# FINAL ENVIRONMENTAL IMPACT STATEMENT

PROPOSED WATER SUPPLY RESERVOIR
HUNTER LAKE

APPLICANT: CITY OF SPRINGFIELD, ILLINOIS
PERMIT APPLICATION NO. 187020

NOVEMBER 2000

**US Army Corps of Engineers**
Rock Island District

DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT. CORPS OF ENGINEERS
CLOCK TOWER BUILDING - P.O. BOX 2004
ROCK ISLAND, ILLINOIS 61204-2004

November 16, 2000

REPLY TO
ATTENTION OF

Planning, Programs and
Project Management Division

SEE REPORT DISTRIBUTION LIST

Pursuant to the National Environmental Policy Act of 1969, the Rock Island District of the U.S. Army Corps of Engineers is providing a Final Environmental Impact Statement (FEIS) prepared to address the impacts of the proposed issuance of a permit under Section 404 of the Clean Water Act for the City of Springfield, Illinois, to construct a municipal water supply reservoir in Sangamon County, Illinois (Hunter Lake).

The Rock Island District prepared a Draft EIS (DEIS) for the permit application by the City of Springfield. The DEIS was released to the public for comment with the official notification of availability of this document in the Federal Register dated April 23, 1999. Comments were received from Federal, State, and local agencies, organized groups, and individuals.

Agency representatives, Federal, State, and local officials, non-governmental organizations, and concerned citizens are asked to comment on the proposed action for which a permit has been requested. A 30-day public review period for this FEIS starts on the date of this letter, or the date the filing notice appears in the Federal Register, whichever is later. Written comments on the FEIS should be addressed as follows:

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Environmental Analysis Section (Charlene Carmack)
Clock Tower Building – P.O. Box 2004
Rock Island, Illinois 61204-2004
Telephone: 309/794-5570

Your comments will be taken into consideration prior to preparation of the Record of Decision for this permit action.

This document is being provided to local, State, and Federal agencies; institutions; public libraries; the media; organized groups; and individuals. Additional copies of this document with the full mailing list are available for review at the Rock Island District Headquarters, at the offices of City Water, Light and Power in Springfield, and at public libraries in the Springfield area.

Sincerely,

William J. Bayles
Colonel, U.S. Army
District Engineer

Enclosure

# FINAL ENVIRONMENTAL IMPACT STATEMENT

## PROPOSED WATER SUPPLY RESERVOIR
## HUNTER LAKE

## APPLICANT: CITY OF SPRINGFIELD, ILLINOIS
## PERMIT APPLICATION NO. 187020

**November 2000**

**Rock Island District**
**U.S. Army Corps of Engineers**
**Clock Tower Building**
**P.O. Box 2004**
**Rock Island, Illinois 61204-2004**

FINAL
ENVIRONMENTAL IMPACT STATEMENT

PROPOSED NEW SUPPLEMENTAL WATER SUPPLY RESERVOIR
SANGAMON COUNTY, ILLINOIS

APPLICANT: CITY OF SPRINGFIELD, ILLINOIS
PERMIT APPLICATION NUMBER 187020

The responsible agency is the U.S. Army Engineer District, Rock Island, Illinois.

Abstract:

The City of Springfield, Illinois, has applied to the U.S. Army Corps of Engineers, Rock Island District, for a permit pursuant to Section 404 of the Clean Water Act for placement of material in Horse Creek, Sangamon County, as part of the construction of a new reservoir to supplement existing municipal water supplies. As part of the U.S. Army Corps of Engineers permit review process, this Final Environmental Impact Statement (FEIS) has been prepared. This document has been prepared in accordance with the provisions of 40 Code of Federal Regulations (CFR) 1500-1508, Council on Environmental Quality, Regulations Implementing the National Environmental Policy Act (NEPA); 33 CFR 230, Corps of Engineers, Procedures for Implementing NEPA (which supplements 40 CFR 1500-1508); and 33 CFR 325, Appendix B, Corps of Engineers, NEPA Implementation Procedures for the Regulatory Program. The Rock Island District prepared a Draft EIS (DEIS) for the permit application. The DEIS was released to the public for review and comment with official notification of the document in the Federal Register dated April 23, 1999. Comments were received from Federal, State, and local agencies, organized groups, and individuals. The proposed action by the City of Springfield is the construction of a new 3,010-acre water supply reservoir to be known as Hunter Lake in rural Sangamon County, Illinois, to supplement existing municipal water supplies. Decision options open to the Corps of Engineers are: issue the permit; issue the permit with conditions or modifications; or deny the permit.

If you would like further information regarding this EIS, please contact:

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Environmental Analysis Section (Charlene Carmack)
Clock Tower Building – P.O. Box 2004
Rock Island, Illinois 61204-2004

Telephone: (309) 794-5570

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## GLOSSARY

| | |
|---|---|
| BMP | best management practices |
| CERCLA | Comprehensive Environmental Response and Liability Act |
| CFR | Code of Federal Regulations |
| CILCO | Central Illinois Light Company |
| CIPS | Central Illinois Public Service Co. |
| CWLP | City Water, Light and Power |
| D.O. | dissolved oxygen |
| EIS | Environmental Impact Statement |
| FEMA | Federal Emergency Management Agency |
| GIS | Geographical Information Systems |
| gpm | gallons per minute |
| IDNR | Illinois Department of Natural Resources |
| IDNR-OWR | Illinois Department of Natural Resources, Office of Water Resources |
| IDOT | Illinois Department of Transportation |
| IEPA | Illinois Environmental Protection Agency |
| IHPA | Illinois Historic Preservation Agency |
| IPCB | Illinois Pollution Control Board |
| ISMS | Illinois State Museum Society |
| ISWS | Illinois State Water Survey |
| IVWA | Imperial Valley Water Association |
| IWR | Institute for Water Resources |
| kwh | kilowatt hours |
| LCR | Lick Creek Reservoir |
| MAIN | Municipal And Industrial Needs |
| MFT | motor fuel tax |
| mgd | million gallons per day |
| msl | mean sea level |
| NHPA | National Historic Preservation Act |
| NPDES | National Pollutant Discharge Elimination System |
| NRHP | National Register of Historic Places |
| NRI | Nationwide Rivers Inventory |
| NSM | Non-Sequential Mass |
| NWI | National Wetlands Inventory |

| | |
|---|---|
| PA | Programmatic Agreement |
| P.L. | Public Law |
| PMF | probable maximum flood |
| RECC | Rural Electric Convenience Cooperative |
| SCADA | Supervisory Control and Data Acquisition |
| SMSD | Springfield Metropolitan Sanitary District |
| TDS | total dissolved solids |
| ULF | ultralow-flush |
| ZOA | zone of attenuation |

# SECTION S
# SUMMARY

## S.1 PURPOSE AND NEED FOR PROPOSED ACTION BY PERMIT APPLICANT

The City of Springfield, Illinois (the City), acting through its municipal utility, City Water, Light and Power (CWLP), has applied to the Rock Island District of the U.S. Army Corps of Engineers, for a Department of the Army permit pursuant to Section 404 of the Clean Water Act for placement of fill material for a dam in Horse Creek to construct a new municipal water supply reservoir near Springfield in Sangamon County.

The City's current water supply source is Lake Springfield. This reservoir was formed in 1935 by constructing Spaulding Dam on Sugar Creek. The adequacy of Lake Springfield as a source of supply was not questioned until the occurrence of the 1953-1955 drought. During that event, the lake declined from the full pool elevation of 560 ft. msl to 547.4 ft. msl, nearly causing the shutdown of both the water treatment and electric generation plants. During this drought event, CWLP constructed a movable low head dam across the South Fork of the Sangamon River to divert water from the river to a pump station at Lake Springfield. This facility is operated to supplement Lake Springfield water supply during low lake levels when sufficient water is available in the South Fork.

Lake Springfield and the South Fork pumping facility constitute the raw water source for the City and surrounding communities as well as cooling water for the City's power generating plants. The existing source is incapable of meeting existing demand during severe drought conditions. Existing supply during a 100-year drought is approximately 29.5 million gallons per day (mgd). Total water demand for the current service area during severe drought conditions is 34.8 mgd. Design year 2025 existing supply is projected at 28.6 mgd, while demand for the current service territory will reach 40.4 mgd.

The City desires to augment current sources by a minimum of 15.3 mgd. This augmentation would enable the CWLP to meet the projected demand of 42.4 mgd during the design drought (100-year recurrence probability, 18-month duration) in the year 2025 for the expected service area while maintaining minimum lake elevations in Lake Springfield necessary for power and water production.

## S.2 ALTERNATIVES INCLUDING PROPOSED ACTION

Numerous alternatives for the proposed supplemental water supply have been evaluated. Criteria utilized to evaluate these alternatives were yield, cost, environmental impacts, and logistics. Alternatives eliminated from further consideration based on these criteria were Lake Sangchris, Sangamon River Dam, South Fork Dam, Illinois River Intake, Jacksonville Joint Use, Recycle/ Reuse of Treated Wastewater for Ash Sluice, Water Conservation, Raise Lake Springfield, and No Augmentation. Each of the feasible alternatives except for the Hunter Lake plan is a component of the No Action Alternative.

Three stand-alone alternatives and 18 combinations of alternatives were identified that would be feasible and provide sufficient yield to meet the projected demand. The stand-alone alternatives evaluated in detail are Hunter Lake, the full-scale Illinois River Valley Well Field option, and the full-scale Havana Lowlands Well Field option. Combinations evaluated in detail include the single well field Illinois River Valley option (12 mgd) in combination with a partial (3.33 mgd) Sangamon River Valley well field network and the single well field Havana Lowlands option (12 mgd) with the partial (3.33 mgd) Sangamon River Valley well field network. Additionally, three combinations (of the 16 identified) combining Lick Creek Reservoir with the Sand and

Gravel Pits and/or Sangamon River Valley well field network components were examined in detail. Cost summaries for the feasible alternatives are shown on Table S2.

## S.3 AFFECTED ENVIRONMENT

Hunter Lake - Applicant's Preferred Alternative

Hunter Lake would be a 3,010-acre reservoir built southeast of Lake Springfield and north of Pawnee in Sangamon County, Illinois. The reservoir would have a drought yield of 21.5 mgd. The total project area would be 7,795 acres. There are 69 residences and 2 businesses, a campground, and a fertilizer sales and service operation in the area. Total tax receipts for the affected area are $150,000. Agricultural land, forest, grasslands, and urban/built-up areas constitute 48%, 35%, 14%, and 3% of the project area land use, respectively. There are 60 farmed units in the affected area. There are 727 recorded historic properties within the project area; 117 of these properties require further evaluation to determine eligibility for inclusion to the National Register of Historic Places. Existing county highways, township roads, and utility services would be affected.

No federally endangered or threatened species are recognized as inhabitants of the study area. The peregrine falcon and bald eagle were censused as flyovers during migration, but no nests were found. The State threatened loggerhead shrike unsuccessfully nested one year in an upland area of the project site. Brown creepers and veerys were considered migrants, with some brown creepers overwintering. The project site would utilize the stream valleys of Horse and Brush Creeks and their tributaries, which are typical of slow, silt-laden streams draining agricultural areas of the central Midwestern Plains. No parks or designated natural areas are present. There are approximately 318 National Wetlands Inventory (NWI) wetland areas that would be inundated by the reservoir. NWI wetland delineation is often not accurate for Section 404 permit issuance until field verification is conducted to determine jurisdictional wetland acreages. The Corps' field verification of the City consultant's delineations indicated that approximately 102.0 acres of jurisdictional wetlands are within the affected area.

Lick Creek Reservoir

Lick Creek Reservoir would be a 1,948-acre reservoir on Lick Creek upstream of Lake Springfield between Loami and Chatham/Springfield in Sangamon County, Illinois. The reservoir would have a drought yield of 8.3 mgd. The total project area would be 5,555 acres.

There are 89 residences and one business, a fee-fishing operation, in the project area. Total tax receipts for the area are about $471,000. Agricultural land, forest, grasslands, and urban/built-up areas constitute 48%, 8%, 25%, and 9% of the project area, respectively. There are 85 farm units in the affected area. There are no documented cultural resources sites, but the probability is high that there are prehistoric sites within the area. Large numbers of historical archeological sites appear on available atlases and plats for the area. Existing county highways, township roads, and utility services would be affected.

No federally endangered or threatened species are documented for the area. The State threatened loggerhead shrike has one documented nesting site from 1994 at the approximate location of the normal pool elevation of the reservoir. Lick Creek and its tributaries are typical of the slow, silt-laden streams draining agricultural areas of the central Midwestern Plains. No parks or designated natural areas are present. There are approximately 241 NWI wetland areas.

## Table S2: Supplemental Water Supply Alternative Costs

| | Hunter Lake | Havana Lowlands Groundwater | Havana Lowlands Groundwater 12 mgd & Sangamon River Valley Groundwater 3.33 mgd | Illinois River Valley Groundwater | Illinois River Valley Groundwater 12 mgd & Sangamon River Valley Groundwater 3.33 mgd | Lick Creek Reservoir 8.3 mgd & Sangamon River Valley Groundwater 8.0 mgd | Lick Creek Reservoir 8.3 mgd & Gravel Pit (A,B,C) 4.8 mgd & Sangamon River Valley Groundwater 3.33 mgd | Lick Creek Reservoir 8.3 mgd Pit (A) 0.87 mgd & Sangamon River Valley Groundwater 6.67 mgd |
|---|---|---|---|---|---|---|---|---|
| Total Capital Cost | $74,443,000 | $134,635,000 | $88,582,000 | $172,523,000 | $110,614,000 | $98,172,000 | $87,952,000 | $99,013,000 |
| Annual Maintenance Cost | $455,000 | $1,307,000 | $983,000 | $1,382,000 | $1,224,000 | $879,000 | $764,000 | $947,000 |
| Total Yield of System (mgd) | 21.3 | 16 | 15.33 | 15.8 | 15.33 | 16.3 | 16.43 | 15.84 |
| Total Capital Cost per mgd | $3,495,000 | $8,415,000 | $5,537,000 | $9,720,000 | $7,216,000 | $6,023,000 | $5,354,000 | $6,251,000 |
| 18-Month Operation Cost | $399,000 | $3,047,000 | $2,632,000 | $3,525,000 | $3,455,000 | $1,407,000 | $1,949,000 | $1,421,000 |
| 50-Year Total Present Worth | $82,014,000 | $158,283,000 | $106,708,000 | $197,831,000 | $133,362,000 | $113,434,000 | $101,944,000 | $113,311,000 |
| 50-Year Total Present Worth per mgd | $3,850,000 | $8,918,000 | $6,670,000 | $11,146,000 | $8,670,000 | $6,960,000 | $6,205,000 | $7,154,000 |
| 50-Year Equivalent Uniform Annual Worth per mgd | $5,203,000 | $10,043,000 | $6,770,000 | $12,552,000 | $8,461,000 | $7,197,000 | $6,468,000 | $7,189,000 |

Sangamon River Valley Wells/Gravel Pits

The Sangamon River Valley well field includes 36 separate well locations on either side of the Sangamon River from northwest of Springfield east of Salisbury in Sangamon County, Illinois, to southeast of Springfield near Mt. Auburn in Christian County, Illinois. The full system would produce 12 mgd. Transmission mains and individual well pipelines total about 75 miles of pipeline corridors. The Gravel Pits source shares the Sangamon River Valley between Riverton and Buckhart, Illinois, in Sangamon County and would provide 4.8 mgd. Well and pump station sites would occupy about 14 acres total if both systems were built. Pipelines would be constructed on easements that would traverse a mix of agricultural and forest lands.

The area examined for pipeline routes, well locations, and gravel pits contained 350 known archaeological sites. There is a high probability of encountering sites in the affected areas. There are no threatened or endangered species documented for any of these areas. Carpenter Park is located along the northern area of the transmission corridor, and a well field area and the South Fork Natural Area are in the east-central area of the pipeline. The pipeline corridors pass near or through 153 NWI wetland areas, most of these being in the Sangamon River Valley.

Illinois River Well System

The full-scale Illinois River Well System consists of two well fields adjacent to the Illinois River approximately 7 miles southwest of Winchester in Scott County, Illinois. The pipeline runs from the northern well field north and east for 54 miles where it discharges to Lick Creek which flows to Lake Springfield. The partial system consists of one of the two well fields with the same pipeline route. Well field and pump station sites would occupy 3 acres and 2.7 acres for the full scale and partial systems, respectively. Pipelines would be constructed on easements that would transverse a mix of agricultural and forest lands.

The pipeline routes examined have six known archeological sites, two being complex multi-component sites at the toe of the bluff in the Illinois River floodplain. There is a high probability of encountering sites near the Illinois River Valley and a moderate probability along the route east to Springfield. There are no Federal endangered or threatened species in the corridor. The State-threatened bunchflower was shown within the corridor south of Orleans. No parks or designated natural areas are within the corridor. The well fields and pipeline corridor pass through or adjacent to 32 NWI wetland areas.

Havana Lowlands Well System

The full-scale Havana Lowlands Well System consists of two well fields of five wells each, one 9.8 miles northwest of Mason City, the second 5 miles southwest of Mason City in Mason County, Illinois. The transmission pipelines travel from the well fields and converge south of Mason City and extend another 34 miles to discharge into Lake Springfield. The partial system uses six wells at the southern well field with the same transmission corridor as the full system. Well fields, pump stations, and flush-out points would occupy 4.8 acres and 3.1 acres for the full-scale and partial systems, respectively.

No identified archeological sites are noted for the well field sites and pipeline routes north of Sherman, but there is a moderate probability of encountering sites. The pipeline route south of Sherman to Lake Springfield through the Sangamon River Valley transverses an area containing 110 known sites. The probability of encountering sites is high along this route. There are no endangered or threatened species within the pipeline corridors or well field locations. No parks or

designated natural areas are located in the affected area. The well field and pipeline corridors pass through or adjacent to 38 NWI wetland areas.

## S.4 ENVIRONMENTAL CONSEQUENCES

Significant environmental impacts for all feasible alternatives are presented in Table S4.

Hunter Lake - 21.3 mgd

The 7,795 acres of land comprising the Hunter Lake site would be removed from the property tax rolls. Approximately $150,000 or 0.6% fewer tax receipts would be collected by the 24 affected authorities. Fewer services also would be needed from these authorities for the project area. Eighty-nine residences and two businesses would require acquisition. Where not already owned by the City, owners would be compensated at fair market value. Relocation would be considered a hardship for 60%-80% of the residents.

Approximately 3,781 acres of cropland would become idle, 1,108 acres by inundation. The buffer areas around the lake would largely be converted to natural landscapes. Recreational potential for picnicking, hiking, camping, fishing, hunting, and boating would increase with the new reservoir. Initially two boat ramps would be provided for lake access.

Archeological and architectural surveys conducted within the Hunter Lake area of potential effect have documented 117 historic properties that are potentially eligible for inclusion to the National Register of Historic Places. Of this total, 89 historic properties have been identified within the proposed pool and shoreline zones that will require determination of effect pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations 36 CFR Part 800. The remaining 28 historic properties will not require a determination of effect under the preferred alternative unless warranted by unforeseen development associated with lake construction. A Programmatic Agreement has been executed between the Advisory Council on Historic Preservation, the Illinois Historic Preservation Agency, the United States Army Rock Island District Corps of Engineers, and the City of Springfield, Illinois, that identifies additional compliance needs, procedures, and responsibilities under the preferred alternative.

The pool area would change from predominantly terrestrial to aquatic habitat. Approximately 815 acres of littoral shore lacustrine areas would be created by the reservoir. Terrestrial animals would be displaced. The stream fishery would be largely replaced by a sport fishery, similar to Lake Springfield. The effects would be mainly negative for most bird species due to removal of the forest and grassland habitat; the effects would be neutral or positive for some species. The expanded open water of the reservoir would favor the populations of other lentic aquatic organisms. No endangered or threatened species, parks, or designated natural areas would be affected.

Flood easements would be needed on 142 acres upstream of the proposed dam above acquisition areas. Fifty-three structures downstream of the reservoir, already affected by the current 100-year flood, would see increased flood heights over existing condition. No new structures would otherwise be impacted.

The estimated total impacts of the Hunter Lake alternative to waters of the United States is approximately 194 acres (102 acres jurisdictional wetland, 88.3 acres of creek channels, and 4.0 acres of ponds). Jurisdictional wetlands would be mitigated at a ratio of 1.5 to 1.0 for each acre of emergent/scrub-shrub wetland impacted; 2:1 for forested wetland impacts; and 1:1 for stream

| Table S4: Feasible Alternatives Impacts | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Alternative | Pipeline Total Length (Miles) | 100-Year Floodplain (Acres)* | Agricultural Land (Acres)* | Non-Agricultural/ Forested Land (Acres)* | NWI Wetlands+ | Stream Crossings (Pipelines) | Threatened & Endangered Species | Designated Natural Areas and Parks |
| Hunter Lake (21.3 mgd) | N/A | 2350 | 3781 | 4014 | 318 | N/A | 1# | |
| Illinois River Wells (15.8 mgd) | 56.0 | 130 | 662 | 55 | 32 | 41 | 1 # | |
| Havana Lowlands Wells (16 mgd) | 50.7 | 98 | 556 | 47 | 38 | 37 | 1 # | |
| Lick Creek Reservoir (8.3 mgd)/Sangamon River Wells (8.0 mgd) | 57.3 | 1745 | 4560 | 1001 | 335 | 61 | 1# | Carpenter Park 15 ac; Riverside Park 6 ac; South Fork Natural Area 2 ac |
| Lick Creek Reservoir (8.3 mgd)/Sangamon River Wells (3.33 mgd)/All Pits (4.8 mgd) | 32.2 | 1585 | 4439 | 821 | 262 | 30 | 1# | South Fork Natural Area 2 ac |
| Lick Creek Reservoir (8.3 mgd)/Sangamon River Wells (6.67 mgd)/Pit A (0.87 mgd) | 59.0 | 1781 | 4564 | 1021 | 358 | 51 | 1# | Carpenter Park 25 ac; Riverside Park 6 ac; South Fork Natural Area 2 ac |
| Illinois River Wells (12 mgd)/ Sangamon River Wells (3.33 mgd) | 89.7 | 295 | 901 | 187 | 89 | 74 | 1 # | South Fork Natural Area 2 ac |
| Havana Lowlands Wells (12 mgd)/Sangamon River Wells (3.33 mgd) | 73.4 | 287 | 719 | 171 | 95 | 64 | 1# | South Fork Natural Area 2 ac |



| Table S4: Feasible Alternatives Impacts (Continued) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Alternative | Energy Requirements (System Horsepower) | Cultural Resources Impact Probability | Farm Displacement | Housing/ Business Displacement | Reservoir Pool Area (Acres) | Total Acres | Impact on Local Taxing Bodies | Increased Recreation Potential |
| Hunter Lake (21.3 mgd) | 600~ | High | 60 | 91 | 3010 | 7795 | Negative | Yes |
| Illinois River Wells (15.8 mgd) | 2551 | High | 0 | 0 | N/A | 719 | Neutral | No |
| Havana Lowlands Wells (16 mgd) | 2357 | Moderate/ High | 0 | 0 | N/A | 608 | Neutral | No |
| Lick Creek Reservoir (8.3 mgd)/Sangamon River Wells (8.0 mgd) | 536 | High | 85 | 90 | 1948 | 6260 | Negative | Yes |
| Lick Creek Reservoir (8.3 mgd)/Sangamon River Wells (3.33 mgd)/ All Pits (4.8 mgd) | 360 | High | 85 | 91 | 1948 | 5952 | Negative | Yes |
| Lick Creek Reservoir (8.3 mgd)/Sangamon River Wells (6.67 mgd)/Pit A (0.87 mgd) | 374 | High | 85 | 90 | 1948 | 6281 | Negative | Yes |
| Illinois River Wells (12 mgd)/Sangamon River Wells (6 mgd) | 2551 | High | 0 | 0 | N/A | 939 | Neutral | No |
| Havana Lowlands Wells (12 mgd)/Sangamon River Wells (6 mgd) | 1649 | High | 0 | 0 | N/A | 780 | Neutral | No |

~ Existing Facility Capacity
+ Jurisdictional wetlands impact may be less than indicated.
* Based on 100-foot-wide pipeline construction corridor.

corridor impacts. Several large forest and prairie tracts would be established in the upland area, and emergent standing timber would be left in many lake areas to provide habitat.

Construction impacts include movement of large quantities of earth for construction of the dam and spillways, road relocations, bridge construction and utility line relocations, necessitating erosion control measures. Turbidity levels in Horse Creek may increase during construction, but would drop below baseline levels after construction. Noise levels would increase during construction. Various road closures and detours would occur and be coordinated with highway officials. Positive impacts include new roadways and bridges built to current standards, and many existing roadway facilities would be upgraded.

The reservoir would be periodically drawn down to supplement the supply of Lake Springfield. Terrestrial impacts would be minimal to nonexistent. One scenario of drawdown would lower the lake by 6.6 ft., equivalent to 25% of the lake surface area. This would expose the entire littoral area of the lake, thereby exposing macrophytes and reducing cover for aquatic organisms. A second scenario would drop the lake 20 ft. once every 15 years, reducing lake surface area by 69%. Again, all of the littoral area of the lake would be exposed and macrophytes would be subject to a greater chance of desiccation if lake levels did not recover. Spawning success of certain sport fishes could be affected for that year. Severe drawdown at Hunter Lake would restore water levels and improve dissolved oxygen concentrations in Lake Springfield. Drawdown would not affect water quality parameters in Hunter Lake other than bottom temperature, which would tend to rise.

Three wastewater treatment plants—Pawnee, Divernon, and Virden—would face permit limitations on effluent quality. The least cost mitigation alternative would route the effluents out of the Hunter Lake watershed.

Illinois River Well Field and Pipeline - 15.8 mgd

Three acres of land would be acquired by the City for well and pump station sites. Wetland sites would be avoided by the pipeline route where possible. Standing timber would be initially impacted during pipeline installation in a 100-foot-wide construction corridor. Probability is high of encountering complex archaeological sites in the Illinois River floodplain and bluff area. Sites would be avoided where possible, and evaluated and mitigated where encountered.

The State threatened bunchflower has been identified near Orleans, Illinois, within the identified pipeline corridor. Pipe construction would be routed to avoid impacts. Loss of one cropping season would be probable along the 55 miles (662 acres) of agricultural corridors during construction. Approximately 717 acres of land would be affected in the temporary construction corridor. A permanent 20-foot corridor over the buried pipeline would be maintained through approximately 4.5 miles (55 acres) of forested areas of the pipeline route. The short-term impact of increased stream turbidity during construction would be experienced where small streams are open cut for pipeline crossings. The pipeline would cross 41 streams.

Fugitive dust and soil erosion control measures would be needed during construction at excavation sites and during well development and testing. Interference of the proposed wells with some nearby existing wells would be likely. Density of wells is sparse in the affected area.

Havana Lowlands Well Field and Pipeline - 16 mgd

Five acres of land would be acquired by the City for wells, pump stations, and flush point sites. Wetland sites would be avoided by the pipeline route where possible. Standing timber would be initially impacted

during pipeline installation in a 100-foot-wide construction corridor. Probability is high of encountering archaeological sites in the Sangamon River Valley portion of the pipeline. Sites would be avoided where possible, and evaluated and mitigated where encountered.

No threatened or endangered species and no parks or designated natural areas are within the pipeline corridors. Loss of one cropping season would be probable along the 45.9 miles (556 acres) of agricultural corridors during pipeline construction. Approximately 603 acres of land would be affected in the temporary construction corridor. A permanent 20-foot corridor would be maintained through approximately 3.9 (47 acres) miles of forested areas of the pipeline route. The short-term impact of increased stream turbidity during construction would be experienced where small streams are open cut for pipeline crossings. The pipeline would cross 37 streams.

Interference of the proposed well fields with surrounding wells is likely. The well field areas were sited based on the low density of irrigation wells in the surrounding areas. Fugitive dust and soil erosion control measures would be needed during construction at excavation sites and during well development and testing.

Lick Creek Reservoir - 8.3 mgd/Sangamon River Valley Wells - 8.0 mgd

The 5,555 acres of land comprising the Lick Creek Reservoir (LCR) would be removed from property tax roles. Approximately $471,000 less in tax receipts would be collected by the taxing authorities. Fewer services would be needed from these authorities for the project area. Wells, pump stations, and flush points account for about 10.6 acres to be acquired by the City. Eighty-nine residences and one business, a fee-fishing area, would require acquisition for the reservoir; these would be purchased at fair market value. Relocation would be considered a hardship for a majority of residents.

Approximately 4,183 acres of agricultural land would become idle; 1,265 acres by inundation. Loss of one cropping season would be probable during pipeline construction along the agricultural areas within the 59 miles of pipeline corridors. Approximately 395 acres of agricultural land would be affected by the temporary pipeline construction corridor. A permanent 20-foot corridor free of timber would be maintained through forested areas (318 acres) of the route. Recreational potential for picnicking, hiking, camping, fishing, hunting, and boating would increase with the new reservoir. Initially two boat ramps would be provided for lake access.

There are no known archaeological sites within the LCR site, but the probability is high that sites exist. Sites within the pool area could not be avoided, and they would be evaluated and mitigated when found. The Sangamon River well fields and pipelines have a high probability of encountering sites. Sites would be avoided if possible and evaluated and mitigated where encountered.

The pool area of the LCR would change from predominantly terrestrial to aquatic habitat. Terrestrial animals would be displaced. The stream fishery would be replaced by a sport fishery similar to Lake Springfield. The effects would be mainly negative for most bird species due to the removal of the forest and grassland habitat, although the effects would be neutral or positive for some species. The expanded open water of the reservoir would favor the populations of other lentic aquatic organisms. The State-threatened loggerhead shrike is known from one nesting record in the LCR area. Habitat is available elsewhere in the project area for this species. No threatened or endangered species are known for the pipeline corridors. The pipeline corridors lie within the established Carpenter Park, Riverside Park, and South Fork Natural Areas.

Well spacings in the Sangamon River Valley were designed to avoid interference with the existing wells. Interference would be limited, since few private wells are located within the river valley. The pipeline

would involve 61 stream crossings that would experience short-term impacts of brief periods of increased turbidity during construction when streams are open cut for pipeline crossings.

The Sangamon River Valley wells and pipeline pass through or adjacent to 130 NWI wetland areas. There would be no permanent wetland impacts except where the 20-foot pipeline maintained corridor would reduce standing timber in forested areas.

Construction impacts include movement of large quantities of earth for construction of the dam and spillway, road relocation, bridge construction, utility line relocation, well development, and pipeline construction, necessitating erosion control measures. Turbidity levels in Lick Creek below the spillway and hence entering Lake Springfield would be lower upon project completion. Noise levels would increase during construction. Various road closures and detours would occur and be coordinated with highway officials. Positive impacts include new roadways built to current standards, and many existing roadway facilities would be upgraded.

The reservoir would be periodically drawn down to supplement the supply of Lake Springfield. Terrestrial habitat changes due to drawdown would be minimal. There would be potential negative impacts similar to Hunter Lake predictions regarding loss of aquatic habitat during drawdown. Seven feet of water would be restored in Lake Springfield with a 16-foot drawdown in the LCR. Improved dissolved oxygen concentration would occur in Lake Springfield. Water drawdown in the LCR would not affect water quality parameters in that reservoir with the exception of an increase in bottom temperature.

One NPDES permit holder in the Lick Creek watershed, the Whispering Pines Mobile Home Park, would be impacted; the effluent could be rerouted north to the Spring Creek drainage.

Lick Creek Reservoir - 8.3 mgd/Sangamon River Valley Wells - 3.33 mgd/Gravel Pits A, B, C - 4.8 mgd

Impacts for this combination of alternatives include the same impacts as for the LCR portion of the previous alternative, plus the gravel pits impacts, and with only a portion of the impacts of the Sangamon River Valley well fields previously described. Additional or different impacts are described here.

Assuming that the City could lease Gravel Pit B-2 from the owner, the existing tenant, a sand and gravel operation, would not stay in the business at this location, resulting in the loss of four jobs. Wells, pump stations, and flush points account for about 7 acres of land to be acquired by the City. Approximately 138 acres of land are affected within the well and pipeline construction corridors.

Reduction of water in the B group of gravel pits would likely result in the loss of virtually all water in the B-1 pit, thereby causing a loss of fish stocks and other aquatic organisms. Water-based recreation would also be lost in Pit B-1. Lowering of the water level in Pit A could affect the water table for the City of Riverton, which currently operates four municipal wells in the vicinity. Agreement would be needed with Riverton if this impact were realized to supply their 0.33 mgd demand. This option involves about 30 stream crossings with associated temporary impacts of increased turbidity from open cut crossings. The Sangamon River gravel pits and wells and associated pipelines pass through or adjacent to 57 NWI wetland areas. No permanent impacts to wetlands would occur, except where a 20-foot corridor would be maintained free of timber in forested areas.

Lick Creek Reservoir - 8.3 mgd/Sangamon River Valley - 6.67 mgd/Gravel Pit A - 0.87 mgd

Impacts for this combination of alternatives include the same impacts for the LCR portion of the earlier alternatives. Portions of the impacts of developing Gravel Pit A are the same as the previous alternative. Additional wells in the Sangamon River Valley system are utilized versus additional gravel pits.

Wells, pump stations, and flush points would account for about 10.5 acres of land to be acquired by the City. Approximately 395 acres of land are affected within the well and pipeline construction corridors. Established parks, Carpenter Park and Riverside Park, and the South Fork Natural Area would be traversed by the pipeline corridors. This option involves about 51 stream crossings with associated impacts of open cut crossings. The well field pipelines pass through or adjacent to 153 NWI wetland areas. No permanent impacts to wetlands would occur, except where a 20-foot corridor would be maintained through standing timber in forested areas.

Illinois River Well Field and Pipeline - 12 mgd/Sangamon River Valley Wells - 3.33 mgd

Nine acres of land would be acquired by the City for well sites, pump stations, and flush points. Transmission main impacts for the Illinois River well field portion are otherwise identified for the full-scale project earlier described, less the minimal construction impact of 1.6 miles of pipeline between the two well locations. The project routes pass through or adjacent to 89 NWI wetland areas. No permanent impacts to wetlands would occur, except where a maintained 20-foot corridor would reduce standing timber in forested areas. Probability is high of encountering complex archaeological sites in the Illinois River floodplain and bluff area, as well as in the Sangamon Valley. Sites would be avoided where possible and evaluated and mitigated where encountered.

The State-threatened bunchflower has been identified near Orleans, Illinois, within the identified pipeline corridor. Pipe construction would be routed to avoid impacts. The South Fork Natural Area is identified in the pipeline corridor for the Sangamon Valley wells. Loss of one cropping season would be probable for all pipeline routes along the 76 miles (919 acres) of agricultural corridors. A 20-foot corridor along pipeline routes through forested areas would result in 37 acres of forest impacts. The Illinois River pipeline route would involve 39 stream crossings, while the Sangamon River Valley well pipelines would cross 18 streams, each with associated temporary increases in stream turbidity during open cuts.

Interference of the proposed wells with nearby existing domestic wells is likely, but the density of such wells is low. Appropriate measures such as well lowering would be examined for specific well sites impacted. Fugitive dust and soil erosion control measures would be needed at excavation sites and during well development and testing.

Havana Lowlands Well Field - 12 mgd/Sangamon River Valley Wells - 3.33 mgd

Eleven acres of land would be acquired by the City for well sites, pump stations, and flush points. Transmission main impacts for the Havana Lowlands portion of this alternative are otherwise identical to the portions of the full-scale south well field location.

The project corridors pass through or adjacent to 95 NWI wetland areas. No permanent impacts to wetlands would occur, except where a maintained 20-foot corridor would reduce standing timber in forested areas. A moderate probability of encountering archaeological sites exists between the Havana Lowlands well field and Sherman, Illinois. For both the Havana Lowlands transmission main south of Sherman and Sangamon Valley wells and transmission mains, the probability is high of encountering sites. Sites would be avoided where possible, and evaluated and mitigated where found. No threatened

or endangered species would be affected by these well field locations and pipeline routes. The Sangamon Valley well pipeline corridor passes through the South Fork Natural Area.

Loss of one cropping season would be probable for all pipeline routes in the 61 miles (737 acres) of pipelines that transverse agricultural areas. A 20-foot corridor along forested areas would result in 34 acres of forest impacts. The Havana Lowlands pipeline corridor would involve 29 stream crossings, and the Sangamon River Valley well pipelines would involve about 18 stream crossings, each with associated temporary increases in stream turbidity.

Interference with existing domestic wells in the Havana Lowlands system is likely. The well field area was chosen based on the low density of irrigation wells in the surrounding area. Appropriate measures such as well lowering would be examined for specific well sites. Fugitive dust and soil erosion control measures would be needed during construction at excavation sites and during well development and testing.

# SECTION 1.0
# PURPOSE AND NEED FOR PROPOSED ACTION

## 1.1 INTRODUCTION

The City of Springfield, Illinois (the City) has applied to the Rock Island District of the U.S. Army Corps of Engineers (the Corps) for a Department of the Army Permit pursuant to Section 404 of the Clean Water Act for placement of material in Horse Creek, Sangamon County, as part of the construction of a new municipal water supply reservoir, to be called Hunter Lake. This application has been designated Application No. 187020 by the Rock Island District.

Section 404 of the Clean Water Act requires that a permit be obtained from the Corps for the discharge of dredged or fill material into waters of the United States. Information required in a Section 404 permit application includes a complete description of the proposed discharge activity; the project location; the source, composition, and quantity of fill and/or discharge material; a description of impacts to waters of the United States; and the method of construction. The Corps has determined that the Section 404 permit application for the proposed Hunter Lake constitutes a major Federal action which could significantly affect the quality of the human environment; therefore, an Environmental Impact Statement (EIS) is required as part of the permit process.

This section of the document presents the applicant's description of past and current water use in the area served by City of Springfield municipal water and power utilities. Description of the applicant's purpose and need is provided here as a consolidated summary of data and information furnished to the U.S. Army Corps of Engineers by the applicant and by several consultants employed by the applicant (Burns and McDonnell 1972, Fitzpatrick and Knapp 1991, O'Hearn and Williams 1982, Planning and Management Consultants 1991, Beck and Associates 1984, Knapp 1998).

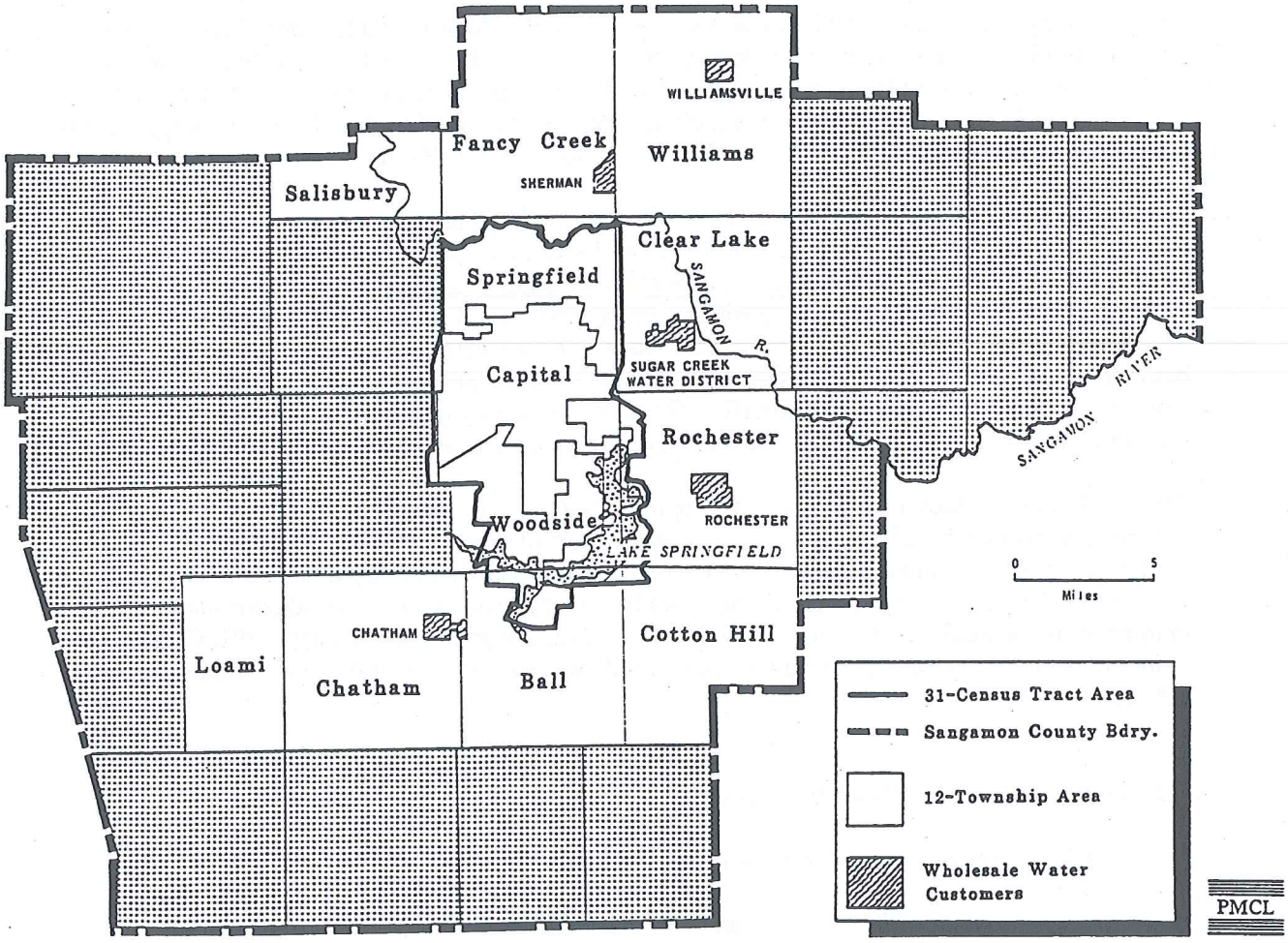
## 1.2 APPLICANT'S PURPOSE AND NEED

### 1.2.1 Background Information

The City of Springfield, Illinois, owns and operates water and electric utilities serving the residents of the City and certain wholesale customers. The City's utilities are administered by the Office of Public Utilities, also referred to as City Water, Light and Power (CWLP). The City's water utility serves, either on a retail or wholesale basis, the City of Springfield, the Villages of Chatham, Grandview, Jerome, Leland Grove, Rochester, Loami, and Southern View, the Sugar Creek Public Water District, the Williamsville-Sherman Water Commission, and certain unincorporated areas adjacent to the City. The service area encompasses approximately 100 square miles in portions of 12 townships and includes a population of about 150,000 (Figure 1.2.1).

The CWLP also operates the largest municipally owned electric utility in Illinois, serving the communities of Springfield, Southern View, Jerome, and Leland Grove on a retail basis and the Village of Chatham as a wholesale customer. In fiscal 1997, the electric system delivered over 2.05 billion kilowatt hours (kwh) of power to 66,637 accounts, representing about 117,200 people. The CWLP periodically sells excess power to other utility systems through the wholesale power market.

**Figure 1.2.1 CWLP Existing and Projected Water Service Area**



Lake Springfield and the South Fork pumping facility constitute the raw water source for the City of Springfield and surrounding communities as well as cooling water for the City's power generating plants. Lake Springfield was formed in 1935 by constructing Spaulding Đam on Sugar Creek. The dam incorporates five movable floating drum gates with the spillway crest elevation at 560 ft. msl (mean sea level). Lake level is allowed to build to 560.5 ft. msl or 0.5 foot above the spillway elevation before gates are lowered to maintain this level. Normal operation maintains the full pool level of 560 ft. msl until withdrawal and evaporation exceed inflow, at which time the pool level begins to fall. Long-term annual pool declines average 2.0 feet. The upper reaches of the lake were dredged during 1987-1990 to allow these areas to again function as natural sedimentation basins.

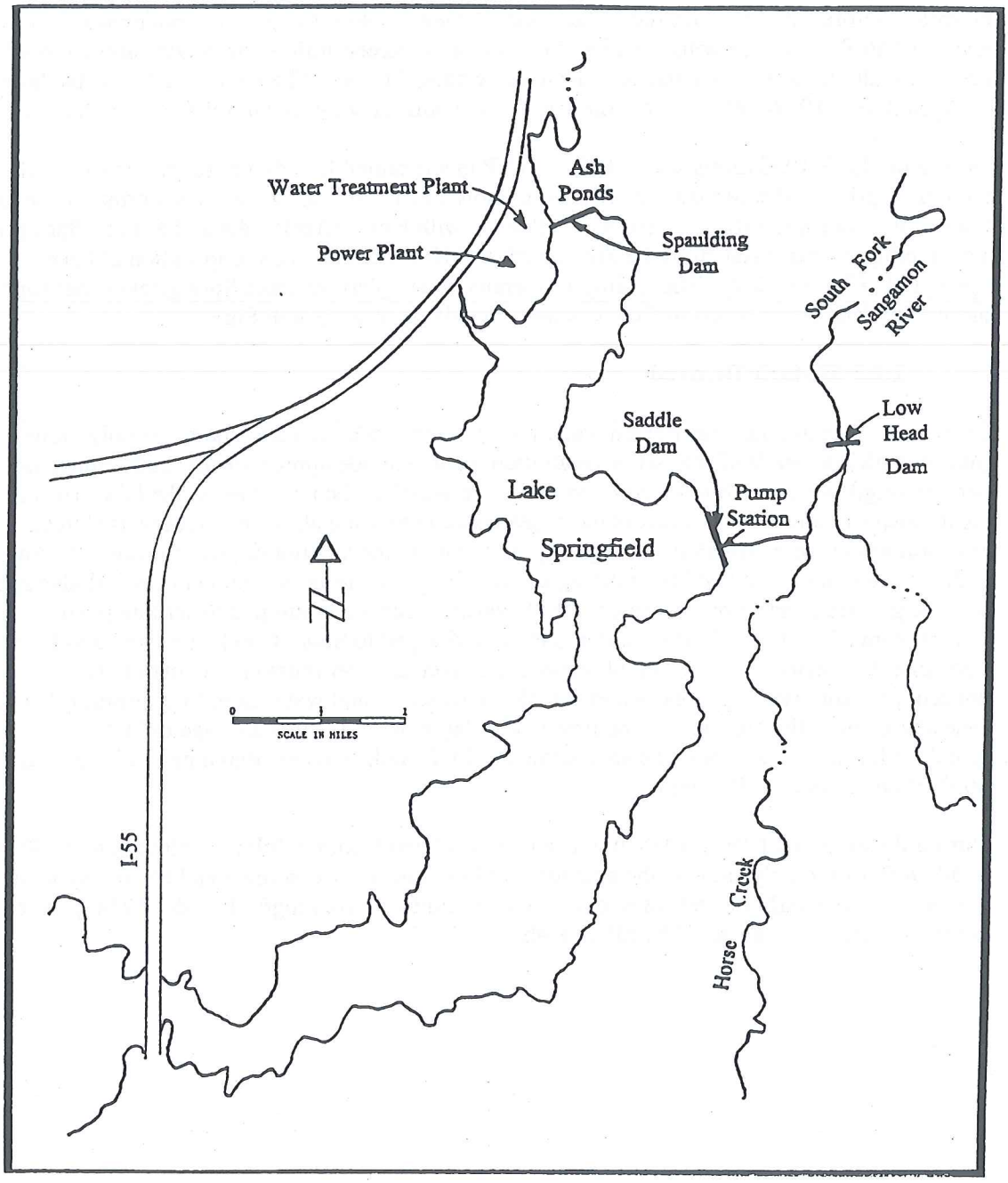
During the 1953-1955 drought event, the CWLP incorporated facility improvements to augment the Lake Springfield water supply. A movable low-head dam was constructed across the South Fork of the Sangamon River below its confluence with Horse Creek, adjacent to Lake Springfield. This facility diverts water from the South Fork and Horse Creek to a pump station at Lake Springfield (Figure 1.2.2). The facility is operated to supplement Lake Springfield water supply during low lake levels when sufficient water is available in the South Fork.

### 1.2.2 Historic Demand

Total water demand includes treated water plus any raw water demands on the supply. Raw water (non-potable) demands of the power generation plants include approximately 250 million gallons per day (mgd) for once-through condenser cooling which is then returned to the lake. Heat lost to the atmosphere through this process increases lake evaporation above natural levels (forced evaporation) by approximately 2.2 mgd depending upon the amount of power produced. An additional 8.6 mgd is utilized for sluicing boiler ash and wastewater treatment plant sludge and in the flue gas desulfurization processes. These waste streams are pumped to settling ponds downstream of the lake; clarified water is then discharged to Sugar Creek or returned to Lake Springfield. Treated water is a combination of delivered water (customer demand plus unaccounted for water), process water for filter backwash, and water used to transport (blowdown) lime sludge from the clarifiers to the lime sludge lagoons. The 1997 average daily treated water (potable) for the service area was approximately 21.7 mgd. To date, maximum daily treated water production has totaled 39.1 mgd.

During the drought of 1953-1955, the lake level declined from the full pool elevation of 560 ft. msl to 547.4 ft. msl, nearly causing the shutdown of both the water treatment and electric generation plants. Average daily treated water during the drought was 16.4 mgd. In 1953-1954, power delivery averaged less than 156 million kwh.

**Figure 1.2.2 Existing Springfield Water Supply System**



### 1.2.3 Water Demand Forecasts

Treated water use forecasts were determined for Springfield and its service territory in 1991 with a computer model called Springfield-MAIN (Municipal And Industrial Needs) (PMCL 1991). Springfield-MAIN was developed by adapting the IWR-MAIN Water Use Forecasting System to local water use patterns. The IWR-MAIN Water Use Forecasting System is a computer modeling system developed by the U.S. Army Corps of Engineers' Institute for Water Resources (IWR). The IWR-MAIN System and its local adaptations have been used across the country to accurately predict demand by identifying water use by sectors as influenced by income, housing stock, industrial mix, water and wastewater rates, population, etc. Single-family and multi-family residential, commercial/institutional, industrial, wholesale, and unaccounted sectors are summed to obtain the treated water use (Table 1.2.3.1). For the purpose of the treated water demand and conservation evaluation, two study areas were defined:

(1) A 31-census tract area that includes the City of Springfield, the surrounding communities of Leland Grove and Southern View, and unincorporated areas, as well as wholesale customers of Grandview and Jerome. The 31-census tract area plus the remaining wholesale customers within the surrounding 12-township area represents the current service area of the CWLP.

(2) The remainder of the 12-township area not currently served is expected to approximate the CWLP service area by the year 2025. The 12 townships included in this study area are:

| | | |
|---|---|---|
| Ball | Cotton Hill | Salisbury |
| Capital | Fancy Creek | Springfield |
| Chatham | Loami | Williams |
| Clearlake | Rochester | Woodside |

**Table 1.2.3.1 Treated Water Demand Base Projections by Sector (mgd)**

| Year | Residential | Commercial | Industrial | Wholesale | Unaccounted | Total |
|---|---|---|---|---|---|---|
| 2000 | 11.522 | 4.755 | 0.355 | 1.138 | 2.423 | 20.193 |
| 2005 | 11.687 | 4.833 | 0.325 | 1.170 | 2.457 | 20.472 |
| 2015 | 12.028 | 5.001 | 0.272 | 1.220 | 2.526 | 21.047 |
| 2025 | 12.400 | 5.139 | 0.239 | 1.259 | 2.596 | 21.633 |
| Annual rate of change (%) | 0.30 | 0.32 | -1.94 | 0.43 | 0.29 | 0.29 |

Source: Planning and Management Consultants, Ltd., 1991

Base projections were then adjusted for high rates of population growth and 100-year drought demand estimates to develop projections for total treated water demand, as shown in Table 1.2.3.2.

**Table 1.2.3.2 Total Treated Water Demand Projections (Base Plus Adjustments)**

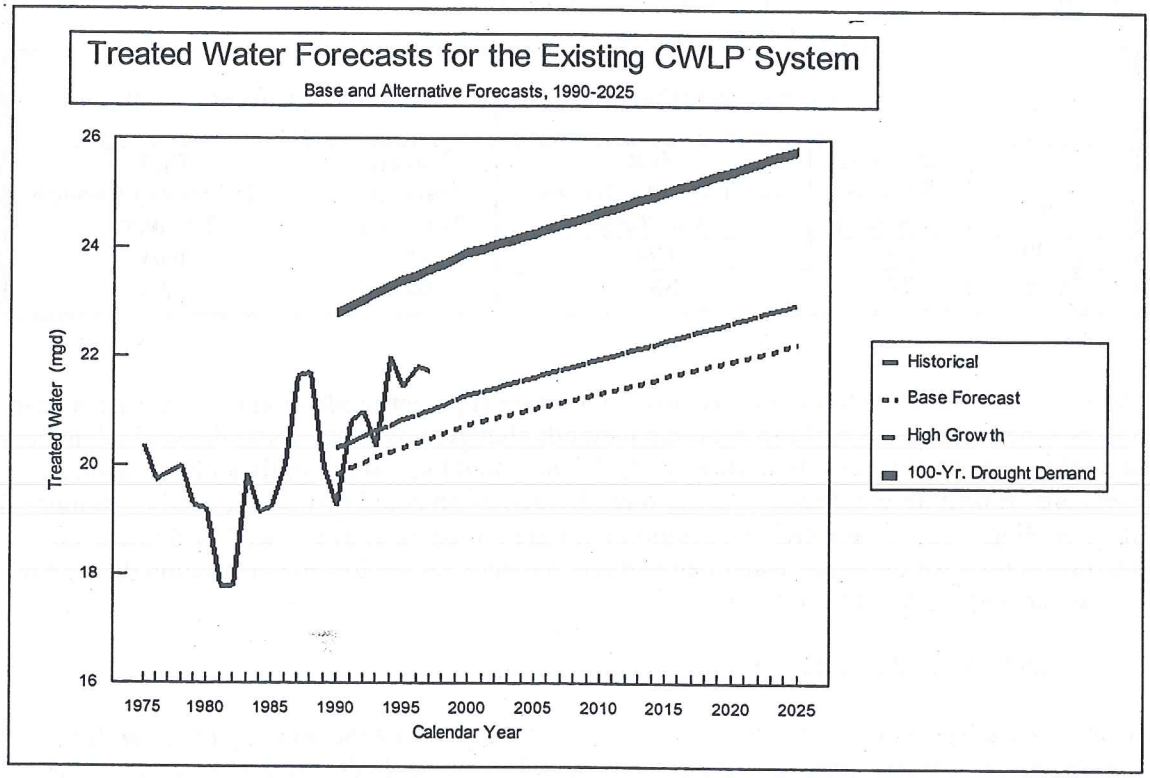
| Year | Base Projections (mgd) Total Annual | High Growth Projections (mgd) Adjustment (+) | 100-Year Drought Projections (mgd) Adjustment (+) | Total (mgd) |
|---|---|---|---|---|
| **31 Census Tracts & Wholesale Customers in 12 Townships (CWLP System)** | | | | |
| 2000 | 20.193 | .526 | 3.211 | 23.93 |
| 2005 | 20.472 | .563 | 3.260 | 24.30 |
| 2015 | 21.047 | .645 | 3.362 | 25.05 |
| 2025 | 21.633 | .726 | 3.466 | 25.83 |
| **12 Townships** | | | | |
| 2000 | 22.251 | .605 | 3.543 | 26.40 |
| 2005 | 22.439 | .640 | 3.577 | 26.66 |
| 2015 | 22.850 | .714 | 3.652 | 27.22 |
| 2025 | 23.273 | .788 | 3.729 | 27.79 |

mgd = million gallons per day

The 12-township service area is partially served by the CWLP via contract with various municipalities and water service districts located within these townships. The projected demand of these service areas is due to normal anticipated growth patterns. The 31 census tracts represent a portion of the CWLP direct service area, i.e., that area for which accurate demographic data and water use records were available. This enabled model calibration and verification, but a realistic demand projection will include the entire 12-township region (Figure 1.2.1).

Backcasts of the model results showed that the model was accurate to within 2% of data in the CWLP historical records. Alternative forecasts adjusted for the effects of weather, growth rates and pricing as they affect the base forecast. Certain conservation measures recommended in *Evaluation of Water Conservation for Springfield City Water, Light and Power* (PMCL 1992) were enacted by the City subsequent to the report date. Consequently, all demand values for the variables investigated were adjusted to reflect the conservation adjusted projections as the baseline under current and future conditions (Figure 1.2.3.1).

**Figure 1.2.3.1**




Development within Springfield and surrounding communities served by the CWLP has increased significantly in recent years. According to a special census released February 25, 1997, Springfield's population numbers 117,044, a gain of 11,817 people since 1990 (State Journal Register 2/27/97). This represents an increase of 11.2%. Residential and commercial water service taps installed over the last 5 fiscal years (FY 94-FY 98) averaged 733 per year in Springfield alone. Approximately 48,500 active retail accounts were served by the CWLP as of January 1998. Springfield bases its projected drought demand on the high growth scenario.

Should the 12-township area including Springfield and nearby areas develop as anticipated, treated water use would reach 24.1 mgd in 2025. Conditions similar to the drought of record would drive treated water demand to 27.8 mgd in the year 2025.

Raw water demands of 8.6 mgd include water taken directly from Lake Springfield for sluicing fly ash, bottom ash, wastewater treatment plant sludge, and flue gas desulfurization process wastes from the power plants to the disposal ponds. Also, the elevation of lake water temperature due to the thermal loading created by condenser cooling water discharge results in an increase over the normal condition in lake evaporation. This increased evaporation is referred to as forced evaporation. Forced evaporation uses an average of 2.2 mgd over and above natural evaporation in a normal year; slightly more (2.3 mgd) in a dry year. Table 1.2.3.3 summarizes the total water demand projections.

**Table 1.2.3.3 Total Water Demand (mgd)**

| | Normal Weather | | 100-Year Drought Conditions | |
|---|---|---|---|---|
| Year | Current Service Territory | Full 12-Township Service Territory | Current Service Territory | Full 12-Township Service Territory |
| 2000 | 31.5 | N/A | 34.8 | N/A |
| 2025 | 37.0 | 38.7 | 40.4 | 42.4 |

Raw water demand for ash sluicing would also increase if power production doubles by the year 2025 as expected; however, if ash handling methods change, this sluice water demand might only rise slightly for the existing units. Raw water demand could increase significantly if cooling towers are utilized for condenser cooling; forced evaporation could then be reduced or eliminated. Future cooling demands and sluicing requirements are unknown at this time. For this analysis, 10.0 mgd is used for the sluice water demand and 4.6 mgd for the forced evaporation demand in 2025 under severe drought conditions.

### 1.2.4 Available Water Yield

The intended purpose of a water supply reservoir is to redistribute the quantity of streamflow through time, i.e., store water, so that a reliable supply is available during the dryer, low-flow periods. The yield of a surface-water supply system is the maximum amount of water that can be supplied from that system during a specific period of time, typically over the duration of a particular drought. The safe yield of the system is the yield that occurs over a critical period, normally defined by either the drought of record or by a hypothetical drought having a specific interval of expected recurrence.

There are two basic types of methods commonly used for the estimation of reservoir yield: (1) a non-sequential mass analysis, and (2) a sequential simulation analysis, sometimes called an operations study.

*Non-Sequential Mass Analysis*

Reservoir yield estimates for Lake Springfield given in most studies in the past 30 years have employed the non-sequential mass (NSM) analysis. The NSM analysis examines the total amount or "mass" of inflows and outflows from a reservoir during a hypothetical drought of a specific duration and frequency.

For the Lake Springfield NSM, the recurrence intervals of 10, 25, 50, and 100 years and the period of record drought (1953-1954) for the durations of 6, 9, 12, 18, 30, and 54 months were studied to determine the quantity of water available from the lake.

*Simulation Analysis*

When the other components or sources are brought into a water supply system, as in the case of the existing and proposed Springfield system, the sequencing differences between various water supply sources is a concern that needs to be addressed.

Simulation analysis mathematically describes (or models) the physical dimensions of reservoir levels and operation for a specific sequence of flow conditions, such as during a historical drought, using a selected set of experimental constraints or policies (scenarios).

The main strengths of simulation model are that: (1) it provides a mechanism to evaluate the joint use of various water supply sources and (2) it provides for experimentation of various operation scenarios, which lets the model user draw inferences about the system performance during drought. Simulations also provide examples of the temporal changes in reservoir levels throughout a drought, which may influence decisions when choosing an operation scheme. In all these aspects, it is most useful that the simulation analysis be used on multiple drought events, since differences in the temporal qualities of droughts may have a significant impact on yields and operation policies.

When simulating a long period of record, there are essentially no choices in defining initial drought conditions (such as the date and reservoir level at the onset of a drought) as these are continuously computed by the model. The designation of drought durations also becomes a less important issue, since this does not directly influence the evaluation of system yield.

A simulation analysis of operation alternatives developed by the Illinois State Water Survey (ISWS) for Springfield is used as the basis for system yield analyses utilized in this section and throughout this document (Knapp 1998). The system yield is the maximum amount of water that can be supplied through joint operation of all components in the water supply system, as simulated on a daily basis. The net yield for a selected component is the difference between the system yield when using that component and the system yield without the component. Table 1.2.4.1 compares yield estimates for the NSM and simulation analyses. Table 1.2.4.2 presents selected yield scenarios for the existing Springfield system. Springfield bases its existing yield value on scenario B4 in this and all subsequent sections.

**Table 1.2.4.1 Comparison of Yield Estimates for the Existing Springfield System* NSM vs. Simulation Analysis**

| Drought Recurrence Interval - Years + | Year 2000 | | Year 2025 | |
|---|---|---|---|---|
| | NSM | Simul. | NSM | Simul. |
| 10 | 69.1 | 70.0 | 74.4 | 67.8 |
| 25 | 51.2 | 49.4 | 43.5 | 47.8 |
| 50 | 38.3 | **32.1◆** | 30.3 | **31.1◆** |
| 100 | 30.1 | **28.8◆** | 28.0 | **27.9◆** |

* South Fork pump rating of 63 mgd
+ Critical duration drought yield used for NSM values
◆ Projected demand exceeds yield estimates

The yield estimates presented have been developed using 63 mgd as the maximum pumping rate of the South Fork facility. Recent tests indicate that the actual maximum pumping rate is approximately 78 mgd, or roughly 25% greater than originally estimated. Yield calculations based on the higher pumping rate will produce increases in the existing system yield averaging 0.7 mgd. In addition, the recycling of ash pond water will add 1.6 mgd. Thus, all system yield scenarios would be increased by these values.

**Table 1.2.4.2 Future Yields for Lake Springfield and South Fork Pumping Facility**

Variables: Minimum pool elevation of Lake Springfield (MinElev), in feet msl
Depth below average pool, in feet, used to trigger South Fork pumping (PumpOpt)

| | Yields (mgd) for different drought recurrence intervals | | | |
|---|---|---|---|---|
| | **100-yr** | **50-yr** | **25-yr** | **10-yr** |
| B2) MinElev = 540, PumpOpt = 0.0 | | | | |
| YEAR = 2000 | 33.1 | 37.1 | 58.2 | 83.2 |
| YEAR = 2025 | 30.9 | 34.7 | 54.7 | 78.5 |
| YEAR = 2050 | 28.8 | 32.3 | 50.6 | 72.4 |
| B4) MinElev = 547, PumpOpt = 0.0 | | | | |
| YEAR = 2000 | 27.2 | 30.5 | 47.8 | 68.4 |
| YEAR = 2025 | 26.3 | 29.5 | 46.2 | 66.1 |
| YEAR = 2050 | 25.5 | 28.5 | 44.6 | 63.7 |
| B5) MinElev = 547, PumpOpt = 2.0 | | | | |
| YEAR = 2000 | 26.8 | 29.8 | 45.4 | 63.5 |
| YEAR = 2025 | 26.1 | 29.0 | 44.0 | 61.4 |
| YEAR = 2050 | 25.2 | 28.0 | 42.6 | 59.4 |

Note: Add 0.7 mgd to all above yields to reflect increased pumping rate of existing South Fork Facility, and 1.6 mgd for recycling ash pond water.

### 1.2.5 Demand Versus Yield

Comparison of the total water demand versus yield shows the existing Lake Springfield system can not withstand the effects of a 100-year drought under existing conditions (Table 1.2.5.1). Projected demand increases and service territory expansions worsen the shortfall.

**Table 1.2.5.1 Design Drought Condition Yield Deficits (mgd) for the Existing Springfield System**

| Year | | Demand | Yield* | Deficit |
|---|---|---|---|---|
| 2000 | Current Service Territory | 34.8 | 29.5 | **5.3** |
| 2025 | Current Service Territory | 40.4 | 28.6 | **11.8** |
| | Full 12-Township Service Territory | 42.4 | 28.6 | **13.8** |

*Yields reflect increased South Fork pump rating - 78 mgd

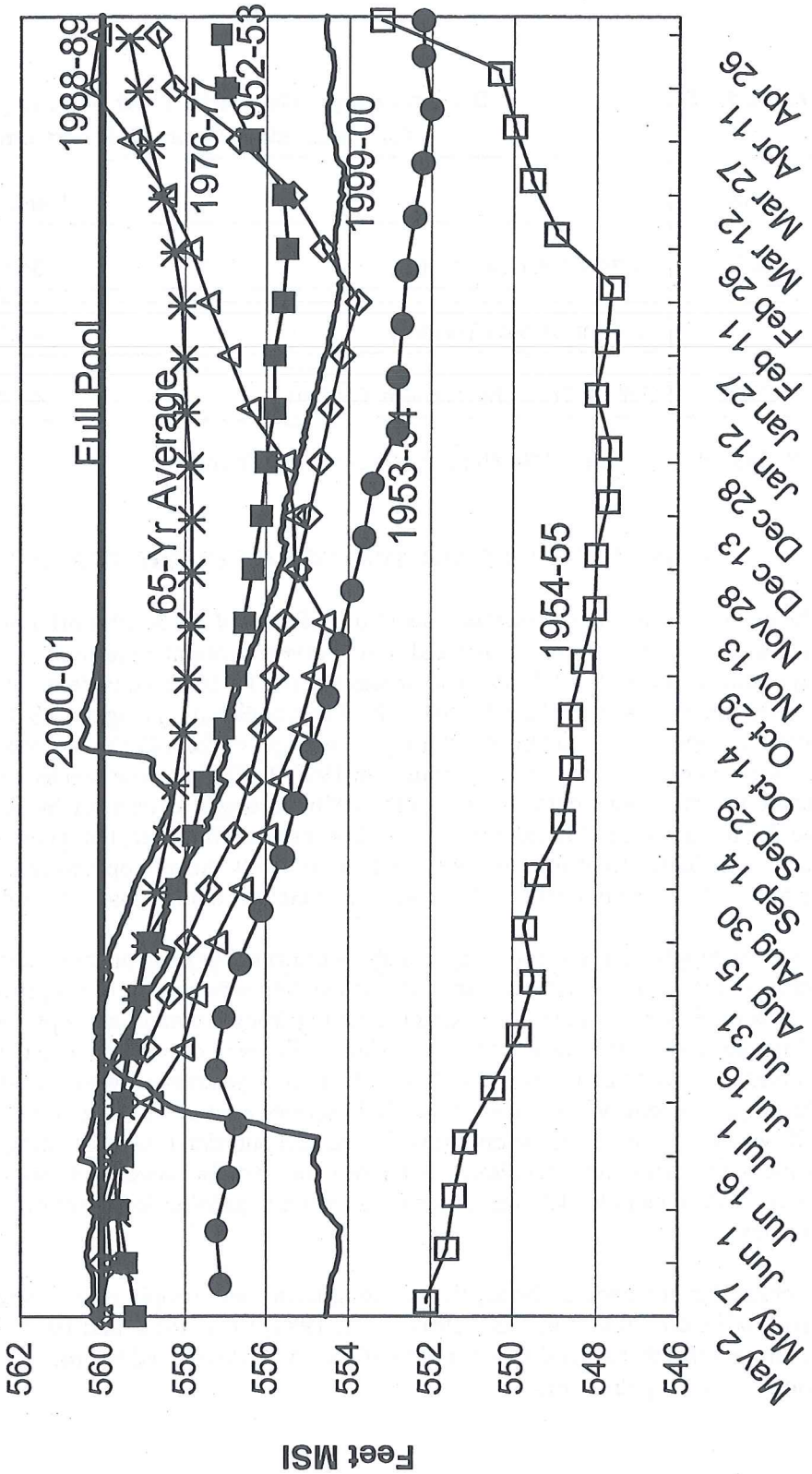
## 1.3 PROJECT PURPOSE AND HISTORY OF CURRENT PERMIT ACTION

The existing water supply system (Lake Springfield and the South Fork pumping facility) is incapable of meeting existing demand during severe drought conditions such as the area experienced during 1953-1955. The drought of the 1950's is considered to be approximately an 80-year drought, and the lake dropped 12.39 feet in elevation (Figure 1.3.1). The South Fork pumping facility was constructed during the drought of the 1950's, but was only completed as the drought ended. The most recent drought in 1990-2000 in comparison to the other droughts of record was tracking most closely with the 1950's drought (even with the South Fork pumping facility in operation) through the spring rainy season. However, the recent drought abruptly ended and is considered to be approximately a 15-year event. Severe operating difficulties were anticipated by the applicant for both water and electric operations had the drought persisted.

Existing supply during a 100-year drought is projected to be approximately 29.5 million gallons per day (mgd). Total water demand for the existing service area during severe drought conditions is 34.8 mgd. Design year 2025 existing supply (drought condition) is projected to fall to 28.6 mgd, while demand for the current service territory will reach 40.4 mgd. The City desires to augment current sources by a minimum of 15.3 mgd. This augmentation would enable the supply to meet the projected demand for the expected 2025 service area of 42.4 mgd during the design drought, a 100-year recurrence interval drought of 18-month duration (approximating the 1953-1955 event), while maintaining minimum lake elevations necessary for power and water production. This augmentation includes 1.5 mgd that would permit expansion for water intensive industrial businesses.

Technical evaluations of the applicant's long-term water supply needs were completed by City staff and/or consultants in 1957, 1965, 1972, 1980, 1981, 1986, and 1991. The 1965 report first recommended that an additional source of supply be developed to protect against future water shortages during drought.

**Figure 1.3.1** **Historic Lake Elevations**



In addition, the CWLP modified its ash ponds in 1978. A pump station was erected at the ash pond clarification lagoon to enable pumpage of clarified sluice water back to Lake Springfield during periods of low precipitation. In 1993, the Illinois Pollution Control Board (IPCB) granted the City an Adjusted Standard for Boron concentration contained in the ash pond sluice water discharged to Sugar Creek. The City's revised NPDES permit precluded the use of the water for recycling back to Lake Springfield until spring of 2000 when an NPDES permit modification was requested by CWLP and granted by IEPA on August 17, 2000. This allows CWLP to pump ash pond water back to the Dallman Power Plant condenser cooling water where it would enter Lake Springfield mixed with the approximately 500 mgd flow from the plant.

The project history dates to the drought of 1953-1955 when the City realized that Lake Springfield would not be an adequate supply of water during severe drought. The City subsequently in 1965 began to implement initial planning and land acquisition for Lake Springfield II, now known as Hunter Lake, southeast of the existing reservoir after investigating several potential supply sources. In 1988, the Springfield City Council moved by ordinance to authorize the continued development of Lake Springfield II as a permanent supplemental water supply. This action was subsequent to the City requesting permits for an emergency plan to temporarily dam the Sangamon River as a supplemental water source. While conditional permits were issued for the emergency plan, it was expressed in permit negotiations that this was not to be considered a permanent solution. Specific objections were raised by the Illinois Environmental Protection Agency (IEPA) and the U.S. Fish and Wildlife Service.

The applicant's Emergency Water Supply Plan is designed and authorized to be implemented when the pool elevation of Lake Springfield reaches 2 feet below normal during June of any year. To date, the plan has not been implemented. The permit was renewed for a 5-year period in 1993, and again in 2000. Once permanent supply augmentation is available, the need for the Emergency Plan will be negated and the plan will be abandoned.

On July 26, 1989, the City of Springfield, Illinois, through City Water, Light and Power, submitted a joint permit application for construction of Hunter Lake Reservoir. A Notice of Intent to prepare a Draft Environmental Impact Statement (EIS) for the construction of Hunter Lake Reservoir was published by the U.S. Army Corps of Engineers in the *Federal Register* of October 31, 1989. Subsequently, Joint Public Notice (No. CENCR-18702Z) was issued on November 8, 1989, by the Corps, the IEPA, and the Illinois Department of Transportation/Division of Water Resources outlining the proposed project.

The City of Springfield sold an issue of water revenue bonds in 1989, which included funds to undertake the required studies for an EIS, continue land acquisition for the Hunter Lake project, and for other water system improvement projects. Consultants were hired in the spring of 1990 to address the EIS topics. Data have been collected and compiled for the project alternatives during 1990 to 1998.

## 1.4 PERMIT REQUIREMENTS

Section 404 - Permit for discharge of dredged or fill material into waters of the United States (including wetlands). Issued by U.S. Army Corps of Engineers.

Section 401 - Water Quality Certification for the above actions. Issued by the IEPA.

Section 402 - Stormwater Discharge Permit for erosion controls approval related to earthwork activities associated with reservoir construction. Issued by the IEPA. Revisions to upstream sewage treatment facilities to allow for a change in discharge location for the plant effluent. Issued by the IEPA.

Construction, Operation, and Maintenance of Hunter Lake Dam - A permit taking into consideration dam safety and flooding issues. Issued by the Illinois Department of Natural Resources, Office of Water Resources (IDNR-OWR).

Construction in a Regulatory Floodplain - Permits which consider the flood impacts associated with fills for bridge embankment or other construction in the floodplain are required from the IDNR. A permit for dam construction is required from the Illinois Department of Transportation in coordination with dam safety permitting. Springfield-Sangamon County Regional Planning Commission also issues floodplain permits.

# SECTION 2.0
# PROJECT ALTERNATIVES CONSIDERED

## 2.1 INTRODUCTION

Numerous alternatives have been identified and evaluated prior to and during the development of this Draft EIS. Alternatives identified to date are described in the following narrative. Those alternatives that were eliminated from detailed analysis are briefly described, along with the reasons for their having been dropped from further consideration.

The Corps is neither a proponent nor an opponent of this proposal by the City of Springfield. The City's proposal is therefore identified in the following discussion as the "Applicant's Preferred Alternative." Permit decision options available to the District Engineer, which embrace all of the applicant's alternatives, are: (1) issue the permit; (2) issue the permit with modifications or conditions; or (3) deny the permit.

The current permit application covers only the proposed construction of Hunter Lake. For this reason, all alternatives to that action identified and evaluated in this document, whether or not they would require a permit from the Corps to be implemented, are considered to be part of the Corps' "no-action" alternative (i.e., denial of a permit for Hunter Lake). Denial of the current permit application does not constitute approval or disapproval of any of the identified alternatives. Should the applicant choose to pursue augmentation of existing water supply by one of these alternatives, a new Section 404 permit action would have to be initiated and additional information provided to the Corps.

Information provided to the Corps on the proposed action and alternatives was developed by the applicant (City of Springfield) and a number of consultants employed by the applicant (Anliker and Wollner 1998, CMT 1998, Hanson 1998, Knapp 1998, PMCL 1991).

### 2.1.1 Screening Criteria

The criteria of yield, cost, environmental impacts, and logistics were established to evaluate all alternatives.

**Yield** - A supplemental raw water source capable of providing a net 15.3 mgd to augment Lake Springfield during the design drought is required to meet projected future demand as described in Section 1. The supplemental supply would be utilized when Lake Springfield falls below its seasonal average elevation. Thus, net yield of pumped groundwater sources is roughly 94% of the source yield as that provided if groundwater were pumped 100% of the time.

Individual feasible alternatives not capable of providing the full yield are considered in combination with other partial yield sources. Sources of less than 1 mgd are not considered combinable. Single sources yielding well in excess of the needs of the City are not considered. Sources must be of adequate quality to allow continued use of existing treatment processes and avoid adverse water quality impacts to Lake Springfield.

**Cost** - The City prefers the lowest cost alternative. Primary cost factors compared are: first cost of construction (capital cost), cost per unit yield; annual operation and maintenance costs; design drought operating costs.

**Environmental Impacts** – Potential limiting factors include: unavoidable impacts to threatened/endangered species (State or federally listed); chemical or biological contamination potential of surface water or groundwater; impacts to historic properties listed or eligible for listing to the National Register of Historic Places that can not be avoided; impacts to rivers listed as part of the National Wild and Scenic Rivers System.

**Logistics** - Limiting factors include: availability of the source to the City; permit requirements, loss of power or water production due to source development.

Some of the alternatives were eliminated from further consideration based on these criteria (Table 2.1.1). Alternatives eliminated are briefly discussed in Section 2.2. Alternatives or combinations of alternatives considered feasible (Table 2.1.2) are described in Section 2.3. Each of the feasible alternatives, except for the Hunter Lake plan, is a component of the No Action Alternative. Table 2.1.3 compares the estimated costs of all feasible alternatives. Cost assumptions of feasible alternatives are based on the following:

- All costs are in 1997 dollars
- 6% interest rate
- 50-year life of system
- One 18-month drought during system life

**Table 2.1.1 Alternatives Eliminated from Further Consideration**

| Alternative | Reason for Elimination |
|---|---|
| Lake Sangchris | Not available for use |
| Sangamon River Dam | Not permitable - environmental impacts |
| South Fork Dam | Environmental impacts, excessive yield, high cost |
| Illinois River Intake | Logistics - Operating impacts (zebra mussels) - Illinois River Valley well field similar & preferable |
| Jacksonville Joint Use | No long-term surplus yield available |
| Recycle/Reuse of Treated Wastewater for Ash Sluice | Environmental impacts - boron |
| Water Conservation | Inadequate yield of 0.65 mgd (maximum) |
| Raise Lake Springfield | Logistically impractical, loss of power production |
| No Augmentation | Inadequate yield, loss of water and power production |

| Table 2.1.2 | Alternatives or Combinations of Alternatives Considered Feasible |
|---|---|

- Hunter Lake Reservoir (21.3 mgd)
- Havana Lowlands Well Field (16 mgd)
- Havana Lowlands Well Field (12 mgd) and Sangamon River Valley Wells (3.33 mgd)
- Illinois River Valley Wells (16 mgd)
- Illinois River Valley Wells (12 mgd) and Sangamon River Valley Wells (3.33 mgd)
- Lick Creek Reservoir and Sand & Gravel Pits and/or Sangamon River Valley Wells*

* 16 variations identified; 3 analyzed for impacts and cost.

## 2.2 ALTERNATIVES ELIMINATED FROM DETAILED ANALYSIS

### 2.2.1 Lake Sangchris

Lake Sangchris is located in the northwest corner of Christian County in central Illinois, approximately 15 miles southeast of Springfield. The lake is an artificial impoundment developed during 1964 through 1966 by the damming of three small arms of Clear Creek which are tributary to the South Fork of the Sangamon River.

The lake was constructed to serve as a condenser cooling water source for the Commonwealth Edison Company power generating station near Kincaid, Illinois. The State of Illinois manages a large portion of the land surrounding the lake as Lake Sangchris State Park.

The lake is approximately 2,200 surface acres in size and contains a volume of 10.7 billion gallons.

Springfield investigated the possibility of obtaining water from this source, but was advised by Commonwealth Edison Company that the lake would not be available as a water supply source.

The Kincaid power station and Sangchris Lake is being purchased by Dominion Energy, Inc. Springfield inquired to the new owners, and was again advised that the lake would be unavailable for any use beyond existing.

This alternative was eliminated from further study on the basis of logistics.

Table 2.1.3 Supplemental Water Supply Alternative Costs

| | Hunter Lake | Havana Lowlands Groundwater | Havana Lowlands Groundwater 12 mgd & Sangamon River Valley Groundwater 3.33 mgd | Illinois River Valley Groundwater | Illinois River Valley Groundwater 12 mgd & Sangamon River Valley Groundwater 3.33 mgd | Lick Creek Reservoir 8.3 mgd & Sangamon River Valley Groundwater 8.0 mgd | Lick Creek Reservoir 8.3 mgd & Gravel Pit (A,B,C) 4.8 mgd & Sangamon River Valley Groundwater 3.33 mgd | Lick Creek Reservoir 8.3 mgd Pit (A) 0.87 mgd & Sangamon River Valley Groundwater 6.67 mgd |
|---|---|---|---|---|---|---|---|---|
| Total Capital Cost | $74,443,000 | $134,635,000 | $88,582,000 | $172,523,000 | $110,614,000 | $98,172,000 | $87,952,000 | $99,013,000 |
| Annual Maintenance Cost | $455,000 | $1,307,000 | $983,000 | $1,382,000 | $1,224,000 | $879,000 | $764,000 | $947,000 |
| Total Yield of System (mgd) | 21.3 | 16 | 15.33 | 15.8 | 15.33 | 16.3 | 16.43 | 15.84 |
| Total Capital Cost per mgd | $3,495,000 | $8,415,000 | $5,537,000 | $9,720,000 | $7,216,000 | $6,023,000 | $5,354,000 | $6,251,000 |
| 18-Month Operation Cost | $399,000 | $3,047,000 | $2,632,000 | $3,525,000 | $3,455,000 | $1,407,000 | $1,949,000 | $1,421,000 |
| 50-Year Total Present Worth | $82,014,000 | $158,283,000 | $106,708,000 | $197,831,000 | $133,362,000 | $113,434,000 | $101,944,000 | $113,311,000 |
| 50-Year Total Present Worth per mgd | $3,850,000 | $8,918,000 | $6,670,000 | $11,146,000 | $8,670,000 | $6,960,000 | $6,205,000 | $7,154,000 |
| 50-Year Equivalent Uniform Annual Worth per mgd | $5,203,000 | $10,043,000 | $6,770,000 | $12,552,000 | $8,461,000 | $7,197,000 | $6,468,000 | $7,189,000 |

### 2.2.2 Sangamon River

The City of Springfield applied for and received permits to install a temporary, emergency dam on the Sangamon River at the confluence of the South Fork of the Sangamon River to provide a supplemental water source during drought. Permits were issued in 1989 by the U.S. Army Corps of Engineers, the Illinois Environmental Protection Agency (IEPA), and the Illinois Department of Transportation. The permit was renewed in 1993 and again in 2000 pending resolution of the City's search for permanent water supply augmentation.

To date, drought conditions outlined in the plan severe enough to define a water supply emergency have not occurred; therefore, the dams have not been constructed. Once a permanent supply augmentation is available, the need for the emergency plan will be negated. It was clearly expressed during permit application review by the IEPA that this permit action was solely an interim, emergency measure.

The use of the Sangamon River, as proposed, was not an acceptable long-term solution to emergency public water supply. The major concern raised by the IEPA was the water quality and biological impacts in the pooled area created upstream of the proposed temporary dam. The IEPA expected that dissolved oxygen concentrations would be detrimentally affected, to the point of violating the general use water quality standard, in both the Sangamon and South Fork arms of the proposed pool due to a change in natural reaeration characteristics and exaggerated diurnal variations attributable to increased algal activity. Concern was also expressed about the impact the diversion of low quality water from the proposed impoundment could have on Lake Springfield. Illinois Pollution Control Board Order 88-113 obtained during the permit application period further stated that the City was to establish a firm schedule for obtaining a long-term water supply. The U.S. Fish and Wildlife Service also voiced objections to the proposed plan due to adverse water quality impacts, especially dissolved oxygen, both upstream and downstream of the proposed impoundment. In addition, the segment of river where the proposed project is to take place is included in the Nationwide Rivers Inventory (NRI). The NRI includes rivers selected on the basis of the degree to which they are free-flowing, the degree to which their corridors are undeveloped, and other outstanding natural and cultural characteristics of the rivers and their immediate environments. Modification of the free-flowing character of a river by impoundments, diversion structures, and the use of riprap is not compatible with the protection of scenic river values because they alter the natural riverine appearance. The recreational value of the river would also be diminished because a dam would create a barrier for canoeists attempting to navigate the river. The Sangamon River option was dropped from further consideration as a permanent alternative water supply to supplement Lake Springfield.

### 2.2.3 South Fork Reservoir

Several possibilities for the location of a dam to construct a reservoir on the South Fork of the Sangamon River have been examined over the years. Each of the possibilities examined both upstream and downstream of the confluence with Horse Creek and at elevations ranging from 550 to 570 ft. msl would create very large shallow reservoirs of 6,870 to 13,400 surface acres. Storage would be 64,000 acre-feet to 218,000 acre-feet, well in excess of the needs of the City. Land acquisition requirements for a South Fork Reservoir would likely be at least double the given surface acreage and would make this project extremely expensive. Extensive floodplain forests and wetlands would also be affected by any of these options. These considerations have resulted in the South Fork option being dropped from further evaluation.

### 2.2.4 Illinois River

The Illinois River was evaluated as a raw water source. Adequate volume exists and would be available during drought conditions. Water quality varies considerably. Springfield determines that a well system versus a surface water intake be analyzed as the Illinois River alternative for the following reasons:

- Studies conducted by the Illinois State Water Survey (ISWS) indicate that ample groundwater volume and numerous well field locations exist along the Illinois River Valley.
- Vastly improved water quality is available from the aquifer along and under the river.
- Pretreatment of a surface intake supply would be necessary to minimize biofouling of the transmission system during non-use periods.
- A well system precludes serious transmission operational problems caused by zebra mussels encrusting the system. Zebra mussel populations have been documented along the entire river.
- Introduction of the zebra mussels and other exotic species to Lake Springfield from this source would be precluded.

An Illinois River surface intake supply was eliminated from further study on the basis of potential for biological contamination.

### 2.2.5 Jacksonville System Expansion

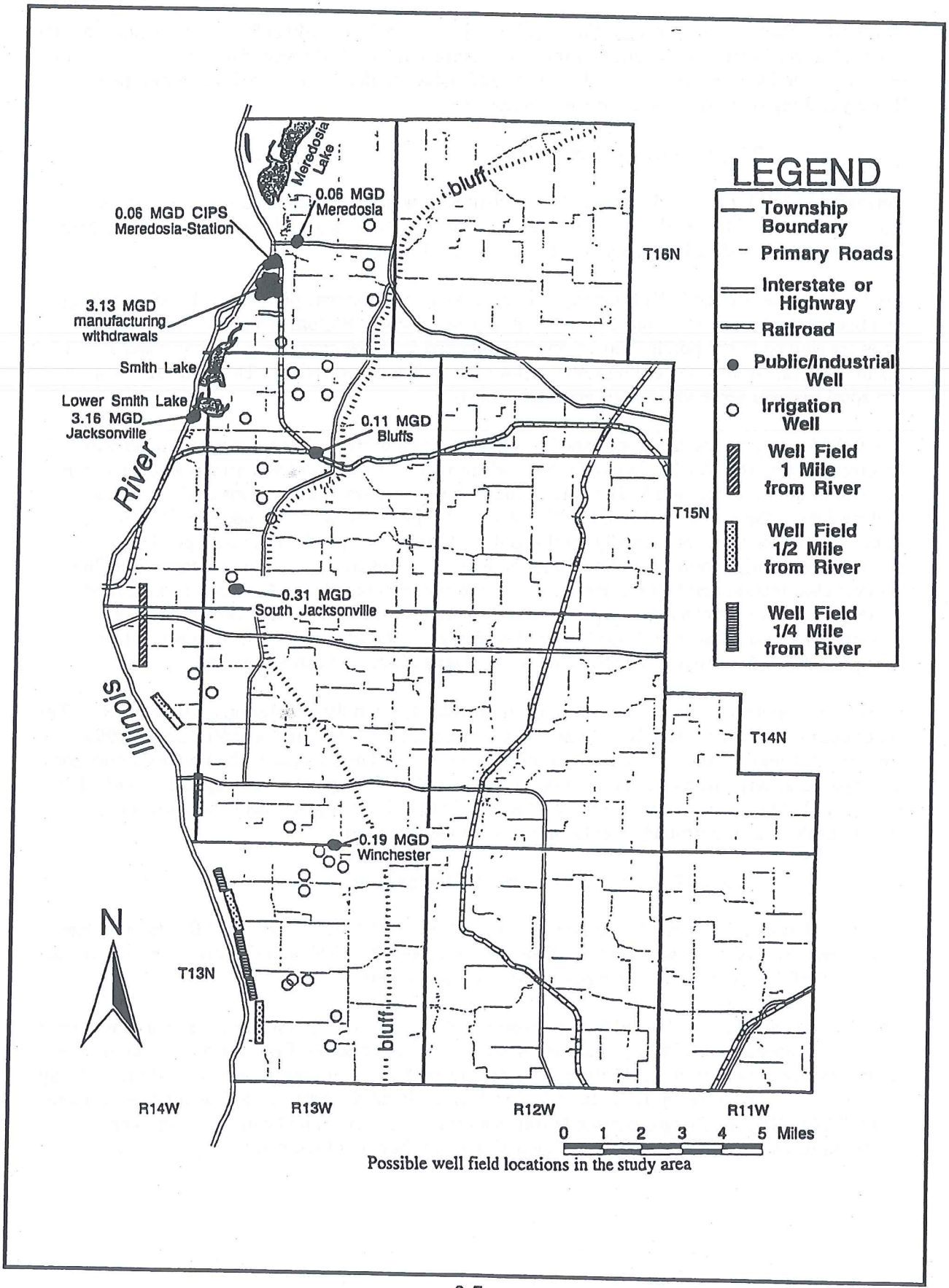
The City of Jacksonville, Illinois, obtains water from a well field adjacent to the Illinois River at Naples, Illinois. The water is pumped approximately 22 miles to Jacksonville. Springfield investigated the possibility of developing a joint use arrangement with Jacksonville to augment the Springfield supply by piping any excess capacity the remaining 30 miles between the two cities.

Discussions with Jacksonville identified their existing system components and capacities. The well field consists of a large "Ranney" collector well as the primary source and two smaller conventional gravel-packed drilled wells serving as backup/emergency sources. The transmission pipeline into Jacksonville lies within a 100-foot-wide right-of-way corridor. Adding booster stations could increase volume of flow through this pipeline, but an additional pipeline would be required to transfer the quantity required by Springfield. Right-of-way documentation was unclear concerning the legality of adding additional pipelines within this corridor.

It was determined that no reserve well capacity existed given Jacksonville's existing and anticipated needs. Additional potential well locations were investigated by the ISWS in a report on the groundwater resources in the Illinois River Valley west of Jacksonville. Additional well capacity within the Jacksonville field was considered inadequate for the supply sought by Springfield. Constraints in siting a large volume well field resulted in potential well field locations shown in Figure 2.2.5.1. The distance between the nearest potential field and the existing Jacksonville system, along with the uncertainties associated with the transmission pipeline/right-of-way corridor, leads Springfield to the conclusion that a totally separate collection and transmission system should be analyzed as a supplemental supply alternative.

The Jacksonville system expansion alternative was dropped from further consideration on the basis of inadequate yield.

**Figure 2.2.5.1** **Potential Well Field Locations**




Possible well field locations in the study area

### 2.2.6 Recycle/Reuse of Treated Wastewater for Ash Sluicing

This section analyzes the potential for recycling Springfield Metropolitan Sanitary District (SMSD) and CWLP clarification pond effluent for ash sluicing at the CWLP Power Stations. Recycle and reuse of treated wastewater for ash sluicing would reduce withdrawals from Lake Springfield, thereby making more water available for potable use.

#### 2.2.6.1 Facility Description

Springfield CWLP owns and operates five coal-fired power generating units (Dallman 31, 32, 33 and Lakeside 7 and 8) which supply electricity to the City of Springfield and Village of Chatham. Excess power is sold on the open market when demand exists.

Coal consumption at the CWLP facility is in excess of 1 million tons per year. The ash handling practices at the facility are typical for coal-fired power plants. Bottom ash and fly ash from all units are sluiced to ash ponds. Sluice water is obtained from the circulating cooling water systems for the boilers; circulating cooling water is drawn from Lake Springfield. Three separate ash transport systems serve the various generating units.

The CWLP operates two ash ponds and has operating flexibility to determine which pond will receive ash (Figure 2.2.6.1). Typically, the Dallman units' fly ash and bottom ash sluice water is pumped to the north ash pond. The north pond also receives wastewater plant sludge and water collected from the scrubber sludge landfill adjacent to the ash ponds. The lakeside fly ash and bottom ash sluice water is normally discharged to the south ash pond. The south pond also receives lime sludge from the water treatment plant. Supernatant from both ash ponds overflows into the clarification pond where neutralization and settling take place. A carbon dioxide feed system, located at the clarification pond outfall, is used to adjust pH of the clarification pond effluent prior to discharge to Sugar Creek, downstream of Lake Springfield. A new pipeline is being constructed to recycle the clarification pond water back to Lake Springfield.

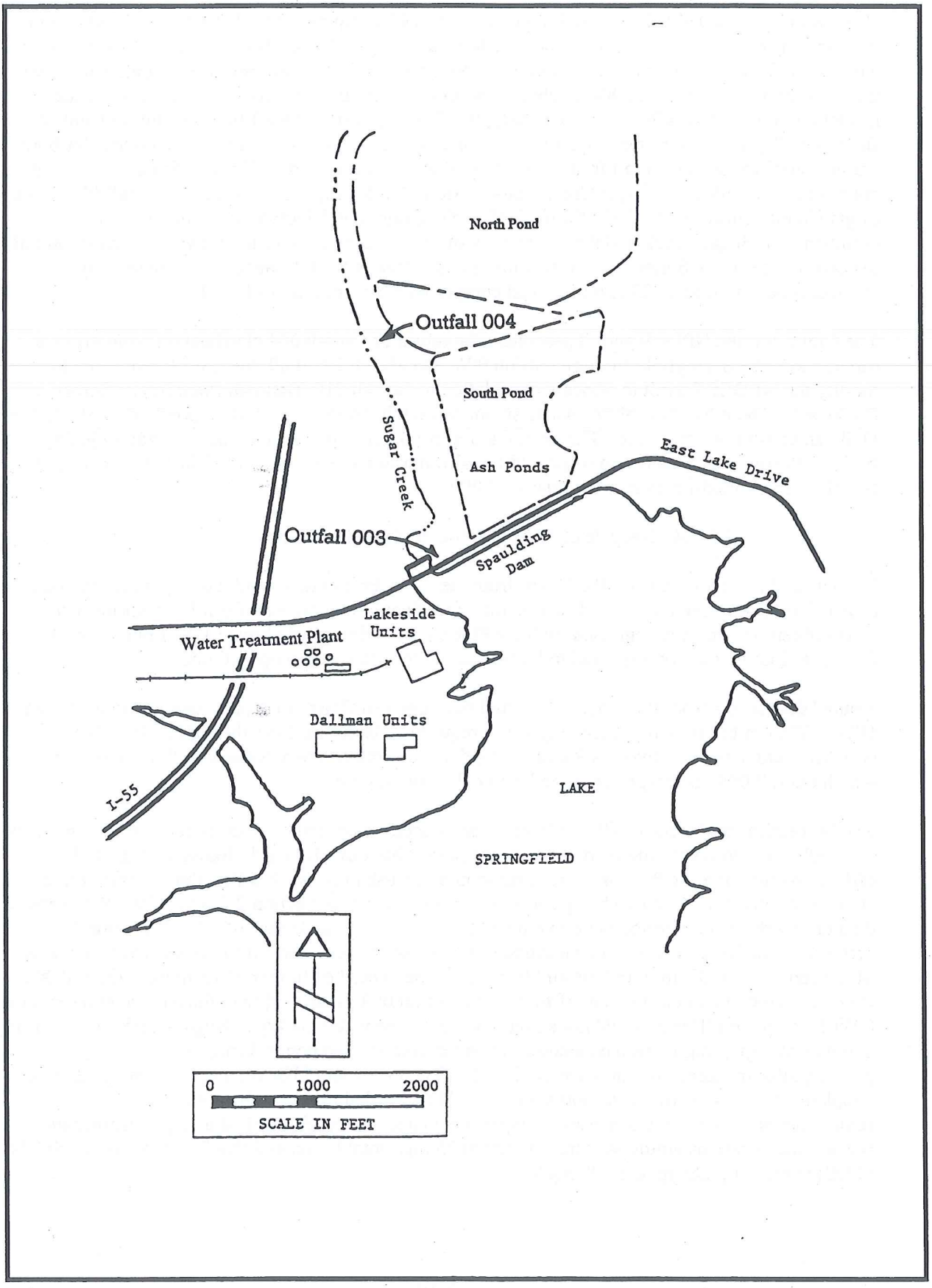
Flow rates into the ash ponds vary but depend principally upon the generating units in service. The monthly sluice pump operation and associated water usage for sluicing for 1991 through 1995 averaged 8.1 mgd. Sluice water plus the other waste streams discharged to the ponds account for 8.6 mgd. Discharge from the clarification pond from 1991 through 1995 averaged 5.3 mgd. The difference between average input and discharge volumes, 3.3 mgd, represents losses primarily to the atmosphere and to groundwater through the unlined ash ponds.

#### 2.2.6.2 CWLP Outfalls and Discharge Descriptions

CWLP's National Pollutant Discharge Elimination System (NPDES) Permit IL0024767 regulates discharges from 16 outfalls at the CWLP facility. Outfalls 003, 004, and 016 discharge into Sugar Creek; all of the other outfalls discharge into Lake Springfield.

Discharge from Outfalls 003 and 004 to Sugar Creek is significant to this analysis. Discharge from Outfall 003 consists mainly of potable water and raw water collected from various locations at the Lakeside Power Station and outfalls into the Sugar Creek channel near the east side of the spillway at Spaulding Dam. Effluent from the Ash Clarification Pond discharges into Sugar Creek through Outfall 004. Both discharges contain boron as a result of direct contact with coal ash. The locations of Outfalls 003 and 004 into Sugar Creek are shown in Figure 2.2.6.1.

**Figure 2.2.6.1** **Ash Ponds - Locations of Outfalls 003 and 004**



### 2.2.6.3 CWLP's Adjusted Boron Standard

NPDES Permit IL0024767, reissued September 29, 1993, required the CWLP to limit and monitor the concentrations of boron in its outfall discharges to Sugar Creek. The permit limit for boron was 1.0 mg/l, with compliance to be achieved by December 14, 1994. Monitoring data suggested that existing Outfall 003 and 004 discharges would be in noncompliance with the boron effluent limitation. Ultimately, after extensive study, the CWLP petitioned the Illinois Pollution Control Board (IPCB) and was granted an Adjusted Standard for boron. The following standards for boron are now applicable: 11.0 mg/l from CWLP's Outfall 003 at Spaulding Dam on Sugar Creek to its confluence with SMSD's Sugar Creek Plant Outfall 008; 5.5 mg/l from SMSD's Outfall 008 to the Sugar Creek confluence with the South Fork of the Sangamon River; and 2.0 mg/l from the confluence of Sugar Creek and the South Fork of the Sangamon River to 100 yards downstream of the confluence of the Sangamon River with Spring Creek, a total distance of approximately 20 river miles. Outfalls 003 and 004 must comply with a permit limit of 11.0 mg/l.

The City's revised NPDES permit precluded the return of Outfall 004 clarification pond effluent directly to Lake Springfield through Outfall 006. On March 27, 2000, the CWLP requested to modify the NPDES Permit to relocate Outfall 006 to Outfall 010, Dallman Plant Intake Screen Backwash. The relocation of this waste stream would divert the clarification pond effluent into the Dallman cooling water intake. This would aid in compliance of the General Use Water Quality limit for boron as well as return some additional water to Lake Springfield. The City received its NPDES permit modification on August 17, 2000.

### 2.2.6.4 Recycle of CWLP Effluent for Ash Sluicing

Recycle and reuse of the CWLP effluent from the Ash Clarification Pond, normally discharged to Sugar Creek, has been considered as a method of reducing withdrawals from Lake Springfield. This effluent is currently regulated by the NPDES permit discussed above. Water quality of this CWLP effluent would be expected to be acceptable for ash sluicing operations.

Annual discharges from the ash ponds would have been sufficient to supply enough water to meet 60% to 72% of the annual ash sluicing water requirements during 1991 through 1995. This equates to conserving between 4.9 and 5.9 mgd of raw water. There were only three periods in which Outfall 004 discharges exceeded water sluicing requirements.

The best estimate of typical effluent total boron concentration under the current no-recycle mode is 7.4 mg/l, compared with the current discharge permit limit of 11.0 mg/l. Recycle of the CWLP effluent would increase the boron concentration in the ash pond wastewater, thus requiring that the sluice water/treatment system be operated as a closed loop (see Section 2.2.6.5). CWLP operations data during the 5-year period were examined to see if recycle and reuse of CWLP ash pond effluent would have resulted in a violation of the adjusted boron standard in Sugar Creek because of the continued utilization of Outfall 003 without the benefit of further effluent from Outfall 004. It was concluded that elimination of flow from Outfall 004 associated with the recycle and reuse of CWLP ash pond effluent would not adversely impact the water quality in Sugar Creek; however, to avoid discharging high boron concentration water from the ash ponds during high discharge periods, interim storage or surge capacities of 100 acre-feet would be required. Most of the time, supplementary water from a second source would be needed to meet ash sluicing water requirements. The results of the study suggested that as the ponds reached an equilibrium state, boron concentrations would stabilize at around 35 mg/l total boron and that Total Dissolved Solids (TDS) would migrate up to 3,000 mg/l.

If full recycle were implemented, the clarification pond level would be controlled to avoid any discharge. Thus, only potential groundwater impacts would need to be considered since the existing ash ponds do not have a liner. The City established a bench scale simulation of the existing ash pond system to evaluate the effects of recycling sluice water.

Based on recent groundwater quality data for the monitoring wells at the adjacent landfill site, it appears that boron is the parameter most likely, with TDS a possible parameter, to exceed groundwater permit limits.

While the effect of higher ash pond boron levels on the groundwater boron concentration is not directly determinable, since it would depend on groundwater flow rate and direction, ion exchange capacity of soils, rate of pond seepage and other factors, an increase in groundwater boron would be expected.

The projected pond boron concentration of 35 mg/l with full recycle is approximately 4.7 times the current average pond concentration. If the groundwater increased proportionately, the resulting concentrations would be about 1.08 mg/l dissolved boron in the upgradient wells and 2.77 mg/l dissolved boron in the zone of attenuation (ZOA) wells. These projected values are close to or exceed the maximum permitted values (Table 2.2.6.1).

**Table 2.2.6.1 Groundwater Dissolved Boron Concentrations (mg/l)**

| Condition | Upgradient Wells | ZOA Wells |
|---|---|---|
| 1996-1997 | 0.23 | 0.59 |
| Landfill Permit Limits | 1.20 | 2.22 |
| Projected with Recycle | 1.08 | 2.77 |

Since individual samples would fluctuate above and below the average, groundwater violations would likely occur if the ash pond effluent were continuously recycled. Groundwater violations are not permissible outcomes of a supply augmentation scenario; therefore, the City concludes this alternative is infeasible.

### 2.2.6.5 Reuse of SMSD Effluent for Ash Sluicing

NPDES Permit No. IL0021971 requires the SMSD to limit and monitor the suspended solids concentration at Outfall 008, the primary discharge point for the Sugar Creek Sewage Treatment Plant. Water quality of the SMSD effluent would be acceptable for ash sluicing operations.

Recycle and reuse of the SMSD effluent, normally discharged to Sugar Creek at Outfall 008, would be expected to notably decrease the flow volume in Sugar Creek. Since the CWLP's petition for an adjusted boron standard was based in part upon dilution water from the SMSD's discharge into Sugar Creek, reducing the volume of this discharge could result in a violation of the Adjusted Boron Standard downstream from Outfall 008. An analysis evaluated actual effluent flow rates and water quality data for the period between 1992 and 1995 to determine whether recycle of the SMSD effluent during that period would have resulted in a violation of the Adjusted

Boron Standard. The mass balances performed predicted the exceedances of the adjusted standard would have occurred in 14 to 20 months within the 3-year period examined.

The water balance for the SMSD recycle option showed some obvious trends. Discharge from SMSD Outfall 008 tends to be less during the summer months. This reduction in flow would be expected since some sewage collection systems receive significant stormwater inflow, and the summer months tend to be relatively dry. Conversely, water requirements for ash sluicing tend to be greatest during the summer months. This is again logical because air conditioner usage during the summer months typically increases power demand. The net effect of the conflicting trends for water supply (Outfall 008) and demand (ash sluicing water requirements) is a shortfall. Water shortages are most likely to occur in the summer months, particularly during dry years. Monthly shortfalls can be expected to occur about 25% to 30% of the time. It is apparent that even if the SMSD recycle option were implemented, a secondary water source would be needed to fully meet ash sluicing water requirements. It is also not surprising that many of the predicted boron exceedances occur during months having a water shortfall, since no SMSD effluent is available for dilution during those periods.

An SMSD recycle option would proceed best only during wet periods when water for ash sluicing could reasonably be supplied by Lake Springfield. Operational difficulties, including lack of sufficient quantities of SMSD effluent water to meet ash sluicing requirements and potential exceedances of the Adjusted Boron Standard in Sugar Creek, would occur during droughts when the process would be most needed.

This alternative was eliminated from more detailed evaluation on the basis of inadequate yield and water quality concerns.

### 2.2.7 Water Conservation

**Introduction**

Comprehensive water supply planning includes the evaluation of two basic sets of alternatives for balancing supply and demands: (1) those alternatives that reduce water use and/or loss and (2) those alternatives that augment supply.

Water conservation is defined as any beneficial reduction in water use or water loss. More specifically, the potential conservation measure must result in water use (or loss) that is less than it would have been had the measure not been implemented. The end result is a reduction of water use (or loss) so that a segment of existing or future water supply is available for uses that otherwise would not have been served except by the provision of new supplies. Then, the question is raised as to whether or not the reduction in water use (or loss) is beneficial.

The universe of types of conservation measures applicable to water uses in the Springfield area was evaluated (PMCL 1991). A list of 12 measures that were technically feasible was established (Table 2.2.7.1). These measures were further evaluated to estimate their social acceptability, implementation conditions, benefits and costs, and effectiveness.

## Summary and Evaluation of Conservation Measures

**Measure A. Voluntary Plumbing Retrofit Program.** Measure A promised the greatest overall effectiveness along with a high community benefit-cost ratio of 7.48 (Table 2.2.7.2). The water conservation savings from this measure alone were estimated to account for an initial 1.148 mgd reduction in 1995, reducing to 0.815 in 2025. Net benefits at the community level were the highest of all measures. The measure's social acceptability also was quite favorable. This measure was implemented by Springfield during 1988 and 1989.

**Table 2.2.7.1 Water Conservation Measures Selected for Evaluation in the Springfield Area**

* A. City Water, Light and Power (CWLP) provided "water saver kits" to all of its residential customers free of charge. These kits contain low-flow showerheads, low-flow bathroom and kitchen faucet aerators, toilet tank dams (to reduce the amount of water used per flush), and instructions on how to install them.

B. CWLP could apply a $150 discount to the connection fee for customers with new homes when less than 50% of the yard would be planted with grass. Those customers with new homes with more than 50% in grass would pay a $500 one-time charge.

C. The City of Springfield could revise its code to prohibit new commercial developments from putting more than 25% of their landscaped area in grass lawn.

D. CWLP could review the water use habits and technologies of large commercial and industrial water uses and identify cost-effective ways to conserve water.

E. Upon request, an employee of CWLP would make an appointment to come to a customer's home to identify opportunities to save water in the home and yard. The home visit would cost $15.

F. Educational programs could be made available at CWLP expense to elementary and high schools in the Springfield area to teach children how to conserve water in their homes and the importance of doing so.

G. CWLP could set up an outdoor water use management program to save water used during the watering of large lawn areas by public facilities such as cemeteries, schools, parks, and golf courses.

* H. The City of Springfield has revised its plumbing code to require installation of low-flush toilets and low-flow showerheads and faucets for all new or replacement construction that begins after June 1, 1990.

I. CWLP could provide rebates of $100 on the purchase of ultralow-flush toilets (1.6 gallons per flush). The estimated cost of a regular toilet is $100. The estimated cost of an ultralow-flush toilet is $200 ($100 after the rebate).

J. The City of Springfield may revise its code to ban the sale of high water-use toilets, faucets, washing machines, and dishwashers that do not meet national efficiency standards. (Upon further evaluation, this measure was dropped from the list due to low feasibility.)

K. CWLP may increase its water rates for the summer season by 30% when demands on water supplies are greatest. The additional revenue would be used to reduce water rates in winter.

L. CWLP may announce a voluntary restriction during water shortages, asking that lawn and garden watering be done only every third day from 7 a.m. to 9 a.m. and 6 p.m. to 8 p.m.

* Measures enacted by Springfield

Table 2.2.7.2 Ranking Summary for Conservation Measures: Effectiveness, Benefit-Cost Ratios, and Social Acceptability

| Measure | Effectiveness (mgd) | | | Benefit-Cost Ratios Over Planning Period | | | | Social Acceptability |
|---|---|---|---|---|---|---|---|---|
| | 1995 | 2025 | Rank[1] | Community | Rank | Utility | Rank | Overall |
| A[2] Voluntary Plumbing Retrofit | 1.148 | 0.815 | 1 | 7.48 | 2 | 0.09 | 4 | 5 |
| B New Residential Turf Area Reduction Increase | 0.002 | 0.014 | 10 | 4.70 | 4 | 0.78 | 2 | 12 |
| C New Nonresidential Turf Area Reduction | 0.005 | 0.053 | 9 | 0.11 | 8 | 0.13 | 3 | 8 |
| D Direct Contact Water Audit, Nonresidential | 0.008 | 0.054 | 7 | -- | -- | 0.08 | 6 | 3 |
| E Voluntary Residential Home Water Audit | 0.099 | 0.100 | 4 | 5.03 | 3 | 0.09 | 5 | 8 |
| F Public Education/Public Information | 0.086 | 0.102 | 5 | 0.25 | 6 | 0.06 | 8 | 1 |
| G Outdoor Water Use Management | 0.008 | 0.008 | 11 | -- | -- | 0.04 | 12 | 1 |
| H[2] Water-Conserving Fixture Ordinance | 0.206 | 1.105 | 2 | | 1 | 0.08 | 7 | 5 |
| I Ultralow-Flush Toilet Rebate Program | 0.007 | 0.201 | 3 | 0.07 | 9 | 0.06 | 9 | 7 |
| K Water Rate Increase | 0.064 | 0.075 | 6 | 1.09 | 5 | 149.74 | 1 | 10 |
| L Watering Time Restrictions | 0.036 | 0.043 | 8 | 0.13 | 7 | 0.05 | 10 | 3 |

[1] Rank determined from total effectiveness, 1995-2025
[2] Enacted by Springfield

**Measure B. Residential Turf Incentives.** This measure ranked fourth both for community benefit-cost ratio (4.70) and for net community benefits. The benefits, however, largely consisted of reductions in landscape maintenance costs. Costs could include significant consumer surplus reductions if residents enjoy nonturf landscapes less than turf landscapes. Overall effectiveness was quite low, reaching a high of 0.014 mgd in 2025, ranking it 10th among the 11 measures. In social acceptability, it ranked last among the measures.

**Measure C. New Commercial and Industrial Turf Area Restriction.** This measure would produce a low community benefit-cost ratio (0.06) and negative net benefits. Effectiveness would likely be low; estimated savings in 2025 are 0.053 mgd, ranking ninth. Social acceptability would be low as well.

**Measure D. Direct Contact Water Audit for Nonresidential Customers with High Water Use.** Since the costs of implementation for CWLP customers need to be estimated on a site-specific basis, no benefit-cost ratio was estimated for this measure for the community. In terms of effectiveness, the measure ranked seventh (at 0.054 mgd in 2025). Its high social acceptability indicates that its inclusion in the comprehensive program could alleviate "fairness" concerns among the general public and perhaps lead to greater public support and participation for other water conservation measures.

**Measure E. Voluntary Residential Home Water Audit.** This measure was rated highly in all categories except social acceptability, ranking fourth in effectiveness, third in community cost-benefit ratio, and third in net benefits to the community. Since customer participation in the program is entirely voluntary, the social acceptability issue should be of little importance; customers who disapprove of the program would simply choose not to participate.

**Measure F. Public Education/Public Information Program.** This measure would produce moderately high water savings, ranking fifth overall, and resulting in savings of 0.102 mgd in 2025. The measure's costs are high relative to savings (excluding water and wastewater cost savings), giving it a community benefit-cost ratio of 0.25, i.e., for every dollar spent on the measure, 25 cents in nonwater benefits would accrue. However, given the measure's top social acceptability ranking, it would likely raise awareness of water conservation needs and of other current water conservation measures, leading to a "synergistic effect" and increasing the effectiveness of other measures.

**Measure G. Outdoor Water Use Management Program.** Measure G produced the lowest-ranking effectiveness (0.008 mgd in 2025) and relatively low benefits, largely due to the relatively small portion of water use devoted to large-scale turf irrigation in the CWLP service area. Its social acceptability rating was very high (tied for first).

**Measure H. Water-Conserving Fixture Ordinance.** Implemented by city ordinance in 1990, this measure includes high effectiveness, high community benefits against no further implementation costs, and high net benefits. The installation of lower-flow and lower-volume water fixtures will likely have substantial effects in reducing indoor water use in the CWLP service area.

**Measure I. Ultralow-Flush Toilet Rebate Program.** This measure's high effectiveness (0.201 mgd in 2025) is balanced by its low community benefit-cost ratio and low social acceptability. In the social acceptability survey, customers indicated that they would be most likely to take advantage of the program by using the rebates to purchase new ultralow-flush (ULF) toilets to replace old, worn-out toilets. If this is the case, then the marginal cost to the customer of replacing

the toilet would be zero; the rebate covers the difference between the price of the ULF toilet and the "typical" toilet the customer would otherwise buy, and the customer would have to bear the cost of installation anyway. (This is estimated to be the same for both "typical" and ULF toilets.) It is thus likely that the true costs to the community would be lower than the estimates appearing here.

**Measure K. Water Price Increase.** The water price increase ranked sixth in effectiveness (0.075 mgd in 2025), fifth in community benefit-cost ratio (1.09), and fifth in net benefits to the community. Despite its number 10 ranking in social acceptability, the water-saving effectiveness and cost-effectiveness warrant its consideration for inclusion in the program.

**Measure L. Watering Time Restrictions.** Watering time restrictions would save an estimated 0.043 mgd by 2025, and rank eighth overall in effectiveness. The community benefit-cost ratio would be low, at 0.13, with negative benefits. In social acceptability, the measure would rank relatively high.

**Estimated Effects of an Example Comprehensive Water Conservation Program**
**Selection of Measures**

The selected measures were analyzed as a group on the basis of effectiveness and benefit-cost ratios. The comprehensive water conservation program was produced by selecting measures in serial fashion. The most meritorious measure was selected first, and other measures were added in merit order until a final group was formed. The measures selected, listed in merit order, are:

* Measure H. Water-Conserving Fixture Ordinance
* Measure A. Voluntary Plumbing Retrofit Program
Measure E. Voluntary Residential Home Water Audit
Measure K. Water Price Increase
Measure F. Public Education/Public Information Program
Measure D. Direct Contact Water Audit for Nonresidential Customers with High Water Use

* Enacted by City of Springfield

For the purpose of producing water use forecasts considering an example of a comprehensive conservation program, the effects of the 1988-1989 CWLP residential retrofit program and the water-conserving fixture ordinance, both existing measures, are included as well.

Most of the effects of these measures would be on indoor water use. While high levels of outdoor water use are often considered the source of water demand problems, the overall level of outdoor water use in Springfield is low enough that the measures proposed to reduce it would not be cost-effective. The purpose of the above program is to reduce the overall level of water demand by reducing indoor water use. If this is accomplished, occasional increases in water use due to hot and dry weather conditions would cause less strain on existing supplies.

**Restricted Forecasts**

Restricted, or conservation-adjusted, forecasts were produced by the Springfield-MAIN system for the example comprehensive water conservation program.

Since the effects of some water conservation measures may overlap with those of other measures, simply to add up the water savings expected from each measure, considered in isolation, would lead to double-counting of some savings. The Springfield-MAIN system accounts for these overlapping effects by the use of *interaction factors*, which make proportional adjustments to the effectiveness estimates of overlapping measures.

The effectiveness of the example conservation program includes the effects of the measures listed above and represents water savings for the current CWLP service area (CWLP system) under normal weather conditions (Table 2.2.7.3). The effect on outdoor water use of these measures is negligible. Total effectiveness is evaluated at the same level, regardless of weather conditions. The slight drop in total effectiveness of the conservation measures in the year 2000 is the result of the decreased savings by Measure A, the highest ranking measure overall. These decreased savings are due to the limited service life of toilet dams and expected demolition of a small percentage of retrofitted homes.

**Table 2.2.7.3 Summary of Effectiveness Estimates of Water Conservation Program* 31 Census Tracts (Savings in mgd)**

| Year | Total Effectiveness |
|---|---|
| 1995 | 1.507 |
| 2000 | 1.410 |
| 2005 | 1.535 |
| 2015 | 1.763 |
| 2025 | 1.963 |

* Includes measures enacted by Springfield totaling approximately 1.3 mgd (1995) to 1.9 mgd (2025).

**Summary**

The total effectiveness of implementing the remaining measures of this water conservation strategy program is less than 0.65 mgd. Conservation measures are not adequate to offset demand sufficiently to meet existing drought requirements for Springfield. Compared to the yield projections (Table 1.2.4.1), under demand projections for the 100-year 18-month drought, the deficits range from 6.9 mgd to 15.4 mgd for the year 2025. The City has already initiated the two most effective measures identified in this study. Water conservation can offset only a small portion (0.65 mgd) of the projected demand. Adoption of the remaining conservation measures is not considered to be a viable alternative to supply augmentation on the basis of inadequate yield.

### 2.2.8 Raise Lake Springfield

The alternative of raising the existing full pool elevation of Lake Springfield was examined as a potential source of supply augmentation (Hanson 1998). Initial analysis by the City suggested that a maximum lake level increase from elevation 560.0 to elevation 562.0 (2 feet) may be possible. Equipment and structural constraints within the water production and power generation plant complex precluded raising the pool level beyond the 562.0 elevation. Raising the existing full pool elevation of Lake Springfield 2 feet, from elevation 560.0 to elevation 562.0, was investigated in detail.

Lake Springfield was formed in 1935 by constructing Spaulding Dam on Sugar Creek. Spaulding Dam is an earthfill structure 48 feet high and 1,580 feet long from abutment to abutment. The spillway is a reinforced concrete structure with five openings spanned by a two-lane roadway bridge. The spillway includes five steel floating drum gates, each 45 feet long and 8 feet high. The gate levels are adjusted by regulating the water levels in chambers beneath the gates. Full pool elevation controlled by the gates is 560 ft. msl.

There is also a saddle dam (earthfill embankment) associated with Lake Springfield. It is located about 2 miles upstream of Spaulding Dam and prevents loss of water to an adjoining watershed (South Fork). The saddle dam is about 1,720 feet long and 29 feet high. The dams and the lake are owned, maintained, and operated by CWLP. Figure 1.2.2 shows the location of Spaulding Dam, the Saddle Dam, and part of Lake Springfield.

#### 2.2.8.1 Surrounding Development

The intake structures for the Springfield power generating and water treatment plants, along with various related equipment systems, have been built to accommodate the maximum lake elevation (560 ft. msl) with approximately 2 feet of freeboard to protect the facilities during flood flows. Two highway bridges owned by the City would also be impacted.

Springfield leases a large portion of the marginal land surrounding the lake to private clubs, camps, marinas, and individuals for homesites. There are 768 leases.

Shoreline development of these leases and public boat launch facilities accommodates the 560 ft. msl elevation. One County highway and one railroad bridge would also be directly impacted by the pool increase.

#### 2.2.8.2 Yield

Raising the full pool elevation of Lake Springfield 2 feet, from 560 ft. msl to 562 ft. msl, results in additional storage volume of 8,660 acre-feet. This volume would yield 5.15 mgd during the 100-year design drought. This is only about 34% of the additional 15.3 mgd needed to meet the water demand by year 2025, during the 100-year drought. The normal pool would need to be raised 5.6 feet to elevation 565.6 to obtain the total amount of additional storage required for 15.3 mgd (25,400 acre-feet).

#### 2.2.8.3 Hydrologic/Hydraulic Analysis

The dam is classified in the "high" hazard category (Class I). Part of the City of Springfield and many roads and utilities are located downstream from the dam. A breach of the dam can produce extensive property damage with the potential for loss of life.

With an embankment height of 48 feet and a maximum storage capacity of 101,205 acre-feet, Spaulding Dam is in the large size category. In accordance with "Rules for Construction and Maintenance of Dams," IDNR-OWR, 1987 last revision, the criteria for any new "major" modification to an existing large Class I dam built before September 2, 1980 (1933), require that the dam and spillways pass 60% of the probable maximum flood (PMF) with adequate freeboard. In order to raise the level of the lake, major modifications to the dams and spillway structure would be required.

The HEC-1 computer program was used to analyze the routing of the 100-year flood, and the PMF through the reservoir and the spillway along with wave runup analysis was performed to determine the maximum water surface elevation of the lake and to select the top of dam elevation. The hydrologic/hydraulic analysis of the design flood with the lake at elevation 562.0 indicates that additional spillway capacity and/or raising of the dam embankment would be needed.

Two options were considered:

**Option (1)** - Raise the main dam embankment and the saddle dam embankments 5 feet to elevation 575.0. This option assumes the use of the existing spillway and gates (raised 2.0 feet). The maximum water surface elevation for the 0.60 PMF would be 571.41 (1.41 above the existing dam crest elevation 570.0). The two embankments would have to be raised about 5.0 feet in order to meet the minimum freeboard requirement (3.35 feet) as determined by the wave runup analysis.

**Option (2)** - Build Emergency Spillway (at saddle dam location) with and without dam height increase. This option assumes the use of the existing spillway and gates (raised 2.0 feet) and: (a) no increase in the dam crest elevation (570.0) and (b) a combination of emergency spillway and dam height increase.

**Option (2-A)** - The crest elevation for the emergency spillway was set at the 100-year flood elevation (564.0). An emergency spillway more than 3,000 feet would be required to pass the 0.60 PMF with adequate freeboard if the dam height is not increased. This option was considered impractical. There is not an adequate site for the construction of a 3,000-foot emergency spillway.

**Option (2-B)** - A combination of building a smaller emergency spillway (400 feet) with a 3.0-foot raise of the dam (573.0 top of dam elevation). Option (2-B) will meet the design requirements. The difficulties of raising the dam 3.0 feet or 5.0 feet are about the same; therefore, the additional complications associated with building a 400-foot emergency spillway at the saddle dam location make Option (2-B) less desirable than Option (1). Thus, cost analysis was estimated only for Option (1).

The structural and hydraulic analyses investigating modification of the existing spillway gates to support the additional hydrostatic pressures, and to operate under more severe flow conditions, indicate that the existing spillway and gates are inadequate and would need to be replaced.

Raising Lake Springfield normal pool 2.0 feet would require very close control of the operation of the gates. Upstream properties around the lake would be subjected to higher water elevations and more frequent flooding. Downstream properties also will be more frequently impacted by higher discharges due to more frequent use of the gates.

#### 2.2.8.4 Cost

A construction cost estimate for Option (1) was prepared for comparison with other supply alternatives. Raising Lake Springfield 2 feet (from 560 to 562) will also impact many structures and utilities, such as: houses, docks, seawalls, boat houses, road bridges, railroad bridges, septic systems, drainage outlets, power plant, water intake tower, gate control room, several pipelines, etc. Also, additional shoreline protection (riprap and seawalls) around the lake was included. New leases would need to be considered for the additional land permanently flooded between elevation 560 and 562. The cost associated with these new agreements was not included in the cost estimate. A construction cost estimate is given in Table 2.2.8.1.

### 2.2.8.5 Environmental Impacts

Existing land use along the Lake Springfield shoreline includes primarily residential development east of the Interstate 55 (I-55) bridges, adjacent to deep water areas. West of I-55, residential development is interspersed with undeveloped and forested shoreline. Several camps and park areas are located along the shoreline. Farther upstream, where Lick and Sugar Creeks enter the reservoir, wetlands dominate shallow areas.

A 2-foot increase in normal pool elevation would have significant adverse impacts to existing development and natural resources adjacent to the lake. Although neither the water treatment plant nor the power plant would be inundated, modifications totaling over $5.9 million would be required to protect these facilities from flooding (Table 2.2.8.1). Thirty homes, with an average value of $400,000, would be inundated or lose existing flood freeboard. Because vacant lakefront lots are not available, comparable replacement housing would be difficult to obtain for those homes that could not be reconstructed at higher elevations on existing lots. Since comparable replacement housing is generally not available in this area, property tax income could be lost to local taxing authorities. In addition to displaced homes, it is estimated that at least 50% of the existing private septic systems surrounding the lake would require replacement, resulting in disturbance to over 230 residences.

Almost 300 private boathouses would be displaced, in addition to boat slips, docks and access structures at several private recreational facilities located on the lake.

A 2-foot increase in normal pool elevation would also remove acreage from several parks and camps, affect existing wetland resources, and cause increased tree mortality. Parks along the lake shore include Lincoln Memorial Garden, Lincoln Greens Golf Course, several public parks, boat docks, and public and private beaches. Boy Scout, Girl Scout, YMCA, and church camps are located along the Lick Creek arm of the lake, west of the I-55 bridges. Shoreline areas along each of these recreational facilities would be inundated.

Inundation of portions of Lincoln Memorial Garden would have a significant impact on both recreational and historic resources. Lincoln Memorial Garden was one of the last public designs by Jens Jensen, the noted Midwestern landscape architect. Founded in 1936, its paths, plant groupings, and social centers were designed with a conscious recognition of time and succession. Lincoln Memorial Garden is one of the few public landscapes designed by Jensen that has not been consciously altered and has maintained its original use. In recognition of its unique contribution to public recreation and landscape planning, Lincoln Memorial Garden was placed on the National Register of Historic Places in 1992. The planned increase in water surface elevation would inundate the Lake Trail that curves along the Lake Springfield shoreline, along with several pedestrian bridges which cross minor drainages into the lake. Relocation of the Lake Trail would require removal of a large number of plantings. One of the areas impacted includes a small bald cypress grove planted along one of the lake's inlets. Bald cypress is typical of wetlands in the southeastern United States and is an unusual species for central Illinois. The proposed 2-foot increase in normal pool would submerse the knee growth of the entire bald cypress grove. Even if all of the inundated resources at the Garden could be relocated, the net impact of loss of plantings, trail relocations and other alterations resulting from the planned water level increase would be to disrupt Jensen's historic design and substantially alter those attributes which resulted in the placement of this resource on the National Register.

| Table 2.2.8.1 Construction Cost Estimate<br>Raise Lake Springfield Pool to Elevation 562.00 (2-Foot Increase) | |
|---|---|
| **IMPACT ITEM** | **ESTIMATED COST** |
| Power Plant Facilities - Electrical and Structural Modifications | $3,800,000[1] |
| Water Production Facilities - Electrical and Structural Modifications | 2,100,000 |
| Adjust steel seawalls along leased properties | 2,164,000[2] |
| Raise riprap shoreline protection along currently protected areas | 5,400,000[3] |
| Purchase private residences | 12,000,000[4] |
| Raise/replace private boathouse facilities | 3,490,000[5] |
| Reconstruct County Highway 40 Glenwood Curves | 750,000[6] |
| Raise Illinois Central RR Bridge and approaches | 490,000 |
| Replace private sewage treatment systems | 1,167,000[7] |
| Lincoln Memorial Garden - relocate lake trail, mitigate wetland and cypress grove impacts | 50,000 |
| Modify lake club facilities | 1,265,000[8] |
| Modify public boat access facilities and material loading docks | 95,000 |
| Subtotal | $33,221,000 |
| (*) 20% Contingency | 6,644,000 |
| Subtotal | $39,865,000 |
| DAM AND SPILLWAY MODIFICATIONS | |
| Dam Earthwork | $3,350,000 |
| Roadway Construction | 650,000 |
| Upstream Dam Slope Protection | 350,000 |
| Spillway Gate Structure | 2,000,000 |
| Spillway Gates | 2,750,000 |
| Spillway Slab Extension | 650,000 |
| Relocated Highway Bridge | 800,000 |
| Existing Gate and Bridge Removal | 550,000 |
| Subtotal | $11,100,000 |
| 20% Contingency | 2,200,000 |
| Subtotal | $13,300,000 |
| SADDLE DAM MODIFICATIONS | |
| Dam Earthwork | $500,000 |
| Roadway Construction | 150,000 |
| Upstream Dam Slope Protection | 50,000 |
| Subtotal | $700,000 |
| 20% Contingency | 140,000 |
| Subtotal | $840,000 |
| Subtotal (All Above) | $54,005,000 |
| Engineering (Plans and Specs) (10%) | $5,400,500 |
| Engineering Services During Construction (10%) | 5,400,500 |
| Permit Process (5%) | 2,700,000 |
| Upstream Flood Impact Mitigation/Flood Easements | 100,000 |
| Wetlands in Upper Lake Reaches | 2,250,000[9] |
| Grand Total | $69,856,000 |

1. Does not include lost revenues during construction period nor purchased power surcharge that is passed on to consumers.
2. 21,640 l.f. @ $100/l.f. Does not include other types of structural walls.
3. Based on 60% of total shoreline: 180,000 l.f. @ $30/l.f.
4. 30 homes. 1996 median price estimate $400,000.
5. Based on 40% of 735 leases @ $10,000 each plus 22 @ $25,000 each.
6. No modifications required on Glasser Bridge, Iron Bridge, West Lake Drive box culvert for hydraulic capacity. Existing limited clearance will be reduced by 2 feet.
7. Based on 50% of existing 467 @ $5,000 each.
8. Replace 283 covered boat slips, 30 uncovered boat slips, 3,675 l.f. of docks/access structures. Includes moving marina convenience building and replacing Troopers Lodge building.
9. 300 acres - mitigate at 1.5:1, = 450 acres @ $4,000 each.

(*) Rounded numbers used (typical)

According to National Wetland Inventory mapping, the proposed increase in pool level would result in the inundation of over 300 acres of existing wetlands. The areas west of the Gulf Mobile and Ohio railroad bridge and south of Glasser Bridge are predominantly in wetlands, including a 2-acre stand of bald cypress, which have been formed in response to inundation from Lake Springfield and sedimentation from inflowing streams. These areas function as sedimentation traps, slowing flows and allowing deposition of soils carried into the lake from upland areas. Wetlands within these areas are dominated by aquatic and emergent species, including American lotus, reed canary grass, and water willow. Other small wetland areas around the periphery of the main basin would also be impacted. Wetlands similar in structure and function would be expected to develop at the new pool level.

Much of the shoreline west of the I-55 bridges that is not currently in emergent wetlands is forested. In some areas, tree species along the shoreline are tolerant of inundation, and would not be expected to suffer excess mortality from an increase in the surface pool elevation. However, much of the shoreline is dominated by upland species that are intolerant of root zone saturation. These species include mast-producing trees such as oaks, walnuts, and hickories that provide habitat for many species of wildlife. Many of these trees would be expected to die within one to two years of the pool increase.

The increase in lake level would also require removal and replacement of the recently constructed East Lake Drive Bridge over the dam, in addition to removal of the original historic Spaulding Bridge on the spillway structure. Spaulding Bridge, a highly decorated, beaux arts style bridge, was constructed in 1934 and dedicated by Illinois Governor Henry Horner and Elizabeth Lindsay, widow of the famous poet and Springfield native Vachel Lindsay. The bridge was named for Willis J. Spaulding, city commissioner of Public Property for 32 years, who was credited with leading the campaign to develop a vastly improved water and electrical system for Springfield, including Lake Springfield. This bridge was determined to be eligible for the National Register in 1990, and significant effort was expended to maintain the aesthetic integrity of this structure when the new bridge was built alongside it in 1991. The loss of this historic structure would be an impact on Springfield's historic resources.

Increasing the pool level would probably not result in impacts to other significant cultural resources. Most Sugar Creek and Lick Creek valley landforms, such as the floodplain, alluvial fans, and colluvial benches, have high potential for cultural resources but are already completely inundated in downstream areas. However, a few of these landforms and any associated cultural resources that are not now flooded could be impacted by an increase in pool elevation.

The valley sides, which are typically devoid of significant cultural resources, are now partially to nearly completely inundated. The proposed rise in the water elevation would likely have little effect on the bluff slopes, particularly within the downstream portions of the lake.

Raising Lake Springfield is not considered to be a feasible alternative on the basis of logistics.

### 2.2.9 No Augmentation

The City would maintain its current use of Lake Springfield supplemented by pumping from the South Fork as its sole water supply. There is adequate water available during times of normal precipitation and minor droughts, but as demonstrated in Section 1, the water supply is inadequate to supply the needs of the City during severe drought. The City would be committed, as it is now, to prudently managing its existing water supply and continued reliance on demand reduction

through water conservation measures already implemented and otherwise available. Reliance solely upon water use conservation would not be sufficient to maintain water and electric power availability through the drought event (see Section 2.2.7). Loss of electric and water production is the worst case scenario of the no augmentation alternative. Severe public health and welfare, fire protection, and economic consequences will occur for approximately 80% of the population of Sangamon County with inadequate water supplies. No augmentation would not meet the purpose and need of the applicant's proposal and is therefore not considered to be a feasible alternative.

## 2.3 FEASIBLE ALTERNATIVES

### 2.3.1 Hunter Lake Reservoir - Applicant's Preferred Alternative

Hunter Lake Reservoir would be built southeast of the existing Lake Springfield and north of Pawnee, Illinois (Figure 2.3.1.1). The reservoir would be formed by constructing an earthen dam on Horse Creek, a tributary to the South Fork of the Sangamon River, in Section 31 of Rochester Township. Spillway elevation of the proposed structure is 571 ft. msl. The resulting reservoir would inundate portions of both Horse Creek and Brush Creek; the confluence of these creeks being within the project area. The 3,010-acre reservoir would hold 15.3 billion gallons of water with maximum and average depths being 46 feet and 14.6 feet, respectively. The project area encompasses approximately 7,795 acres; 3,010 acres of this would be the lake pool, 4,785 acres are lands marginal to the lake. The lake margins, particularly where rolling, would be largely managed as forest, prairie restoration, or other grassland areas to provide buffer zones.

#### 2.3.1.1 Drought Yield

The Hunter Lake watershed encompasses 130 square miles in primarily Sangamon, Macoupin, and Montgomery Counties with a small portion in Christian County (Figure 2.3.1.2). The yield of the proposed Hunter Lake during the design drought will depend on how Lake Springfield and Hunter Lake are jointly operated. A yield analysis and a subsequent simulation analysis by ISWS defined the range of yields that could be provided by this alternative for a variety of scenarios. Under the evaluated scenario, water is transferred from Hunter Lake to keep a long-term average pool level in Lake Springfield. Transfers are discontinued when the pool level in the second reservoir is drawn down a total of 19.8 feet and do not resume until either (a) the pool in the second reservoir rises above the 19.8-foot drawdown level, or (b) Lake Springfield is drawn down below an elevation of 550 ft. msl. The 19.8-foot maximum drawdown is used to protect aquatic life in Hunter Lake, as recommended in the Hunter Lake Habitat Evaluation Procedures (1992). The combined yield of Hunter Lake and Lake Springfield is 48.5 mgd in 2025. The net yield of the proposed reservoir under this scenario would be 21.5 mgd and would provide sufficient water to meet Springfield's needs beyond the design year of 2025.

**Figure 2.3.1.1** **Hunter Lake Reservoir**

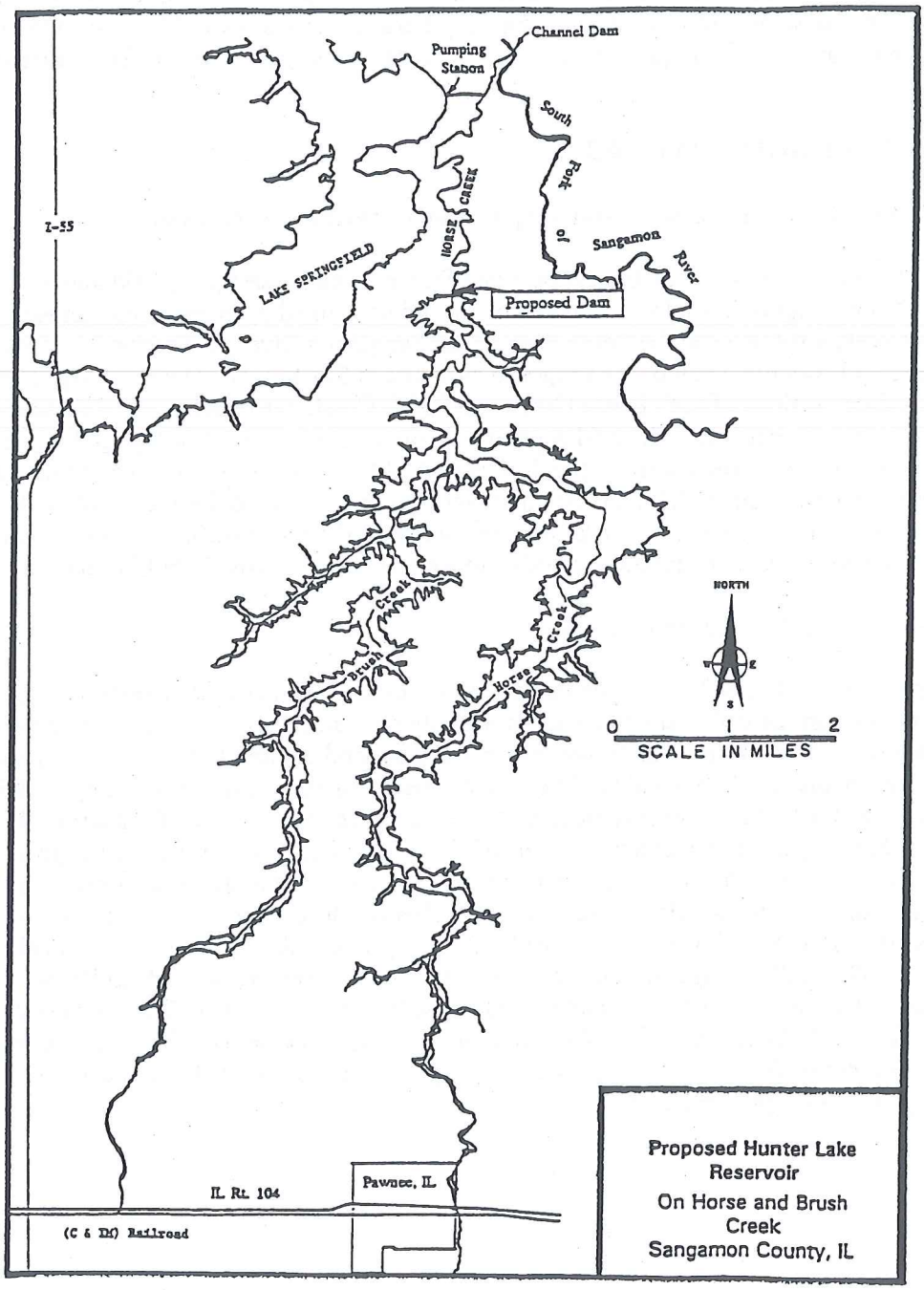
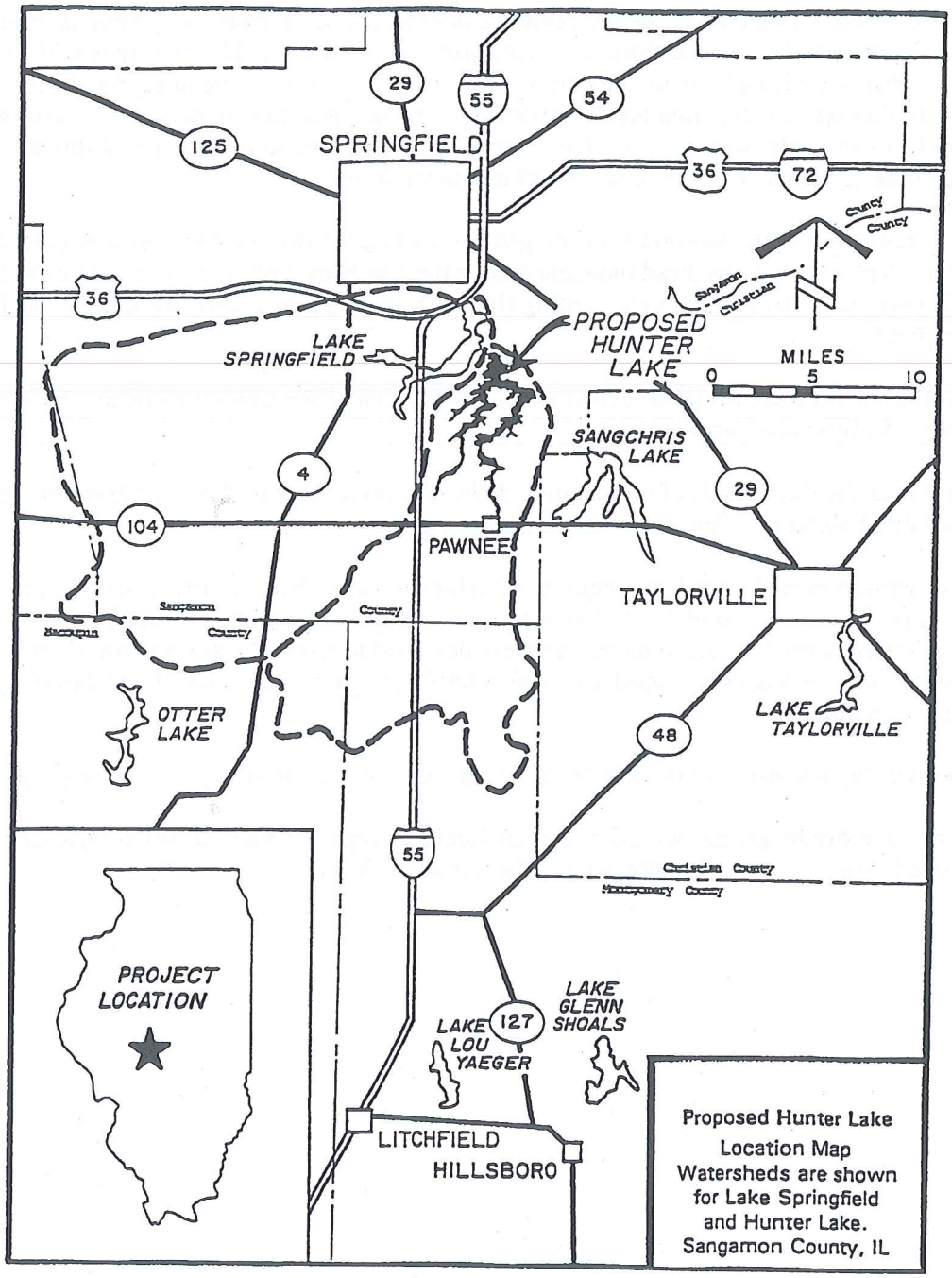


**Figure 2.3.1.2** **Hunter Lake Watershed**



### 2.3.1.2 Reservoir Design

Preliminary engineering design calls for a 1,700-foot earthen dam with a 325-foot fixed crest principal spillway and 400-foot emergency spillway flanking the dam on opposite sides (Figure 2.3.1.3). Borrow material for the dam embankment would come from excavation of the principal and emergency spillways and from within the proposed pool area. The facility would include an intake tower and piping through the dam for dewatering purposes. The tower would feature two, 2-square-foot gates at separate levels for dewatering from desired lake elevations. Two additional 4-foot by 6-foot gates would be located at the base of the tower to provide the ability to rapidly dewater the reservoir as required in case of imminent failure.

During operation, water would be discharged via the intake tower to the downstream Horse Creek channel. The existing low-head movable dam at the confluence of Horse Creek and the South Fork would pool the water to the City's existing Horse Creek pumping station for delivery to Lake Springfield.

Two lake access areas would be constructed, one on each of the County highways for easy access. No other facilities are currently planned.

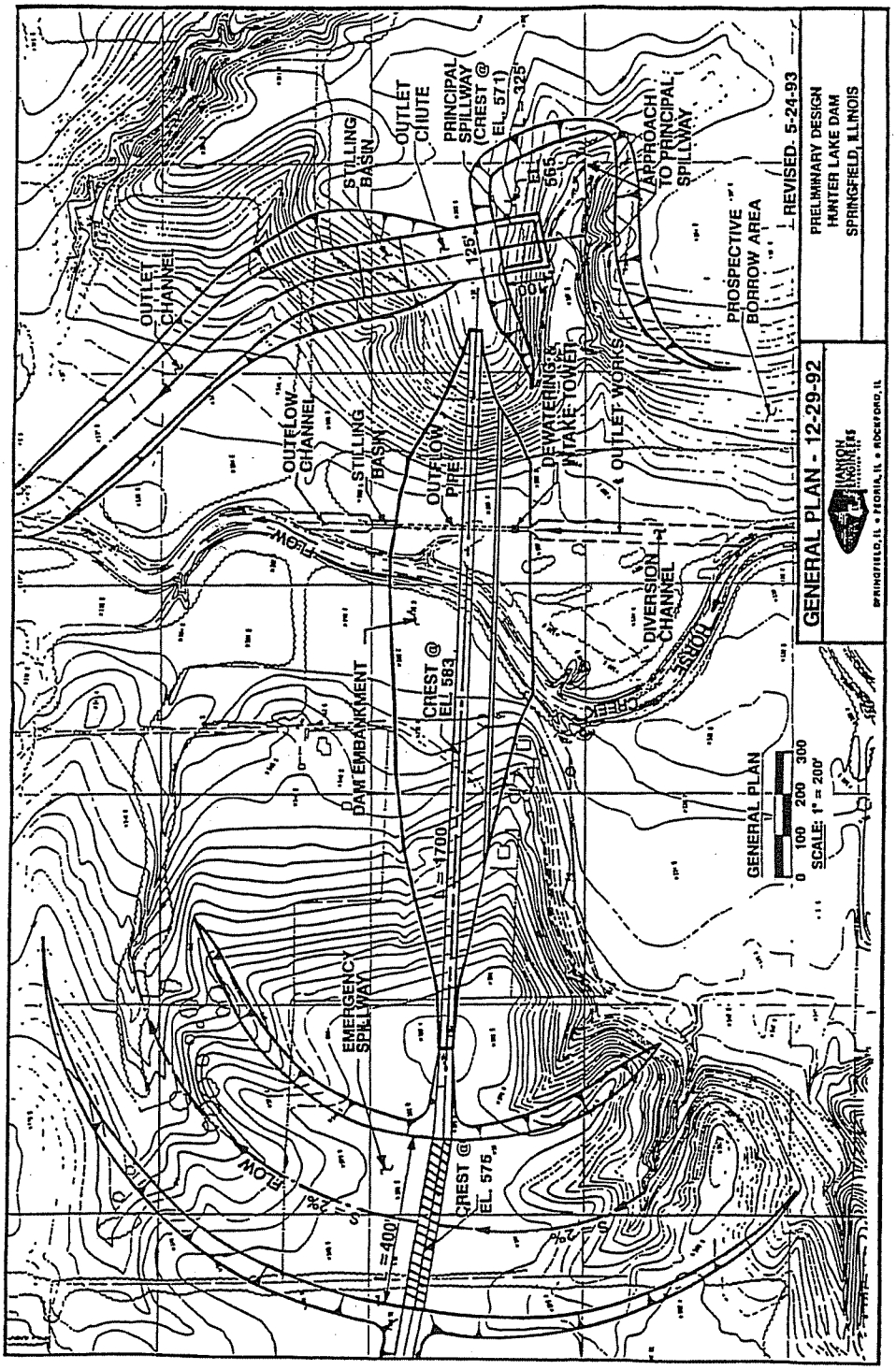
Except near the dam, much of the standing timber would be kept in shoreline areas of the reservoir for wildlife habitat and shoreline erosion protection.

The construction of Hunter Lake requires the relocation and abandonment of certain public roadways. Discussions with the Sangamon County Highway Department and Township Road Commissioners resulted in a roadway network designed to minimize adverse travel and emergency response times through the project area and to minimize the potential for illegal dumping at road closure locations.

Various utility abandonments and/or relocations would be required throughout the project area.

Point source discharges associated with community sewage treatment facilities upstream of the proposed reservoir would be directed to adjacent watersheds.

**Figure 2.3.1.3** **Proposed Dam on Horse Creek**



#### 2.3.1.3 Operation and Maintenance

Horse and Brush Creeks both are rated zero-flow streams during the 7-day, 10-year low-flow period. During the full pool condition, spillway overflow would mimic inflow. The downstream condition and potential water use downstream during low flow is unaffected during critical periods since the 7-day, 10-year low flow at the Sangamon River would be expected to remain at 58.8 cfs, the current condition. During less than full pool conditions with flows greater than the zero low flow, water storage would occur in Hunter Lake, subsequently reducing stream flow downstream of the dam until full pool condition reoccurred. However, flows in the South Fork and Sangamon Rivers would also likely be greater at these times.

The applicant proposes that the monthly Q75 flow be incorporated as the minimum release rate from Hunter Lake, with the exception that since this stream system is a Q7,10 = 0 system, during the filling of the reservoir and during any drought condition the applicant proposes that the instream flow releases revert to a monthly Q90 condition. The drought condition could be indicated as any time Lake Springfield would fall below the average pool level in any given month.

The reservoir would be operated to maintain the pool level in Lake Springfield near seasonal long-term averages. Water would be released from the lake through the dewatering structure during drought conditions. The City's existing low-head movable dam would pool the water to the existing South Fork pumping facility. The pumps would be operated as necessary to transfer the water to Lake Springfield. Additional operation and maintenance of the existing pumping facility would be required during drought conditions due to increased usage.

The CWLP Security staff would provide routine security patrols around the project area as well as boat patrols on the reservoir itself. Two additional full-time security officers would be added to the existing staff.

Periodic maintenance of the protected shoreline areas would be required. Regular maintenance of the boat launching facilities and grounds would be required during seasonal use periods. One additional three-person maintenance crew and related equipment would be added to the existing staff.

Annual inspection and maintenance of the dam facilities would be performed by existing staff and the additional maintenance crew.

Farm operations will be phased out as natural areas are developed in the buffer area around the lake. Operations will continue to be managed by the City's Farm Management agent during the transition. Best Management Practices (BMP) will continue to be utilized and implemented in order to minimize soil erosion and transport to the proposed reservoir. Active participation by the City through the Sangamon County Soil and Water Conservation District will provide financial assistance and incentives to farm operators in the watershed of Hunter Lake to implement BMP on lands not owned or controlled by the City.

Bridge embankments in the upper reaches of the reservoir would cause these areas to function as sedimentation basins, protecting the primary storage volume.

#### 2.3.1.4 Cost

The total estimated cost for design and construction of Hunter Lake Reservoir was determined, including all costs previously incurred. All remaining dollar amounts are in 1997 dollars. The

total estimated cost is $74,100,000 (Table 2.3.1.1). Total estimated construction cost is $40,035,000 or approximately 54% of the total capital cost. Total Capital Cost per mgd is approximately $3,447,000 (Table 2.3.1.2).

The construction costs were broken down into four primary items:

- Dam, Spillway and Intake Facilities
- Road and Bridge Relocation
- Relocation of Utilities
- Shoreline Protection

**Table 2.3.1.1 Hunter Lake Project Costs**

| **Estimated Implementation Costs** | |
|---|---|
| Dam, spillway, and intake tower facilities | $11,700,000 |
| Road and bridge relocation work | 10,725,000 |
| Utility relocation/abandonment | 11,775,000 |
| Shoreline stabilization | 3,000,000 |
| Archaeology (Phases II and III) | 3,000,000 |
| Cemetery protection/relocation | 300,000 |
| Lake access areas | 600,000 |
| Legal/administrative | 600,000 |
| Mitigation measures | 1,500,000 |
| Land acquisition and easements | 3,700,000 |
| Engineering and inspection | 760,000 |
| **Subtotal** | **$47,660,000** |
| Contingencies - 5% | 2,383,000 |
| Total Remaining Costs | $50,043,000 |
| Land/Engineering/Environmental/Administrative Through 1997 | 24,400,000 |
| **Total Project Cost** | **$74,443,000** |

| Table 2.3.1.2 Total Cost Summary - Hunter Lake | |
|---|---|
| Total Capital Cost | $74,443,000 |
| Total Capital Cost per mgd | $3,495,000 |
| 18-Month Operation Cost | $399,000 |
| Annual Maintenance Cost | $455,000 |
| 50-Year Total Present Worth | $82,014,000 |
| 50-Year Total Present Worth per mgd | $3,850,000 |
| 50-Year Equivalent Uniform Annual | $5,203,000 |

Total property costs are estimated at $28,100,000. Additional land and easements to be acquired by the City account for $3,700,000 of this amount. Remaining Legal and Administrative costs were allocated as a separate line item.

Additional operation and maintenance costs during the drought periods for the existing South Fork pumping station include electricity costs and pump replacement schedules comparable to the pipeline alternatives.

The Sangamon County Highway Department has agreed to fund one of the seven bridges in the roadway plan and provide construction engineering/inspection for the entire plan. All other costs are to be borne by the City.

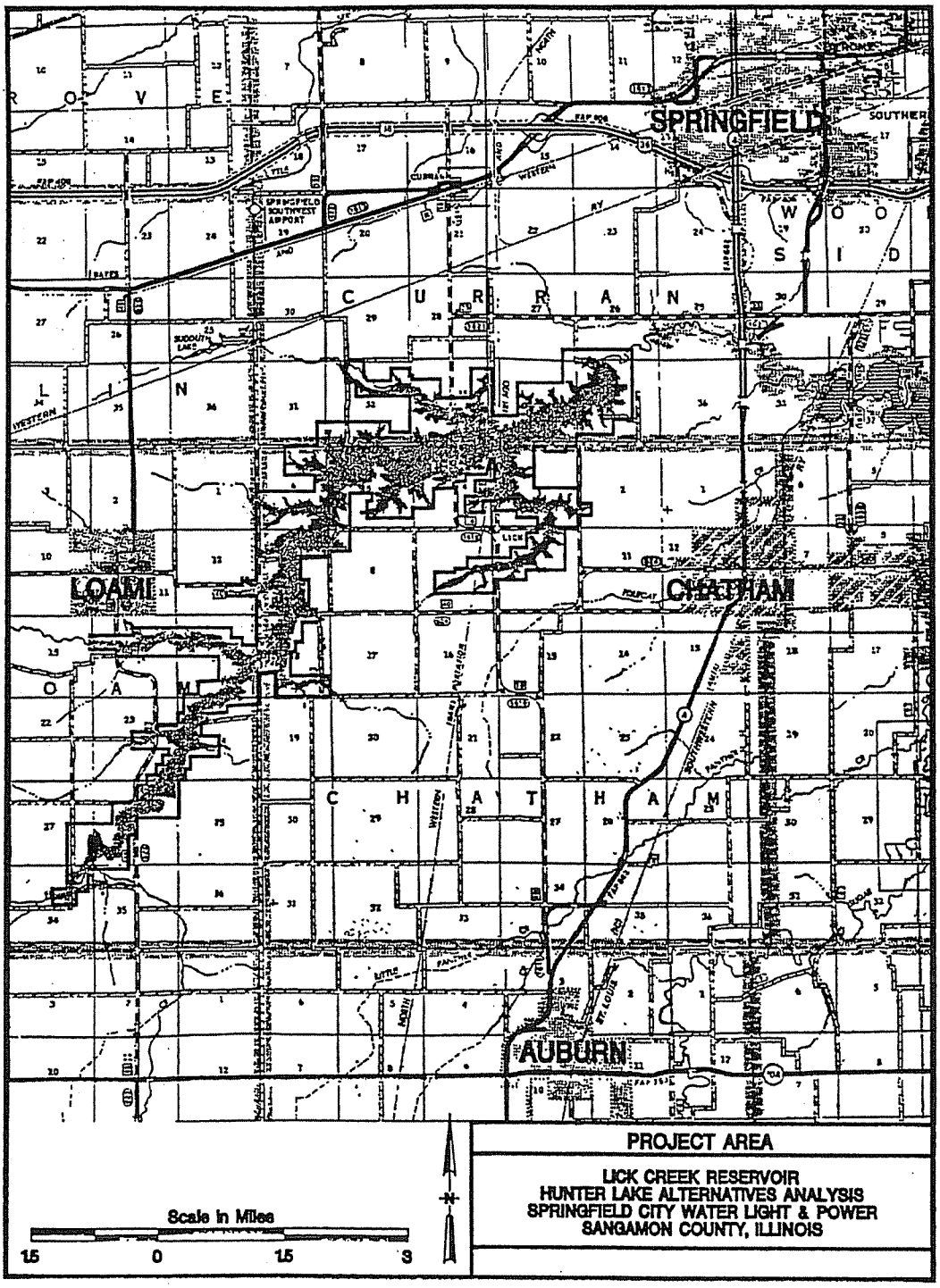
Much of the land for the reservoir is already owned by the City. Remaining land to be acquired accounts for 712 acres within the 7,795-acre project site. Flood easements for areas occasionally impacted by the reservoir would be required in areas not acquired by fee simple. These activities would be completed during the design phase of the project.

### 2.3.2 Lick Creek Reservoir

A reservoir site on Lick Creek was identified as a potential augmentation source. The potential reservoir would be situated between Loami on the west and Chatham/Springfield on the east. The dam would be located on Lick Creek in Sections 26 and 35 of Curran Township. The maximum spillway crest elevation attainable is approximately 590 ft. msl allowing for adequate freeboard at the dam site for flood flows and wave runup.

A reservoir pool elevation of 590 ft. msl would back up water along the creek channel to Section 26 of Loami Township. The resulting lake would cover 1,948 acres with a maximum depth of 35 feet and an average depth of 10 feet. This would provide a capacity of 20,000 acre-feet of storage. The total project area evaluated encompasses 5,555 acres. The limits of the total project area and of the reservoir are shown in Figure 2.3.2.1.

**Figure 2.3.2.1** **Lick Creek Reservoir**



#### 2.3.2.1 Drought Yield

Lick Creek is one of two primary streams providing inflow to Lake Springfield. The drainage area of Lick Creek at the potential Lick Creek Reservoir (LCR) location is approximately 110 square miles and represents roughly 41% of the total drainage area in the Lake Springfield watershed. The net yield of the LCR during the design drought will depend on how the reservoirs are jointly operated and on the maximum pool elevation that can be developed at this site. A yield analysis and a subsequent simulation analysis by ISWS defined the range of yields that could be provided by this alternative under a variety of scenarios. Under the evaluated scenario, water is transferred from LCR to keep a long-term average pool level in Lake Springfield. Transfers are discontinued when the pool level in the second reservoir is drawn down a total of 19.8 feet and do not resume until either (a) the pool in the second reservoir rises above the 19.8 foot drawdown level, or (b) Lake Springfield is drawn down below an elevation of 550 ft. msl. The 19.8-foot maximum drawdown is used to protect aquatic life in the second lake. The combined yield of LCR and Lake Springfield is 35.3 mgd in 2025. This yield is not sufficient to meet the projected needs of the City. The net yield of LCR utilizing this scenario is 8.3 mgd. LCR is considered only in combination with other alternatives as a supplemental supply source.

#### 2.3.2.2 Reservoir Design

LCR design parameters similar to the applicant's preferred alternative, Hunter Lake, were utilized for comparison. Project limits were established to provide the same relative buffer area around the reservoir pool.

A 1,500-foot earth dam would be constructed across Lick Creek. The principle spillway would be a fixed crest design. Dewatering facilities would be provided for emergency drawdown of the reservoir and to allow controlled release of water to Lake Springfield during drought conditions.

Initial recreational development would be limited to two lake access areas. Surrounding land management would be a combination of natural succession, forest restoration, prairie establishment, and wetland mitigation areas.

Borrow areas required for dam construction and roadway embankments would be located within the pool area. Roadway system design in the project area minimizes route relocation and road closures.

#### 2.3.2.3 Operation and Maintenance

The reservoir would be operated to maintain the pool level in Lake Springfield near seasonal long-term average. Water would be released from LCR through the dewatering structure during drought conditions, where it would flow by gravity through Lick Creek for approximately 3.4 stream miles to Lake Springfield.

CWLP Security staff would provide routine security patrols around the LCR project area as well as boat patrols on the reservoir itself. Two additional full-time security officers would be added to the existing staff.

Periodic maintenance of the protected shoreline areas would be required. Regular maintenance of the boat launching facilities and grounds would be required during seasonal use periods. One additional three-person maintenance crew and related equipment would be added to the existing staff. No additional operation or maintenance of the reservoir would be needed during the design

drought. Annual inspection and maintenance of the dam facilities would be performed by existing staff and the additional maintenance crew.

#### 2.3.2.4 Cost

The total estimated capital cost of LCR is $55,200,000 (Table 2.3.2.1). Total estimated construction cost is $24,705,000 or approximately 45% of the total capital cost. Total Capital Cost per mgd is approximately $6,651,000 (Table 2.3.2.2).

The construction costs were broken down into four primary items:

- Dam, Spillway and Intake Facilities
- Road and Bridge Relocation
- Relocation of Utilities
- Shoreline Protection

Property costs are estimated at $22,644,000. Legal and Administrative costs were allocated as a separate line item. No additional operation costs for the design drought are required for this alternative; water transfer from LCR to Lake Springfield would be via gravity flow through sluice gates located in the dewatering structure.

**Table 2.3.2.1 Lick Creek Reservoir Project Costs**

| | |
|---|---|
| Land and improvements | $22,640,000 |
| Dam, spillway, and intake tower facilities | 10,295,000 |
| Road and bridge relocation work | 9,275,000 |
| Utility relocation/abandonment | 1,525,000 |
| Shoreline stabilization | 1,950,000 |
| Lake access areas | 600,000 |
| Environmental studies | 2,100,000 |
| Legal/administrative | 425,000 |
| Mitigation - environmental | 590,000 |
| Engineering and inspection | 470,000 |
| Easements | 300,000 |
| Archaeology (Phases II and Phases III) | 2,400,000 |
| **Subtotal** | **$52,570,000** |
| Contingencies - 5% | 2,630,000 |
| **Total Project Cost** | **$55,200,000** |

| Table 2.3.2.2 Total Cost Summary - Lick Creek Reservoir | |
|---|---|
| Total Capital Cost | $55,200,00 |
| Total Capital Cost per mgd | $6,651,000 |
| 18-Month Operation Cost | $0 |
| Annual Maintenance Cost | $210,000 |
| 50-Year Total Present Worth | $58,510,000 |
| 50-Year Total Present Worth per mgd | $7,050,000 |
| 50-Year Equivalent Uniform Annual | $3,713,000 |

### 2.3.3 Sangamon River Valley Wells

During the period from approximately 1884 to the mid 1930's, the City of Springfield operated a system for the collection of both groundwater and surface water at a location just north of the city along the banks of the Sangamon River. This system operated in conjunction with a dam across the river and first entailed the construction of a single large diameter well. This was followed by the construction of approximately 3,000 feet of infiltration galleries; a direct connection to the river; and finally, the construction of approximately 40 small-diameter wells operated in groups or "banks." Historical information indicates that this system utilized an "admixture" of both surface and groundwater. Following construction of Lake Springfield in about 1936, this system was abandoned.

Following the drought which severely depleted available water in Lake Springfield in the mid-1950's, there was renewed interest in estimating the availability of groundwater to be used as a supplemental municipal supply for Springfield. In 1964, the ISWS produced letter-type reports addressing this issue. At that time, discussions concerning the potential for groundwater development centered around past operation of the system of wells and infiltration galleries north of the City. In short, it was stated that the cone of influence for this system encompassed an area of about 3 square miles, and of the nearly 7 mgd that was pumped from this system in about 1924, probably no more than 3 mgd were derived from groundwater.

One alternative under consideration by the City of Springfield for supply augmentation is re-developing the operation of a well field in the Sangamon River Valley. Estimates for the yield of such a well field range from approximately 1 mgd/sq. mi. for non-drought conditions, to 0.33-0.66 mgd/sq. mi. for drought conditions.

Based on available information describing the regional geohydrologic picture, the aquifers along the Sangamon River are limited, both in areal extent and in capacity to be recharged from precipitation and induced infiltration, particularly during drought conditions. For these reasons, major groundwater development will require an extensive array of relatively small capacity wells.

The full required yield desired by the City during drought conditions is not obtainable from this system due to the limited yield of the aquifer and the physical size of the system that would be needed to produce the full yield. Quite often, the aquifer does not perform as expected and well

locations are modified. Because of the required spacing of the wells for this system, altering the location of any one well could require modification of several other sites. A system supplying a maximum of 12 mgd was developed for this analysis as the greatest practical yield available from this supply.

#### 2.3.3.1 Water Quality

Current pumping of the Sangamon River Valley aquifer shows the groundwater to generally be of excellent quality. There is potential for increased iron concentrations and harder raw water. The current treatment facilities at Lake Springfield should be able to accommodate any variation of the raw water quality caused by the introduction of groundwater. For this analysis, increased water treatment costs were considered negligible.

#### 2.3.3.2 System Design

Three main components of this supply system are:

- Wells
- Pump Stations (Including Head Tanks)
- Piping

The wells would be situated in clusters where typically four to six wells would pump to a head tank at a central pump station. The pump stations would then pump the water through transmission mains to Lake Springfield where it would supplement the current raw water supply (Figure 2.3.3.1). It is assumed that the wells can be developed based on characteristics of wells currently operating in the Sangamon River Valley and modified as required to supply the required flow during the design drought. The pump stations would be designed to produce the heads required to transmit the water from the tanks at each pump station to Lake Springfield. The resulting piping network consists of over 76 miles of pipe to bring the water from the wells to Lake Springfield. Actual lengths of pipe required would be determined from additional studies and acquisition of right-of-way if this system is developed further. The water supply system consists of 36 wells, 9 pump stations, 9 head tanks, and over 400,000 feet of piping to transfer 12 mgd of water from a 36-mile stretch of the Sangamon River Valley aquifer to Lake Springfield. This network is shown schematically in Figure 2.3.3.2. The network is split into East and West sections. Each section is further divided into clusters. There are a total of 9 clusters, each consisting of 2 to 6 wells. Each cluster is focused around a tank and pump station. The wells pump to the nearest tank. The pump station then transfers the water from the head tank through the transmission mains to Lake Springfield. This general system was developed because it proved to be the most economical and technically feasible method of obtaining 12 mgd of groundwater from the Sangamon River Valley aquifer.

**Figure 2.3.3.1** **Sangamon River Valley Well Pump Stations**

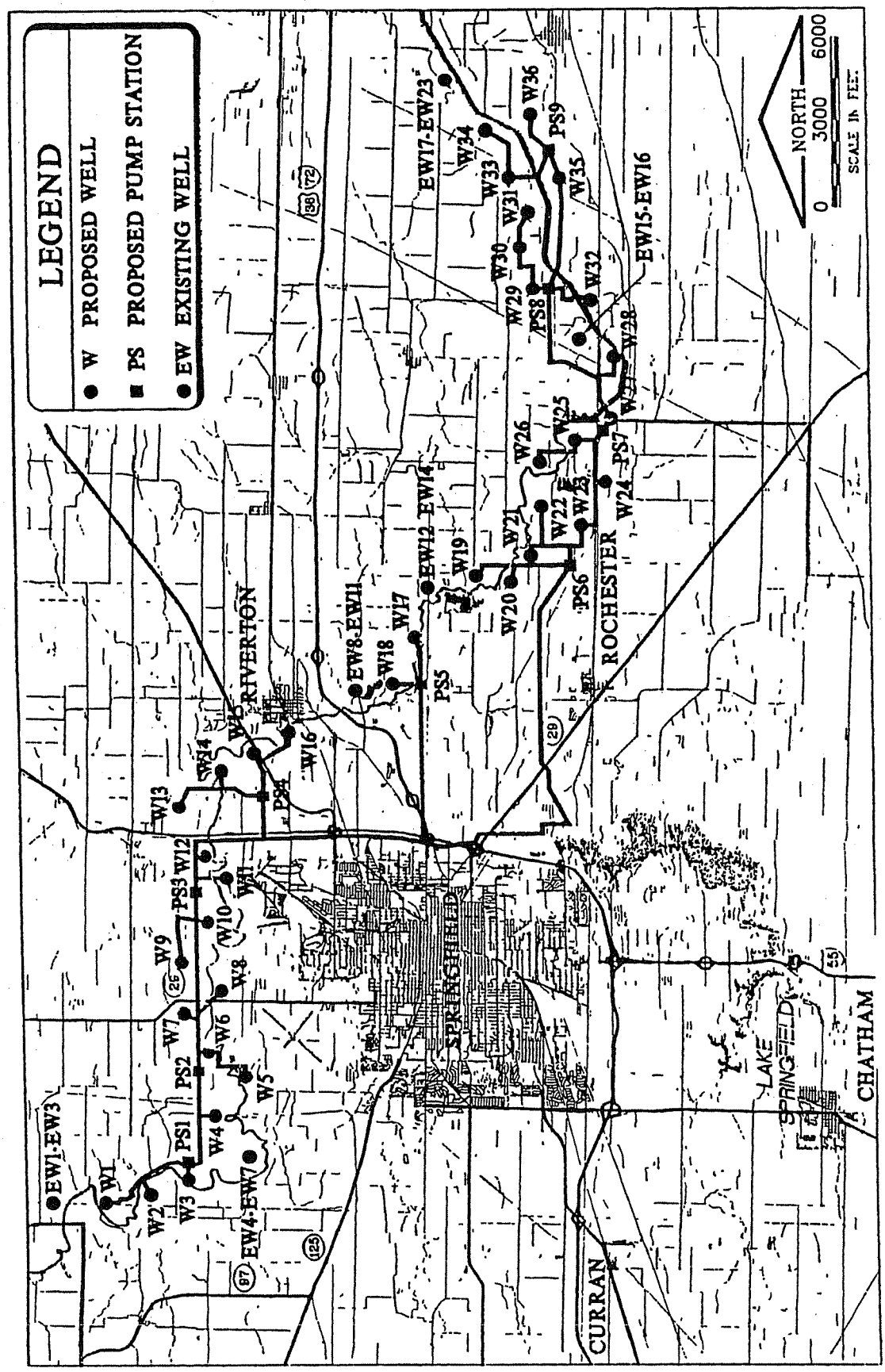
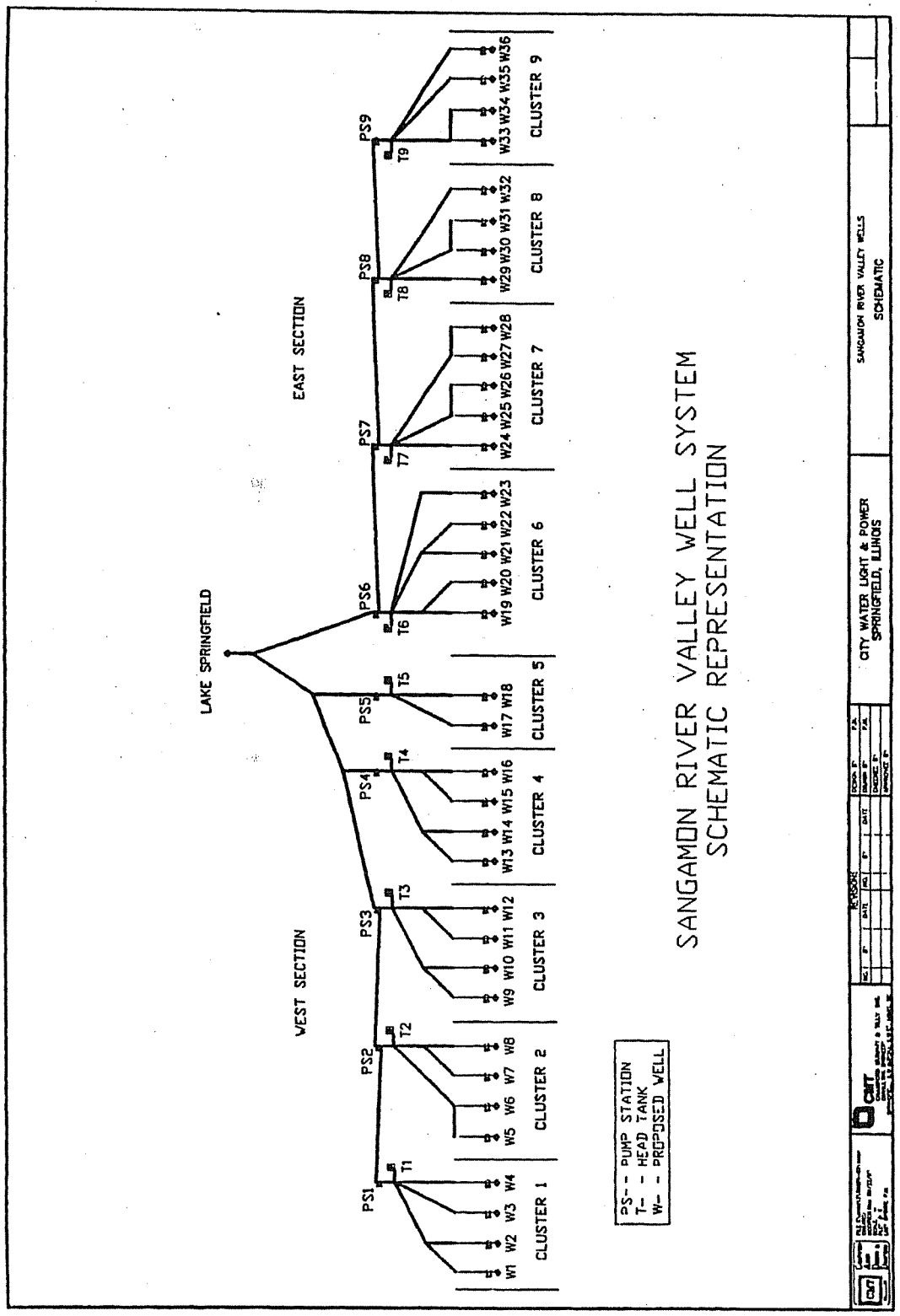


**Figure 2.3.3.2** **Sangamon River Valley Well System - Schematic**



#### 2.3.3.3 Water Collection and Transmission

Primary collection consists of 36 standard vertical gravel-packed wells. Various assumptions were made to facilitate the placement and design of the wells for this alternative. The following assumptions would need to be verified and modified if this alternative is pursued further:

- Yield of 230 gpm is obtainable at proposed sites
- Aquifer is uniform and has "average" characteristics
- Land is available for acquisition
- Existing road is accessible within 100 feet
- Appropriate power supply is accessible within ½ mile
- No nearby sources of groundwater contamination exist
- No prohibitive environmental factors exist (e.g., endangered species, archeological sites, etc.)

The wells were located according to the following objectives:

- Place within the Sangamon River Valley containing the aquifer
- Provide adequate aquifer area for full yield potential
- Provide adequate distance to avoid interfering with existing municipal and industrial wells
- Provide adequate distance to avoid interfering with other proposed wells
- Place near existing roads for access
- Minimize required network piping

Not enough of the Sangamon River Valley aquifer exists in Sangamon County to place all 36 wells and satisfy all of the above conditions. To locate enough wells to produce 12 mgd, some wells were situated in Christian County, south of the Sangamon River on the East Section of the well system. Any wells located farther north in Menard County would require permits issued by the Menard County Water Authority. The Authority regulates all use of groundwater in that county.

Primary transmission network consists of the piping within each cluster from the wells to the pump station. The piping is routed adjacent to existing roadways and property lines whenever possible to facilitate right-of-way acquisition. The primary transmission network requires over 37 miles of piping. The piping also includes combination air release and vacuum valves at every high point and drain valves at every low point. Gate valves open to the atmosphere are included stemming off of 'Y' sections within a valve box so that sediment and deposits could be periodically flushed or pigged from the system. Stilling basins are included at each flush point to provide appropriate erosion control and drainage.

Secondary collection consists of head tanks located at each pump station. Nine tanks are included in the system to provide a relatively constant head for the wells and pump stations to operate more efficiently and also to add a total of 9 million gallons of storage capacity to the system. The tanks are fed by the wells comprising its cluster and all upstream wells. Each tank is a standard ground storage tank of 1 million gallon capacity.

Secondary transmission consists of the nine pump stations and the required water main from the pump stations out to Lake Springfield. Each pump station is placed outside of the 100-year floodplain to conform with the Ten-States "Recommended Standards for Water Works." The pump stations are also located to minimize the amount of piping and energy required to transfer

water from each well to the pump station. The following assumptions were made to facilitate locating the pump stations:

- Land is available for acquisition
- Existing road is accessible within 100 feet
- Adequate power supply is accessible within ½ mile
- No prohibitive environmental factors exist (e.g., endangered species, archeological sites, etc.)

The secondary transmission piping network consists of over 38 miles of 8-inch to 20-inch pipe. Pipes were sized to keep water velocity at full flow below 5.75 feet per second and water pressure in the pipes below 100 psi. Other design features are similar to the primary transmission network.

#### 2.3.3.4 System Variations

In this comparison of feasible alternatives, portions of the Sangamon River Valley well field system are used in combination with other partial-yield sources to achieve the desired total yield.

This well system is designed to be constructed with fewer wells for lower yields. For example, constructing only clusters 1 through 4 of the West Section would result in a well system that produces 5.33 mgd. The partial systems were developed so that they could be expanded to their full capacity without modifying any items that are already in place. For example, the main transmission line feeding Lake Springfield for 1.33 mgd system including only Well Cluster 4 would be 20 inches in diameter. This is oversized for the 1.33 mgd yield but is able to support the potential 6 mgd available from the entire West Section of the network if increased future water demand required that Well Clusters 1, 2, and 3 also be constructed.

#### 2.3.3.5 Operation and Maintenance

Operation of the system would be through a wireless communication network linking every well and pump station to a central control station located at the existing Springfield water treatment plant and integrated with the existing Supervisory Control And Data Acquisition (SCADA) System. Each well and pump station would also have local controls.

A maintenance crew would consist of two full-time employees, at least one being a certified well operator, and a part-time electrician. General conditions of the pump stations and wells should be inspected at least monthly. Recommended maintenance for the pumps in the system involves exercising the motors and pumps every 2 weeks. Typically, pumps and motors are exercised at least once a month by running them for short periods. Maintenance runs, especially of the larger pump stations, might need to be coordinated with the electric utilities to avoid operation during peak power usage. Typically, each well would need to be run for at least 1 hour so that a full volume of water will circulate through the pipeline to the tank. Pump stations should be run from the farthest ones to the ones closest to Lake Springfield to fully circulate the water out of the piping network. Pump stations pumping to tanks will need to run for at least 1 hour. The pump stations that pump directly to Lake Springfield will need to be run for up to 6 hours to completely flush the pipes due to the larger pipe size and the distance to Lake Springfield.

As well pumps and motors fail, they would be replaced with new pumps and motors. This is more economical than repairing pumps of this size. Submersible pumps and motors and well columns typically are replaced after approximately 22,000 hours of use (or 5 years, running 12 hours per day). This is outside the life span of the project if pumps are run only for maintenance and during

one 18-month drought. However, it should be expected that the pumps and motors will be replaced at least twice during the life of the project since the system may be started up for a few months if an expected 100-year drought is cut short. Pump station pump repairs are also based on replacing the pumps twice during the life of the project.

Maintenance also would include periodic acid and chlorine treatment to combat clogging from calcium carbonate and iron bacteria. Periodic flushing or pigging of the transmission lines would be required to remove accumulated sediment deposits. Tanks would need to be drained and inspected seasonally. Steel tanks normally need to be painted every 15 years and sand blasted and painted every 30 years. The access roads would require regular maintenance as they wear from use, seasonal changes, and flooding.

### 2.3.3.6 Costs

The total estimated cost for design and construction of the Sangamon River Valley Well System was determined for the entire system producing 12 mgd; however, among the feasible alternatives evaluated, only various portions of the full Sangamon Valley Well system are utilized. Incremental costs for the system are listed in Table 2.3.3.1.

**Table 2.3.3.1** Sangamon River Valley Well System Incremental Cost of Complete System

| Available Flow (mgd) | Number of Wells | Item Includes | Cumulative Construction Cost | Cumulative Total Capital Cost | Cumulative Annual Operation Cost | Cumulative Annual Maintenance Cost | Total 50-Year Present Worth | Total Incremental Present Worth | Total Present Worth per mgd |
|---|---|---|---|---|---|---|---|---|---|
| 1.67 | 5 | Cluster 6 | $5,586,000 | $9,979,000 | $196,000 | $140,000 | $12,480,000 | $12,480,000 | $7,488,000 |
| 3.33 | 10 | Cluster 7 | $9,079,000 | $16,240,000 | $391,000 | $279,000 | $21,230,000 | $8,750,000 | $6,369,000 |
| 4.67 | 14 | Cluster 8 | $12,289,000 | $21,984,000 | $547,000 | $390,000 | $28,960,000 | $7,730,000 | $6,206,000 |
| 6.00 | 18 | Cluster 9 | $15,048,000 | $26,921,000 | $704,000 | $502,000 | $35,890,000 | $6,930,000 | $5,982,000 |
| 6.67 | 20 | Cluster 5 | $19,440,000 | $34,728,000 | $782,000 | $557,000 | $44,690,000 | $8,800,000 | $6,704,000 |
| 8.00 | 24 | Cluster 4 | $24,059,000 | $42,972,000 | $938,000 | $669,000 | $54,930,000 | $10,240,000 | $6,866,000 |
| 9.33 | 28 | Cluster 3 | $27,222,000 | $48,606,000 | $1,094,000 | $780,000 | $62,550,000 | $7,620,000 | $6,702,000 |
| 10.67 | 32 | Cluster 2 | $30,228,000 | $53,999,000 | $1,250,000 | $891,000 | $69,920,000 | $7,370,000 | $6,555,000 |
| 12.00 | 36 | Cluster 1 | $32,898,000 | $58,802,000 | $1,407,000 | $1,003,000 | $76,730,000 | $6,810,000 | $6,394,000 |
| | | | | | | | Average | $8,526,000 | $6,586,000 |

### 2.3.4 Sand and Gravel Pits

A number of sand and gravel mining pits have been excavated within the Sangamon River Valley. These pits are located where deposits of unconsolidated sand and gravel were present and are currently full of water. Three of the larger sites are evaluated as supplementary water sources for the City of Springfield. The pits are located just south of the City of Riverton and northwest of the Christian County border and are referred to as Sites A, B, and C (Figure 2.3.4.1). The pits cover a total of 545 acres and are approximately 40 feet deep. The sites are owned by six proprietors and are currently used for a variety of purposes ranging from sand and gravel businesses to recreation.

All current (1997) owners were contacted to obtain input on the use of the water in the pits as a supplementary supply for the City of Springfield and to verify actual depth information. Four owners are currently mining the pits with dredges on floating barges. These operations depend upon the water volume and water levels to varying degrees. Each operator has a different opinion about how selling water from the pits could affect their operations. Some owners feel that pumping water from their pit would undoubtedly put them out of business while others believe that it would have no negative effect on their operations.

The usable water supply is primarily derived from the stored volume of water at each site, with additional gains and losses from infiltration and evaporation, respectively. These pits currently have a total volume of almost 6.0 billion gallons. The net yield available from a system that would include all of the pits is 4.80 mgd (Section 2.3.4.2). The water would be collected with floating pumps placed on the water at each site. The water would be pumped to a head tank and pump station near each site. The pump station would then pump the water the rest of the way to Lake Springfield. The entire transmission network includes approximately 14 miles of piping.

#### 2.3.4.1 Site Descriptions

**Site A**

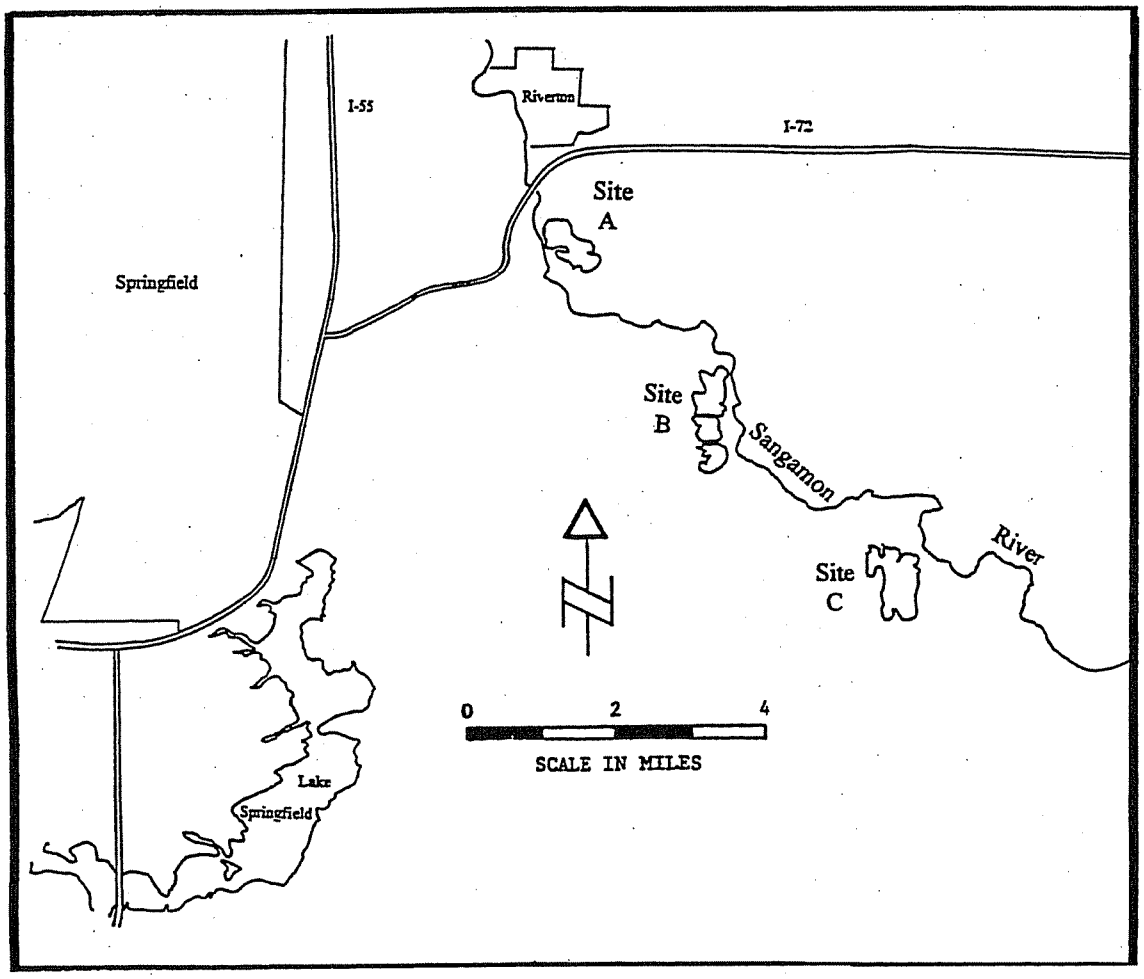
The owner of Site A had no strong opinion about supplying water from the pit to the City of Springfield. The owner indicated that it would probably not be in the best interest of the company to pump excessive amounts of water from the pits. There was concern that reduced water levels might not allow slurry water from the gravel wash to settle before it was recirculated through the dredge. A minimum depth of 10 feet of water is required to operate the dredge.

This sand and gravel pit has enough property to continue operations for the next 40 to 50 years. The pit can expand to approximately 375 acres. The pit currently has an average water depth of 35 feet. There are 10 people employed in the operation.

**Site B-1**

Site B-1 is operated as a recreational lake and is owned by a board of trustees. The board would consider selling water rights. They would continue operating the lake as long as water levels would allow. They were concerned about possible fish kills and possible damage to existing docks resulting from loss of water. The docks would need to be modified to accommodate reduced water levels. As long as these issues were addressed, the board was not opposed to allowing the CWLP full access to the water.

**Figure 2.3.4.1** **Sand and Gravel Pit Locations**



Several years ago, the Sangamon River breached into the southeast side of the pit and proceeded to flow through it, exiting at the north end of the pit. The stability at the site of the breach might be of concern if the water level in the pit is dropped significantly. The board is currently looking at alternatives to reinforce this area of the pit.

Maximum and minimum water depths are 36 feet and 10 feet, respectively, with an estimated average depth of 20 feet.

**Site B-2**

Site B-2 is run as a family operation. The operators are reluctant to fully cooperate with current studies. However, the current operators do not own the land. It is leased from the owner through a property manager. The water level greatly influences the operation of the dredge at this site. The dredge cannot operate satisfactorily with less than 40 feet of water in the pit.

The current operators plan to continue mining the site for an additional 50 years. They typically mine approximately 1 acre per year. The average water depth in the pit is currently 50 feet. Four people are employed.

**Site B-3**

The owner of Site B-3 would very much like to sell water from the pit and is convinced that there is no way that the pit can be pumped dry due to high infiltration from the surrounding aquifer. The owner is not concerned with a variation in water level and believes that the equipment can operate efficiently with at least 10 feet of water in the pit. The owner has offered the use of the pit if pump tests were required to determine possible yields.

There is enough material at Site B-3 to continue the dredging operation for the next 50 years. The gravel pit can ultimately cover up to 400 acres. The average water depth is 55 feet. Seven people are currently employed, operating 20 hours per day and producing approximately 3,000 cubic yards of material during a typical operating day.

**Site C**

The owner of Site C was quick to express that they would not be willing to sell water instead of selling sand and gravel. The general operations and the type of dredge that is currently being used are very sensitive to the water level. The water needs to be at least 20 feet deep for the dredge currently in use to operate.

There is currently a 20-year supply of material remaining on the site. The average depth of the pit is 30 feet. The deepest areas are as much as 60 feet deep. The depth varies greatly due to the inconsistency of the gravel deposits. There are currently 12 people employed.

**Site C (N.E. Corner)**

The northeast corner of Site C is under separate ownership. The owner is very interested in selling water from the pit and believes that there is practically an unlimited supply of water available. Since the owner does not run operations in the pit, reduced water levels are not of concern.

### 2.3.4.2 Water Acquisition

Acquiring water from the pits is a complex situation due to the varying levels of cooperation of the current landowners and the different effects that reduced water levels have on current operations. A number of water acquisition options were considered, including:

- Purchase water rights
- Lease property during drought conditions
- Complete buy-out of operations
- Acquire property through condemnation
- Provide equipment required to continue operations with reduced water levels
- Provide equipment required to continue operations as a dry pit

The options were judged with the following considerations:

- Obtainable yield
- Relative cost
- Opinion of the gravel pit owners
- Effect on the business operations
- Technical feasibility

The most desirable acquisition option for each site provides maximum yield from the pit with acceptable levels of interference to existing operations at minimum cost. The following discussion summarizes the bases used for this evaluation that are technically feasible and assumed acceptable to current property owners. In addition to these measures, all property owners would be paid for each gallon of water removed from their property at an established rate. Additional access easements and property for pumping facilities would also need to be purchased from the gravel pit owners.

**Site A**

Water would be drawn down from this site, leaving a minimum water depth of 10 feet. The operations would not be greatly affected during pumping or due to reduced water levels. Therefore, reimbursement would include the raw water unit cost plus a privilege fee.

**Site B-1**

Reimbursement for the owners of this recreational lake would involve retrofitting existing docks so that they can be used during pumping and with reduced water levels. The pit may also need to be restocked with fish since the lake would practically be pumped dry.

**Site B-2**

Obtaining this property would involve leasing the land from the owner, thereby putting the current operators out of business. For this analysis, the cost of the lease will be set at twice its current value to make transfer of the lease worthwhile for the owner.

**Site B-3**

Operations at this site do not depend upon the water level, and the current owner seeks no major reimbursements. Costs for the use of the water from this pit would include a raw water unit cost plus a privilege fee.

**Site C**

Operations at this gravel pit are greatly affected by water level. New equipment would be needed for operations to continue at this gravel pit during pumping and with reduced water levels. The cost of a new dredge capable of operating at the reduced water levels is included in the costs in addition to a raw water rate as reimbursement for use of this pit.

**Site C (N.E. Corner)**

The owner here has strictly a financial relationship with the pit. Reimbursement for use of water from this portion of the pit would be the raw water unit cost plus a privilege fee.

### 2.3.4.3 Aquifer Characteristics

The three pit sites lie in the Sangamon River Valley aquifer. The aquifer is comprised of unconsolidated sand and gravel formations on top of bedrock. The sand and gravel formations extend approximately 50 feet below ground surface. Dredging over the past years has shown that the sand and gravel formations vary throughout the area. These formations have been studied and data indicate that 0.33 mgd of groundwater per square mile of aquifer is likely available during severe drought conditions.

### 2.3.4.4 Water Quality

Water obtained from the sand and gravel pits is a combination of surface water (from runoff into the pits) and groundwater from the Sangamon River Valley aquifer. Current pumping from the aquifer shows the groundwater to generally be of excellent quality. The current treatment facilities at Lake Springfield should be able to accommodate any variation of the raw water quality caused by the introduction of water from this source. For this analysis, any increases in water treatment costs were considered negligible.

### 2.3.4.5 Yield

The yields of the gravel pits are primarily a function of the available storage volume with additional influence from evaporation and groundwater infiltration. The total available yield is reduced by 0.33 mgd due to the added water demand required for the supply to the City of Riverton. Volumes were determined by multiplying the area of each gravel pit with the available storage depth. The water depth below the drought-time normal water level and above a minimum required water level is the available storage depth, as shown in Figure 2.3.4.2. This depth is then multiplied by the current areas of the sites (as determined from aerial photos taken in March of 1997) resulting in the available working volume. The yield calculations are summarized in Table 2.3.4.1.

**Table 2.3.4.1** **Gravel Pit Yield Calculations**

| Site | Area (acres) | Available Storage Depth (ft) | Available Storage Volume (million gallons) | Yield From Storage (mgd) | Infiltration (mgd) | Evaporation (mgd) | Total Available Yield (mgd) |
|---|---|---|---|---|---|---|---|
| A | 124 | 18 | 727 | 1.35 | 0.18 | 0.33 | 1.20 |
| B-1 | 103 | 13 | 436 | 0.81 | 0.11 | 0.27 | 0.65 |
| B-2 | 45 | 38 | 557 | 1.03 | 0.11 | 0.12 | 1.02 |
| B-3 | 40 | 38 | 495 | 0.92 | 0.11 | 0.11 | 0.92 |
| B *(total)* | *188* | — | *1,489* | *2.76* | *0.33* | *0.50* | *2.59* |
| C | 233 | 13 | 987 | 1.83 | 0.13 | 0.62 | 1.34 |
| **Total** | **545** | **—** | **3,203** | **5.94** | **0.64** | **1.45** | **5.13** |
| | | | | | | Riverton | -0.33 |
| | | | | | | **Net Yield** | **4.80** |

Water levels in the gravel pits are directly affected by the water level in the aquifer. This is especially true during drought conditions when surface water runoff flowing into the pits is reduced. During drought conditions, aquifer water levels can be expected to drop 7 feet below normal water levels (Mark Anliker, ISWS, personal communication with CWLP staff). Therefore, the water levels in the pits can be expected to drop by the same amount.

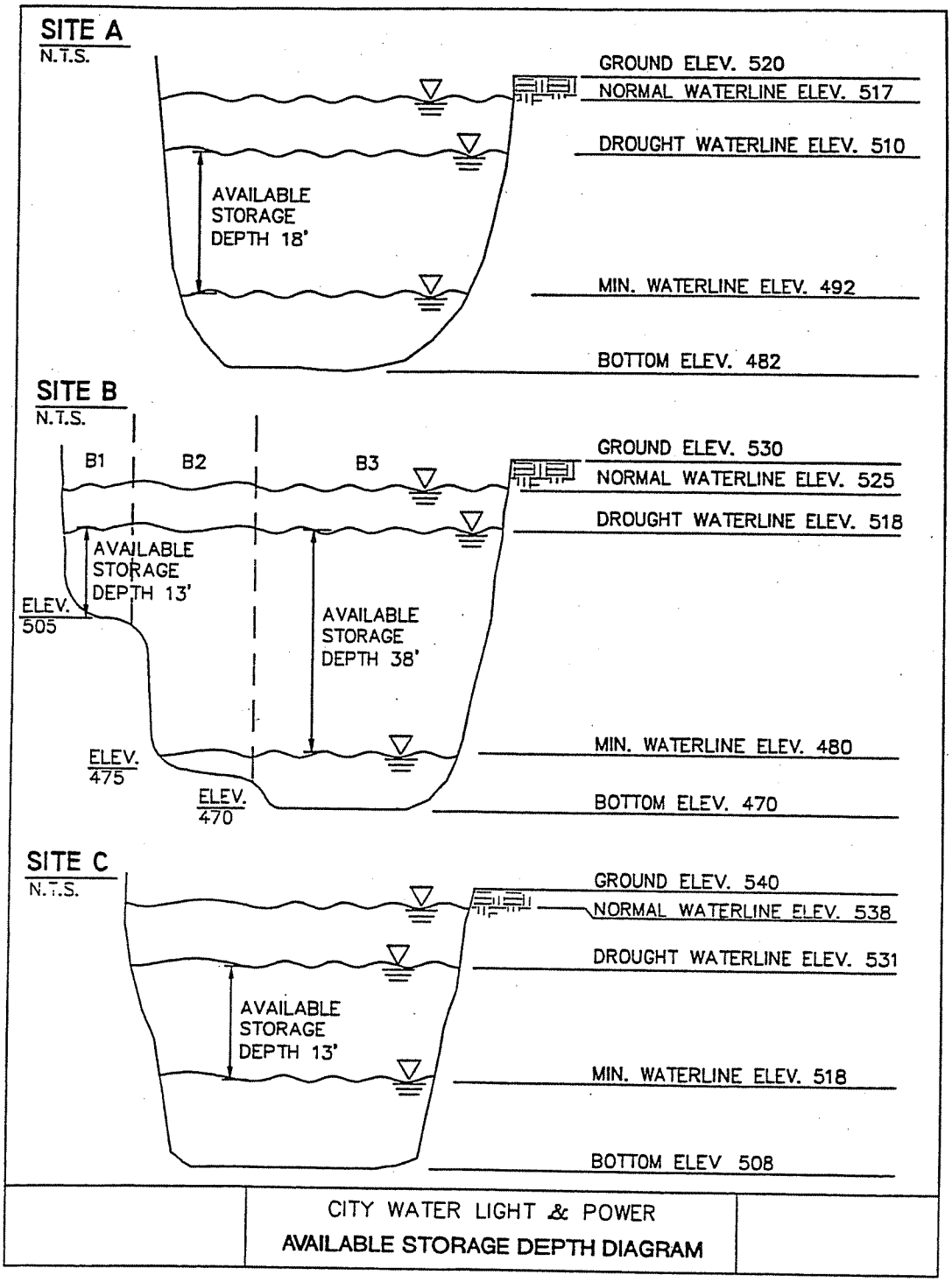
Infiltration rates into the gravel pits are based on 0.33 mgd of groundwater availability per square mile of the aquifer. This yield is obtainable with a standard vertical well operating at the designed pumping water level. However, there are a number of factors that affect this infiltration rate, such as:

- Varying drawdown elevations
- Depletion of the aquifer due to mining
- Natural variations in the sand and gravel formations
- River water infiltration

Infiltration of groundwater into each site is dependent on the drawdown elevations. The water levels in the pits will lower throughout the period of operation. Since the pit will not reach its maximum drawdown until near the end of the period of operation, the maximum infiltration yield will not be available until that time. Therefore, the infiltration rates at Sites A and C were reduced to reflect the average drawdown elevations.

The size of the pits greatly affects the available yield. The infiltration rate is dependent on an area of 1 square mile of aquifer. Currently, there is approximately 1 square mile of aquifer surrounding each site. As the pits expand and deplete the surrounding sand and gravel formations, the yield due to infiltration will be reduced. However, the expanding pit will also increase the available storage volume, thus increasing the yield.

**Figure 2.3.4.2** **Available Storage Depth in Sand and Gravel Pits**



The issues noted above require that a full yield analysis and aquifer study be completed before this water supply option is developed further. A more detailed study now of the available yields would not be beneficial since conditions at the pits are constantly changing. The yields listed in Table 2.3.4.1 were used for the preliminary design of the water withdrawal system.

The total yield at Site B is comprised of the yields from three pits. The three pits are hydraulically linked through the aquifer and they must be considered as a single source since reducing the water level in one would affect water levels in the others. To facilitate the transfer of water from one section to the other, a channel would be cut in the berms dividing the three pits when the system is put into full service. The berms would be reconstructed once the system is retired.

#### 2.3.4.6 Water Collection and Transmission

The potential water supply system consists of one floating pump located at each of the three sites, three storage/head tanks, three pump stations, and over 76,000 feet of piping to transfer water from the pits to Lake Springfield. This system is shown schematically on Figure 2.3.4.3. The system layout is shown on Figure 2.3.4.4.

Various assumptions were made to facilitate the preliminary design of the system. The following assumptions would need to be verified and possibly modified if this alternative is pursued further:

- Current yield estimate is obtainable at proposed sites
- Existing road is accessible within 100 feet
- Access to water is available
- Purchase of water is negotiable
- Land is available for acquisition
- Appropriate power supply is accessible within ½ mile
- No sources of groundwater contamination exist
- No prohibitive environmental factors exist (e.g., endangered species, archeological sites, etc.)

The availability of adequate power needs to be verified. Contractual and practical issues due to the intermittent and infrequent use of electricity at these sites will also need to be examined. An agreement for stand-by power use and fees will need to be established with the power company controlling the area. Impacts of exfiltration of the Sangamon River should also be studied further. Soil conditions need to be tested to verify that an adequate foundation exists for pump stations and tanks. The soil should also be tested where ductile iron pipe will be buried to verify that the soil is not corrosive to iron. Test borings around the pits could also be used for yield analyses of the sites.

**Figure 2.3.4.3** **Sand and Gravel Pit System - Schematic**

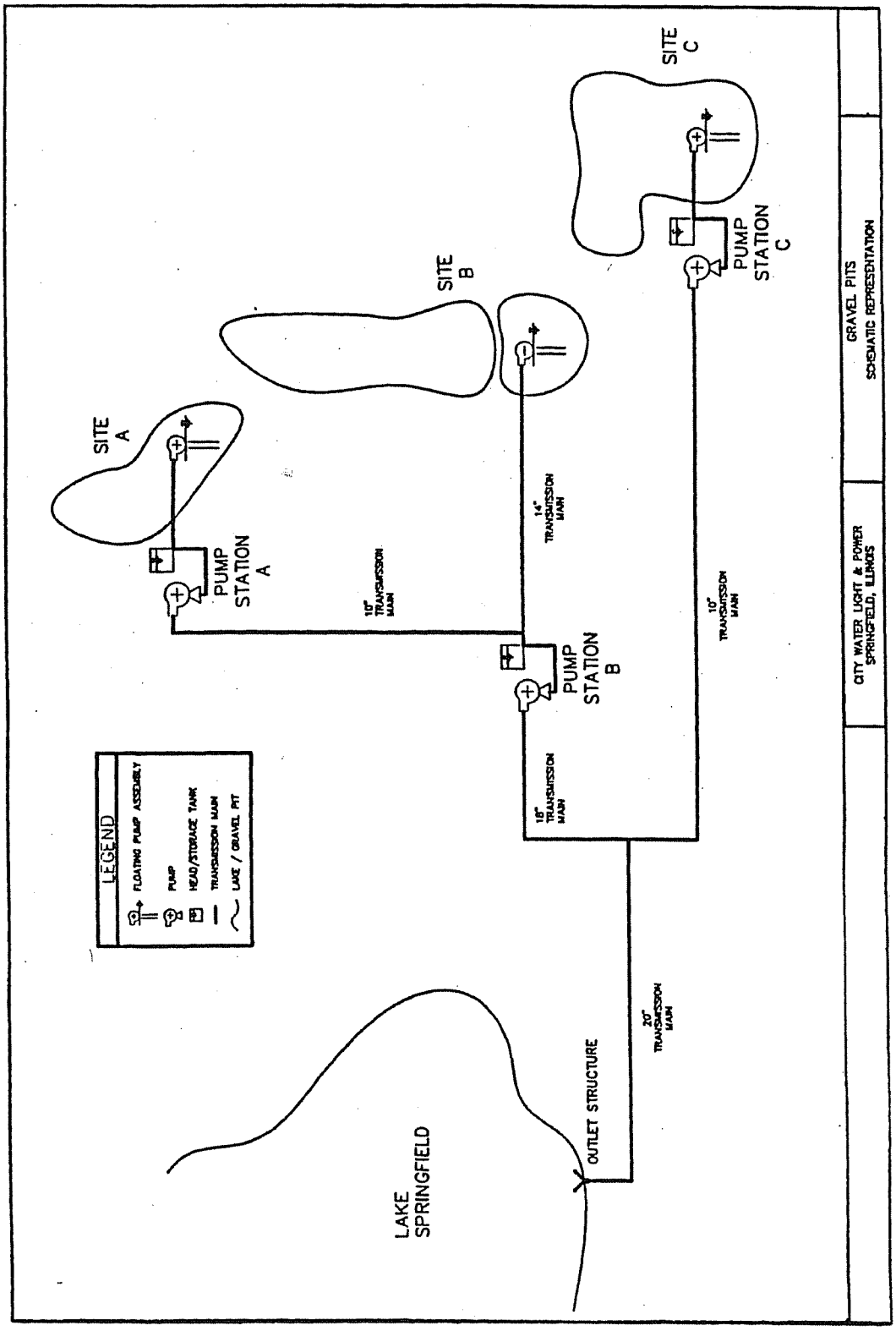
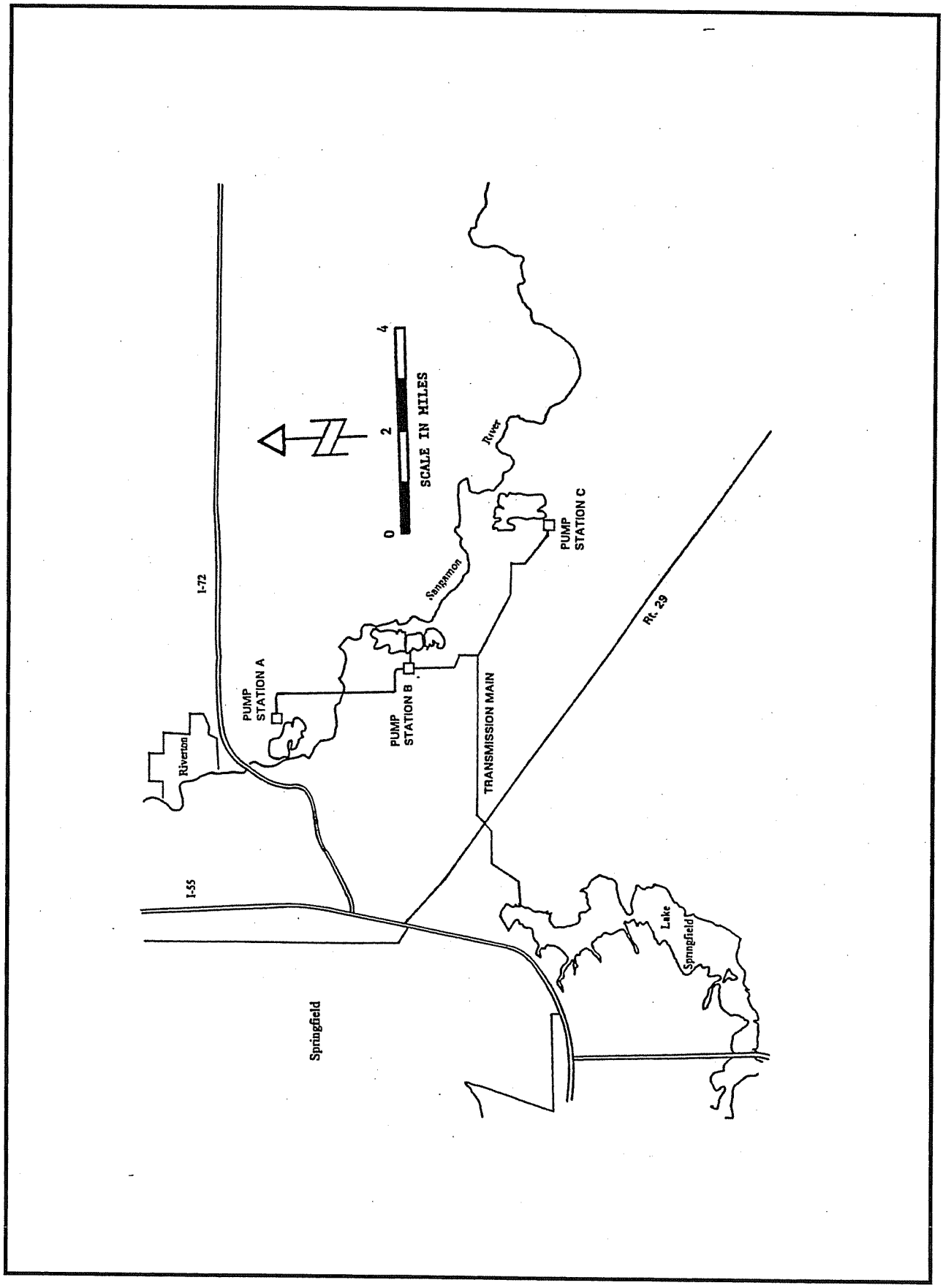


**Figure 2.3.4.4** **Sand and Gravel Pit System**



A complete yield analysis needs to be performed at each of the sites to determine how much water is actually available. While the assumptions presented in this analysis are reasonable estimates for the system, a firm yield based on actual site conditions must be established for a final design of the system. Although full-scale pumping tests would not produce satisfactory results for this system because of the magnitude of the tests required and variables due to drought-time implications, a number of other studies should be completed to confirm the available yield. Infiltration rates need to be modified as the surrounding aquifer is depleted due to continuing mining operations. The actual effect of the river on the infiltration must be determined. The volume of the pits at the time the system is established also needs to be determined as the pits continue expanding. All of these varying conditions would need to be measured at the time of the development of this water supply system to establish accurate design parameters.

#### 2.3.4.7 System Variations

Any of the sites can be developed independently to produce a system with a lesser yield. Costs for each partial system were developed (Table 2.3.4.2). Capital costs were developed based on the items required for each system. The piping for the partial systems was sized the same as for the full system so that at a later time an additional site could be added to the existing system. Operation and maintenance costs were calculated as a percentage of the total costs based on the percentage of the total yield that is supplied by the partial system. The yields for Site A include a 0.33 mgd deduction to supply the City of Riverton.

#### 2.3.4.8 Operation and Maintenance

Operation of the system would be through a wireless communication network linking the pumps to a central control station located at the water treatment plant and integrated with the existing Supervisory Control and Data Acquisition (SCADA) System. Each pump would also have local controls at the pump station or storage house.

Frequent full-scale use of this system would be unacceptable due to the impacts on current operations at each site. Therefore, this system would be used strictly during severe drought conditions.

**Table 2.3.4.2** Gravel Pits Cost of Partial Systems

| Yield (mgd) | Item Includes | Total Construction Cost | Total Capital Cost | Annual Operation Cost | Annual Maintenance Cost | 50-Year Total Present Worth | 50-Year Total Present Worth Per mgd | 50-Year Equivalent Uniform Annual Worth |
|---|---|---|---|---|---|---|---|---|
| 0.87 | Site A | $6,015,000 | $9,085,000 | $165,000 | $50,000 | $10,121,000 | $11,641,000 | $643,000 |
| 1.34 | Site C | $5,211,000 | $8,240,000 | $254,000 | $77,000 | $9,835,000 | $7,325,000 | $624,000 |
| 2.59 | Site B | $5,448,000 | $8,091,000 | $490,000 | $149,000 | $11,175,000 | $4,314,000 | $709,000 |
| 1.88 | Site A & C | $8,224,000 | $13,118,000 | $356,000 | $108,000 | $15,355,000 | $8,159,000 | $975,000 |
| 3.13 | Site A & B | $7,641,000 | $11,809,000 | $592,000 | $180,000 | $15,535,000 | $4,963,000 | $986,000 |
| 3.93 | Site B & C | $7,657,000 | $12,123,500 | $744,000 | $226,000 | $16,802,000 | $4,272,000 | $1,066,000 |

A maintenance crew would consist of two full-time employees and a part-time electrician. General conditions of the pump stations and floating pumps should be inspected at least monthly. Maintenance for the pumps in the system involves exercising the motors and pumps every 2 weeks by running them short periods. Maintenance runs might need to be coordinated with the electric utilities to avoid operation during peak power usage. Typically, each pump station would need to be run for approximately 1 hour so that a full volume of water will circulate through the pipeline.

As pumps and motors fail, they would be repaired or replaced with new pumps and motors. Pump repair costs include two replacements of the pumps and motors during the life of the project. Periodic flushing and cleaning of the transmission lines would be required to remove accumulated sediment deposits and iron corrosion. Tanks would need to be drained and inspected seasonally. Steel tanks typically need to be repainted every 15 years and sand blasted and repainted every 30 years. The access roads would require regular maintenance as they wear from use and seasonal changes.

#### 2.3.4.9 Cost

The total estimated cost for the design and construction of the gravel pit water withdrawal system was determined for the complete system producing 5.13 mgd (Table 2.3.4.3). Costs per mgd were calculated using a net yield of 4.80 mgd. The net yield accounts for 5.13 mgd produced by the system reduced by 0.33 mgd to be supplied to the City of Riverton.

**Table 2.3.4.3 Gravel Pit System Project Costs**

| | |
|---|---|
| Floating Pump Assemblies | $ 471,000 |
| Pump Stations | 699,000 |
| Tanks | 2,103,000 |
| Piping | 5,020,000 |
| Lake Outlet Structure | 25,000 |
| Control Center | 75,000 |
| **Subtotal** | **$8,393,000** |
| Contingencies - 25% | 2,099,000 |
| **Total Estimated Construction Costs** | **$10,492,000** |
| Property Costs | 444,000 |
| Water Acquisition Mitigative Costs | 2,217,000 |
| Design Engineering - 10% | 1,050,000 |
| Construction Engineering - 7% | 735,000 |
| Legal & Administrative - 15% | 1,574,000 |
| **Total Estimated Capital Cost** | **$16,512,000** |

The total estimated capital cost is $16,512,000. Total estimated construction cost is $10,492,000, or approximately 64% of the total capital cost. Total capital cost per mgd is approximately $3,438,000.

Property costs are estimated at $444,000. Legal and additional mitigative work involved with land acquisition are included as part of Legal and Administrative Costs.

Water acquisition costs are based on the assumptions presented earlier in this section. A contingency of 30% for these costs reflects the uncertainty of these measures at this stage of development. The total cost of this item is $2,217,000. These costs do not include the per-gallon raw-water costs which are included as part of the operation costs.

Design and construction engineering costs are estimated based on requirements from past projects. Legal and Administrative costs include the permitting, land acquisition, and studies required for the completion of this project.

Operation costs were based on the minimum required operation during an 18-month drought. Operation costs include the following:

- Electricity costs
- Raw water costs
- Earthwork costs for connecting pits at Site B
- Increased labor costs for additional operators
- 20% of annual maintenance costs (for increased maintenance due to increased usage)
- Additional 10% for miscellaneous expenses

It is assumed that raw water unit costs (1 unit = 100 cubic feet = 748 gallons) are in the range of $0.05 to $0.15 per unit. Costs were calculated assuming a cost of $0.10 per unit. Energy costs per kilowatt-hour account for approximate fees for stand-by power usage. Operation costs are approximately $1,362,000 for an 18-month drought period. Total maintenance costs are based on a percentage of total capital costs. Maintenance costs are approximately $275,000 per year. Total costs of the system including operation and maintenance have been compiled and listed in Table 2.3.4.4.

**Table 2.3.4.4 Total Cost Summary - Gravel Pit System**

| | |
|---|---|
| Total Capital Cost | $16,512,000 |
| Total Capital Cost per mgd | $3,438,000 |
| 18-Month Operation Cost | $1,362,000 |
| Annual Maintenance Cost | $275,000 |
| 50-Year Total Present Worth | $22,209,000 |
| 50-Year Total Present Worth per mgd | $4,625,000 |
| 50-Year Equivalent Uniform Annual | $1,410,000 |

### 2.3.5 Illinois River Well System

The ISWS report titled *Phase I: Study of Potential Ground-Water Resources for Springfield. Task 3: Illinois River West of Jacksonville* (Anliker 1997), as well as past and current groundwater development along the Illinois River, show that an appreciable amount of water is available through the Illinois River aquifer. The water is obtainable from a combination of both stored groundwater and infiltrated surface water from the Illinois River. The ISWS developed a conceptual design for well fields capable of producing 12 mgd. This analysis expands on the well

field design produced by ISWS and examines further considerations and costs associated with developing projects yielding 12 mgd and 15.8 mgd.

#### 2.3.5.1 Water Quality

Current pumping of the Illinois River Valley aquifer shows the groundwater generally to be of good quality. Typical iron concentrations are below 1 ppm and hardness typically ranges between 200 ppm and 400 ppm. Since the water supplied by collector wells would be comprised of both ground and surface water infiltrating from the Illinois River, these concentrations should be lower. Some contaminants from surface water can be filtered out as it percolates through the ground. The current treatment facilities at Lake Springfield should be able to accommodate any variation of the raw water quality caused by the introduction of water from the Illinois River aquifer. Any changes for the cost of water treatment are considered negligible.

#### 2.3.5.2 System Design

Three main components of the water supply system are:

- Collector wells
- Pump stations (including head tanks)
- Piping

Based on the ISWS report (Anliker 1997) and consultation from Hydro Group, Inc., the producers of the Ranney collector well, one radial collector well capable of producing 12 mgd or two radial collector wells capable of producing 7.9 mgd each can be developed along the Illinois River. Typical Ranney collection wells are shown on Figures 2.3.5.1 and 2.3.5.2.

The potential water supply systems consist of Ranney collector wells, pump stations, head tanks, and over 54 miles of piping to transfer 12 mgd and over 56 miles of piping to transfer 15.8 mgd of water from the Illinois River Valley aquifer to Lake Springfield. Both systems are shown schematically in Figures 2.3.5.3 and 2.3.5.4. The water infiltrates from the aquifer into the caisson of the collector wells. From there, it is pumped into the head tank at the first pump station located near the well. Water is then transferred through the piping with the help of additional pump stations along the transmission main. The water main discharges into Lick Creek where it continues to Lake Springfield. These general systems were developed because they proved to be the most economical and technically feasible method of obtaining the design yields from the Illinois River Valley aquifer. The 15.8 mgd system is shown in Figure 2.3.5.5.

#### 2.3.5.3 Water Collection and Transmission

For the 12 mgd system, water is extracted from the aquifer using one radial collector well. The well would be sized to produce 12 mgd. The proposed well location is west of Winchester, along the Illinois River.

For the 15.8 mgd system, water is extracted from the aquifer using two radial collector wells. Each well would be sized to produce 5,500 gpm (7.9 mgd). Both wells are located on the land side of the levees along the Illinois River. Well 1 is approximately 2.2 miles south of Winchester, Illinois, and Well 2 is approximately 3.6 miles south of Winchester. Typical characteristics of existing wells in the area were applied at the proposed well locations and elevations to derive appropriate pump and motor design characteristics.

**Figure 2.3.5.1** **Ranney Collector Well**

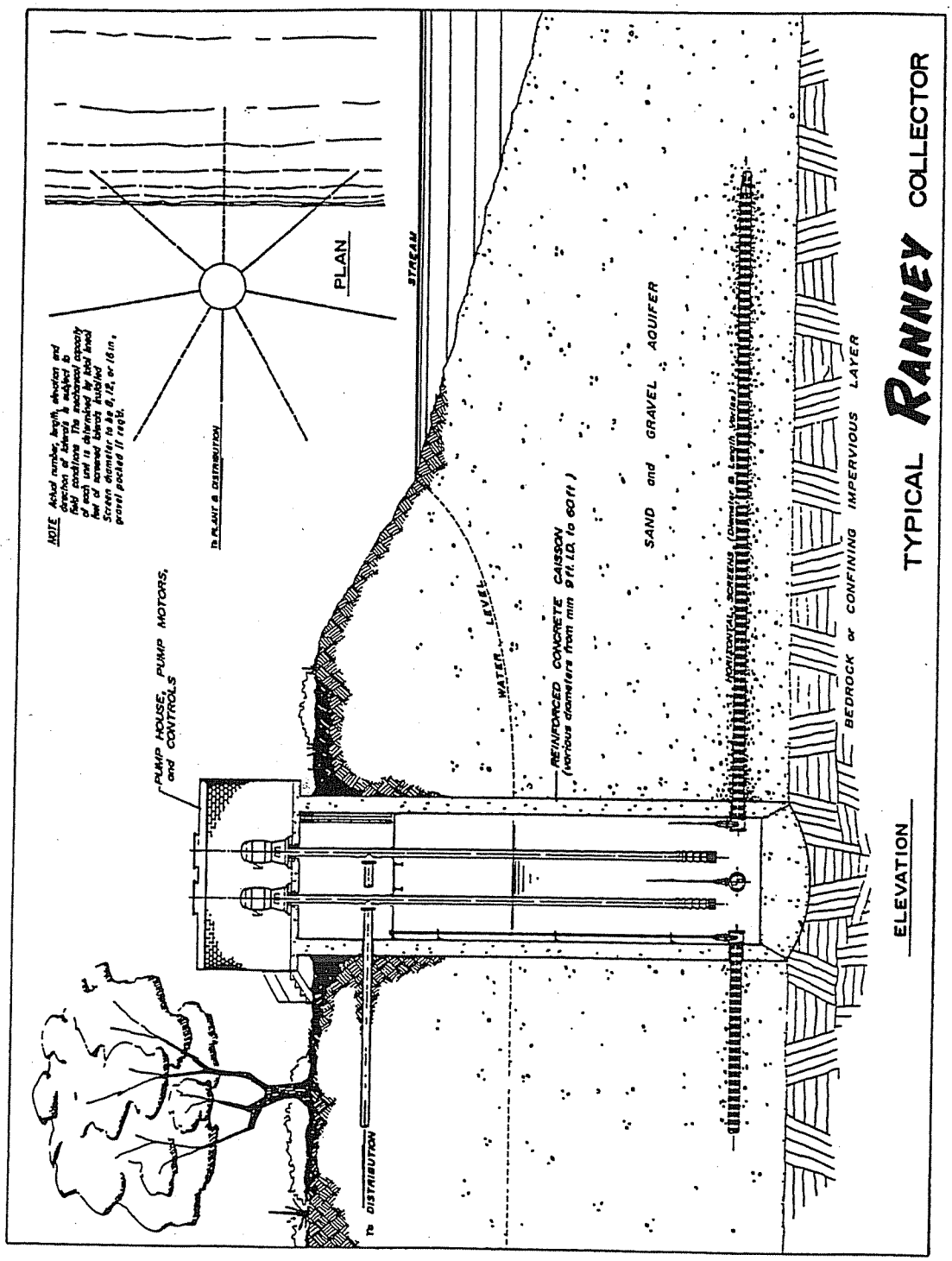


**Figure 2.3.5.2** **Ranney Collector Well**

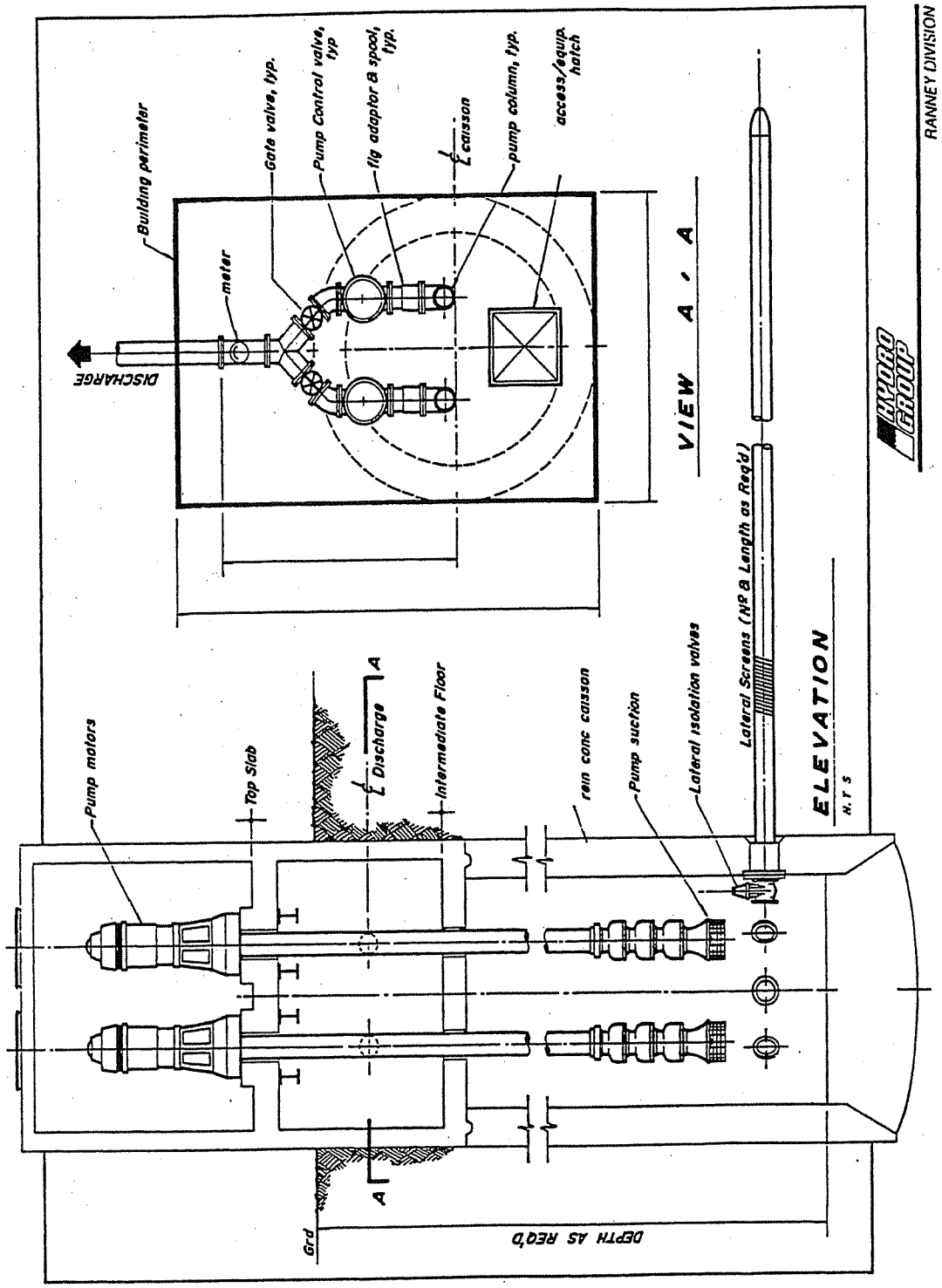


**Figure 2.3.5.3** **Illinois River Well System - 12 MGD - Schematic**

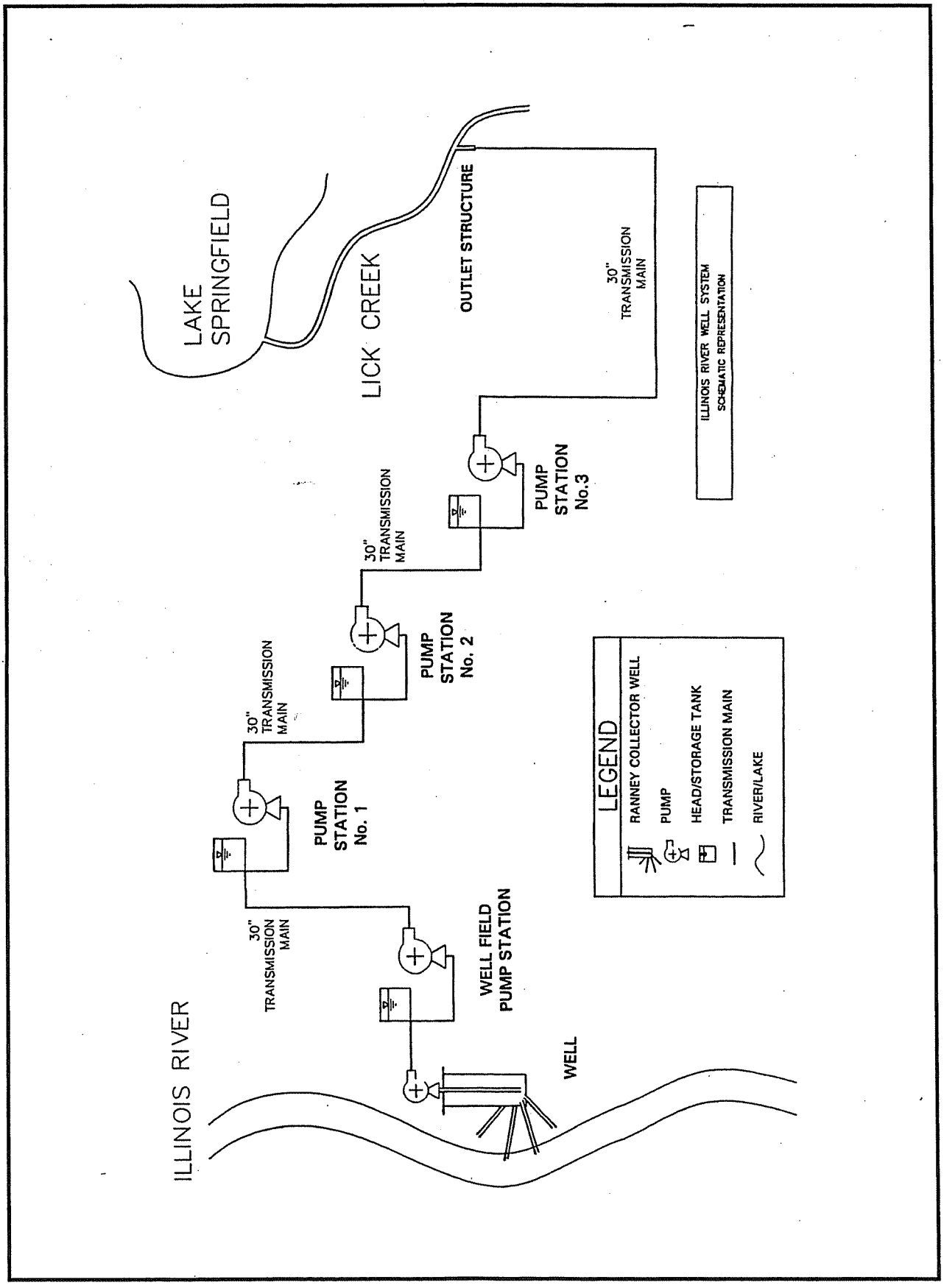


**Figure 2.3.5.4** **Illinois River Well System - 15.8 MGD - Schematic**

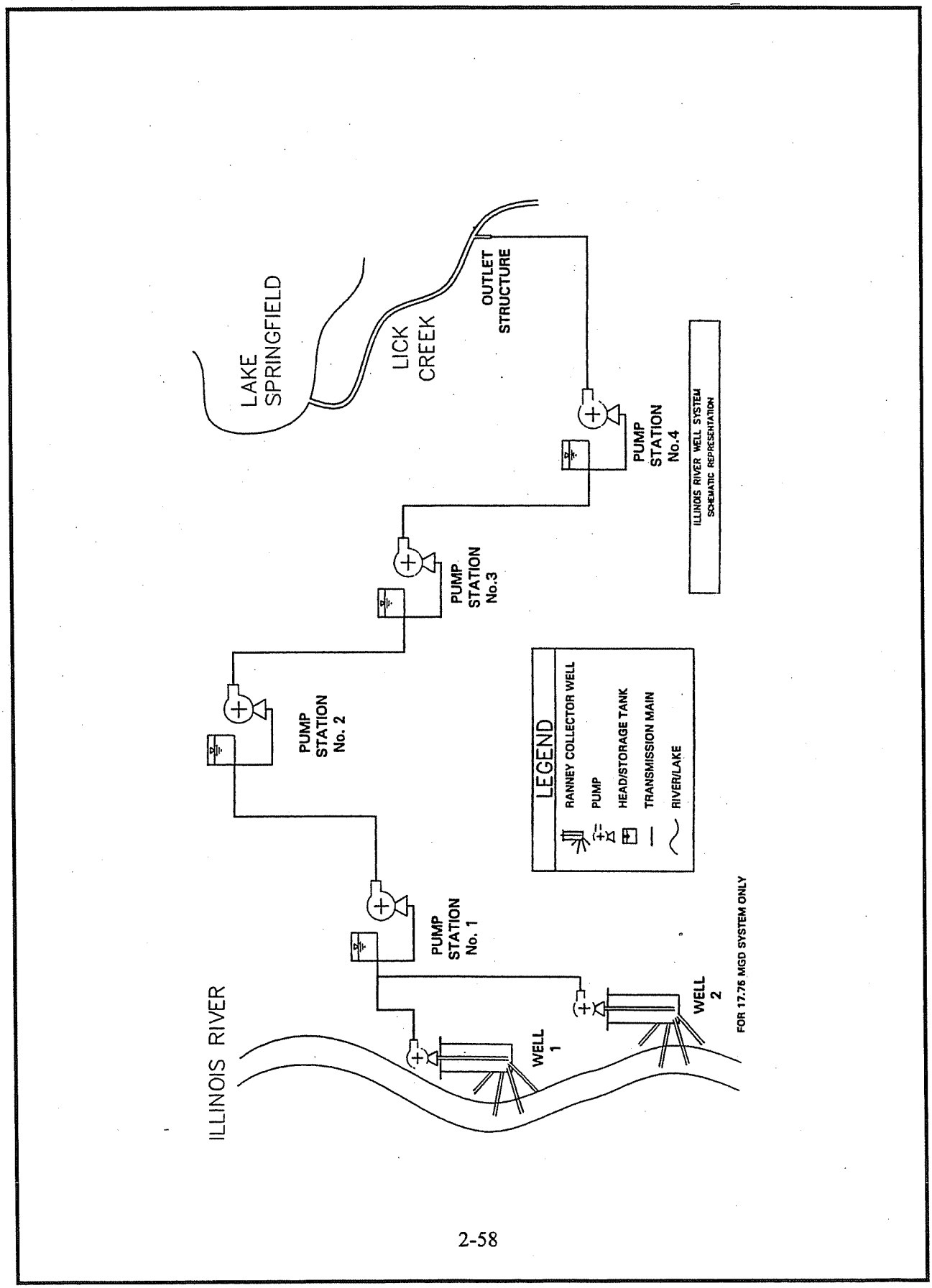
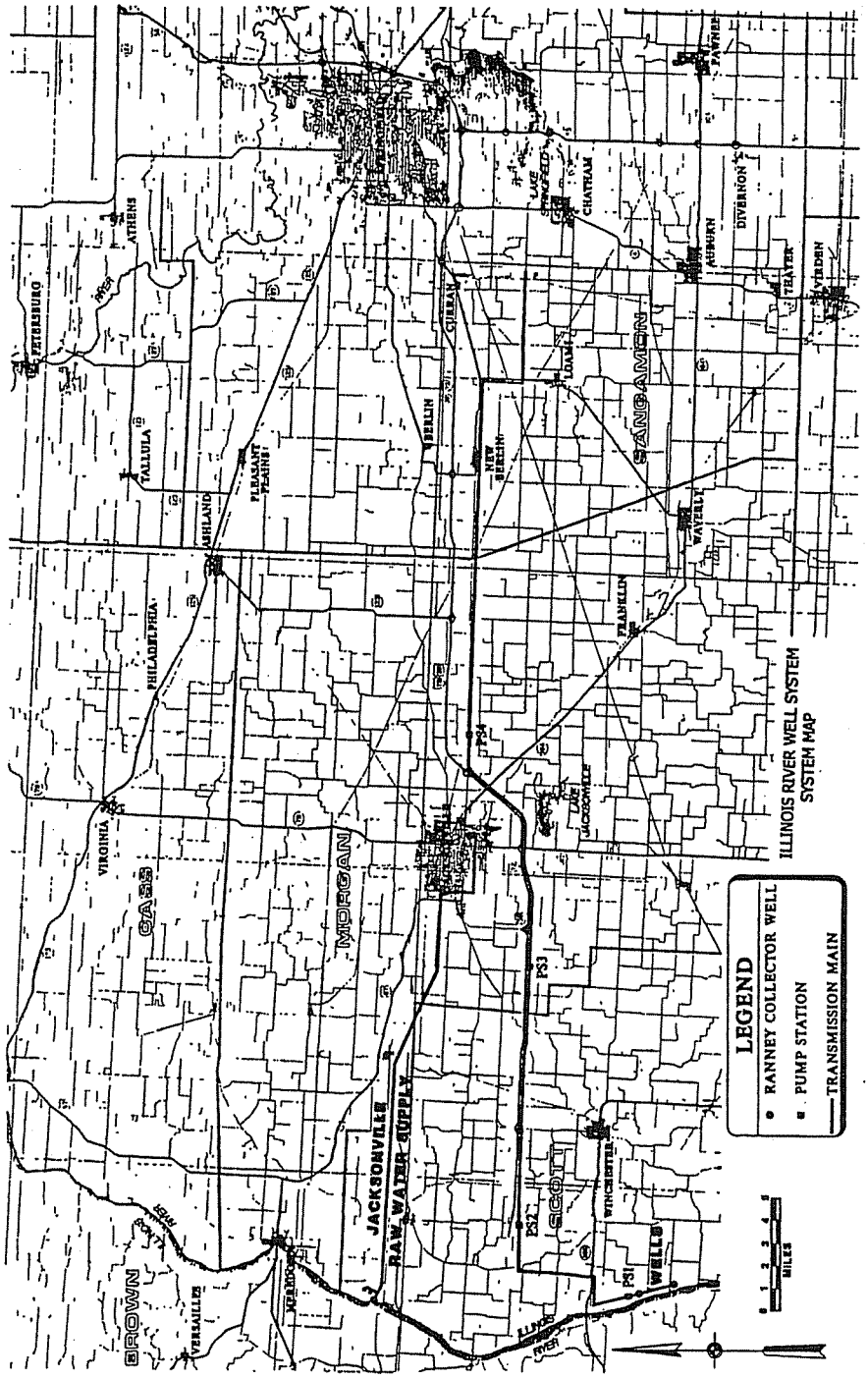


**Figure 2.3.5.5** **Illinois River Well System - 15.8 MGD**



Horizontal screens can extend up to 360 feet into the aquifer and under the riverbed, allowing water from the surrounding aquifer to infiltrate into the central caisson. The horizontal well screens are installed near the bottom of the water table so that water could be pumped down to a lower level in the aquifer than would normally be possible with a vertical well. This increases the rate of recharge into the aquifer and utilizes a greater storage depth of the aquifer. Hundreds of feet of horizontal screen extending radially also allow a larger area of the aquifer to be exploited than possible when using a vertical well. Hydro Group, Inc. provided technical and cost information for the collector wells. Some assumptions were made to facilitate the placement and design of the well(s) for this analysis. The following assumptions would need to be verified and possibly modified if this alternative is pursued further:

- Full required well yield is obtainable at proposed site(s)
- Land is available for acquisition
- Appropriate power supply is accessible within ½ mile
- No nearby sources of groundwater contamination exist
- No prohibitive environmental factors exist (e.g., endangered species, archeological sites, etc.)

The well site location(s) used for this report was established in the ISWS report (Anliker 1997) according to the following requirements:

- Close to the river
- Parallel to the river
- Accessible via existing roads
- Avoid interference with established significant groundwater pumping centers
- Protected from river flood waters by existing levees

The transmission system consists of the pump stations and the required piping from the pump stations to Lake Springfield.

The following assumptions were made to facilitate locating the pump stations:

- Land is available for acquisition
- Existing road is accessible within 100 feet
- Adequate power supply is accessible within ½ mile
- No prohibitive environmental factors exist (e.g., endangered species, archeological sites, etc.)

There are at least two pumps and motors at each pump station. The pumps are sized to collectively transmit full flow against the calculated design head. Two pumps are used so that if one pump fails, partial flow can continue without the need for stand-by pumps.

One tank is included at each pump station to provide a relatively constant head for the well and pump stations to operate more efficiently. The tanks also serve as reservoirs, adding a total of 4 million gallons of storage capacity to the system and giving the pump stations a buffer to continue operating before going dry if there is a failure upstream in the system. Each tank is a standard ground storage tank of 1 million gallon capacity.

The transmission main consists of ductile-iron pipe including river-crossing pipes where required. Pipes were sized to keep water velocity at full flow below 5 feet per second and water pressure in

the pipes below 100 psi during normal operating conditions. The piping is routed adjacent to existing roadways and property lines whenever possible to facilitate right-of-way acquisition. The transmission main requires over 54 miles of piping for the 12 mgd system, 56 miles for the 15.8 mgd version. The piping also includes combination air release and vacuum valves at every high point and drain valves at every low point. Gate valves open to the atmosphere are included for stemming off of 'Y' sections within a valve box so that sediment and deposits can be periodically flushed or pigged from the system.

The outlet structure at Lick Creek consists of a pipe, erosion control, and flap gate, and would be located approximately 1 mile west of Chatham. The outlet would be placed so as not to interfere with existing structures. The outlet would be designed to reduce excessive erosion to protect existing banks and the creek bed.

#### 2.3.5.4 Operation and Maintenance

Operation of the system would be through a wireless communication network linking the well(s) and pump stations to a central control station located at the existing water treatment plant and integrated with the existing SCADA System. The well(s) and each pump station would also have local controls.

A maintenance crew would consist of two full-time employees, at least one being a certified well operator, and a part-time electrician. General conditions of the pump stations and wells should be inspected at least monthly. Recommended maintenance for the system involves exercising the motors and pumps every 2 weeks. Typically, pumps and motors are exercised at least once a month by running them for short periods. Maintenance runs might need to be coordinated with the electric utilities to avoid operation during peak power usage. Pump stations would be run in sequence from the well to Lake Springfield to fully circulate the water through the piping network.

Maintenance of the well(s) would include periodic acid and chlorine treatment of the screens to combat clogging from calcium carbonate and iron bacteria. Periodic flushing or pigging of the transmission lines would be required to remove accumulated sediment deposits and iron corrosion. Tanks would need to be drained during cold weather and inspected yearly. Steel tanks typically need to be painted every 15 years and sand blasted and painted every 30 years. The access roads would require regular maintenance as they wear from use, seasonal changes and flooding.

#### 2.3.5.5 Cost

The total estimated capital cost for design and construction of the Illinois River Well System was determined for each complete system (Table 2.3.5.1).

For the 12 mgd system, total estimated capital cost is $98,634,000, or about $8,220,000 per mgd. Total estimated construction cost is $76,362,000, or 77% of the total capital cost.

For the 15.8 mgd version, total estimated capital cost is $172,523,000, or about $10,920,000 per mgd. Total estimated construction cost is $134,501,000, or 78% of the total capital cost.

Property costs for land acquisition are estimated at $1,652,000 (12 mgd) and $1,704,000 (15.8 mgd). Legal and mitigative work involved with land acquisition are included as part of Legal and Administrative Costs.

**Table 2.3.5.1 Illinois River Well System Project Costs**

**12 MGD**

| | |
|---|---|
| Well | $1,802,000 |
| Pump Stations | 1,237,000 |
| Tanks | 2,804,000 |
| Piping | 57,667,000 |
| Lake Outlet Structure | 25,000 |
| Control Center | 100,000 |
| **Subtotal** | **$63,635,000** |
| Contingencies - 20% | 12,727,000 |
| **Total Estimated Construction Cost** | **$76,362,000** |
| Land Acquisition (Property Costs) | 1,652,000 |
| Design Engineering - 10% | 7,637,000 |
| Construction Engineering - 7% | 5,346,000 |
| Legal/Administrative - 10% | 7,637,000 |
| **Total Estimated Capital Cost** | **$98,634,000** |

**Illinois River Well System Project Costs**
**15.8 MGD**

| | |
|---|---|
| Wells | $3,294,000 |
| Pump Stations | 1,239,000 |
| Tanks | 2,804,000 |
| Piping | 104,622,000 |
| Lake Outlet Structure | 25,000 |
| Control Center | 100,000 |
| **Subtotal** | **$112,084,000** |
| Contingencies - 20% | 22,417,000 |
| **Total Estimated Construction Cost** | **$134,501,000** |
| Land Acquisition (Property Costs) | 1,704,000 |
| Design Engineering - 10% | 13,451,000 |
| Construction Engineering - 7% | 9,416,000 |
| Legal/Administrative - 10% | 13,451,000 |
| **Total Estimated Capital Cost** | **$172,523,000** |

Design and construction engineering costs are estimated based on requirements from past projects. Legal and Administrative costs include the extensive permitting, land acquisition, and studies required for the completion of such a project.

Operation costs were based on the minimum required operation during an 18-month drought. Costs include electricity costs, increased labor costs for additional certified well operators, 20% of annual maintenance costs (to cover increase maintenance due to increased usage), and an additional 10% for miscellaneous expenses. Operation costs for an 18-month drought period are approximately $2,907,000 for the 12 mgd system, $3,480,000 for the 15.8 mgd system.

Total maintenance costs are based on a percentage of total capital costs accounting for the items mentioned above. Maintenance costs are approximately $988,000 per year (12 mgd) and $1,382,000 (15.8 mgd).

Total costs of the systems including operation and maintenance have been compiled and listed in Table 2.3.5.2.

**Table 2.3.5.2 Total Cost Summary - Illinois River Well System**

| **12 MGD** | |
|---|---|
| Total Capital Cost | $98,634,000 |
| Total Capital Cost per mgd | $8,220,000 |
| 18-Month Operation Cost | $2,907,000 |
| Annual Maintenance Cost | $988,000 |
| 50-Year Total Present Worth | $117,114,000 |
| 50-Year Total Present Worth per mgd | $9,760,000 |
| 50-Year Equivalent Uniform Annual Worth | $7,431,000 |
| **Illinois River Well System 15.8 MGD** | |
| Total Capital Cost | $172,523,000 |
| Total Capital Cost per mgd | $10,920,000 |
| 18-Month Operation Cost | $3,480,000 |
| Annual Maintenance Cost | $1,382,000 |
| 50-Year Total Present Worth | $197,786,000 |
| 50-Year Total Present Worth per mgd | $11,143,000 |
| 50-Year Equivalent Uniform Annual Worth | $12,549,000 |

### 2.3.6 Havana Lowlands Well Field

An extensive aquifer system exists in the vicinity of Mason County, Illinois. This region is commonly referred to as the Havana Lowlands and lies generally 35 miles from the center of Springfield (Figure 2.3.6.1).

Springfield commissioned the ISWS to conduct a study of the potential of the aquifer system associated with the Havana Lowlands to supply Springfield's needs. The ISWS report titled, *Phase I: Study of Potential Ground-Water Resources for Springfield. Task 4: Havana Lowlands* (Anliker 1997), as well as past and current groundwater development in the Havana Lowlands, show that a substantial amount of water is available from the local aquifer. The area examined

encompasses the southern half of Mason County. The ISWS developed a conceptual design for well fields capable of producing 12 mgd of water. This analysis expands well field design produced by the ISWS and examines further considerations and costs associated with projects to develop and transfer both 12 mgd and 16 mgd of water under severe drought conditions.

#### 2.3.6.1 Existing Development

There is currently extensive groundwater development within the Havana Lowlands. In 1989, groundwater withdrawals during the agricultural growing season were estimated to approach 425 mgd. Typical groundwater usage for Mason County is approximately 90 mgd (Anliker 1997). There are over 1,480 wells in the southern half of Mason County. The locations of the larger public, industrial, commercial and irrigation wells are shown in Figure 2.3.6.2. The majority of these wells are located in the western portion of the Havana Lowlands, west of the Village of Easton. The wells vary greatly in size and capacity. Depths range from 24 feet to over 260 feet and diameters range from 5 inches to 18 inches. Pumping tests on individual wells were performed at 10 gpm to over 1,500 gpm.

#### 2.3.6.2 Local Water Authority

All groundwater development in the Havana Lowlands falls under the jurisdiction of the Imperial Valley Water Authority (IVWA). The IVWA regulates the use of water from the aquifer and has established a Groundwater Use Management Strategy that is to be followed by well owners in the Havana Lowlands. Implementation of any supply augmentation for Springfield would need to comply with the rules and regulations of IVWA.

Representatives of Springfield appeared before the IVWA Board in December 1997 to brief them on the status of the City's supply augmentation process and request input regarding this alternative. The IVWA informally requested Springfield to "consider avoiding pumping during the growing season" if this alternative were to be pursued. The City would examine impacts on specific adjacent wells as part of siting criteria if this alternative is developed. For purposes of this analysis, the City assumes constant availability of the system. System components would need to be redesigned to deliver a much higher volume of water if off-season pumping periods are utilized to meet Springfield's needs during the design drought.

#### 2.3.6.3 Water Quality

Current pumping of the Havana Lowlands aquifer shows the groundwater to generally be of good quality. Typical hardness and iron concentrations are below 300 ppm and 1 ppm, respectively (Anliker 1997). Groundwater quality could vary significantly within the aquifer, and water quality analysis would be necessary at the proposed well sites. The current treatment facilities at Lake Springfield should be able to accommodate variation of the raw water quality caused by the introduction of water from the Havana Lowlands.

**Figure 2.3.6.1** **Havana Lowlands Area**

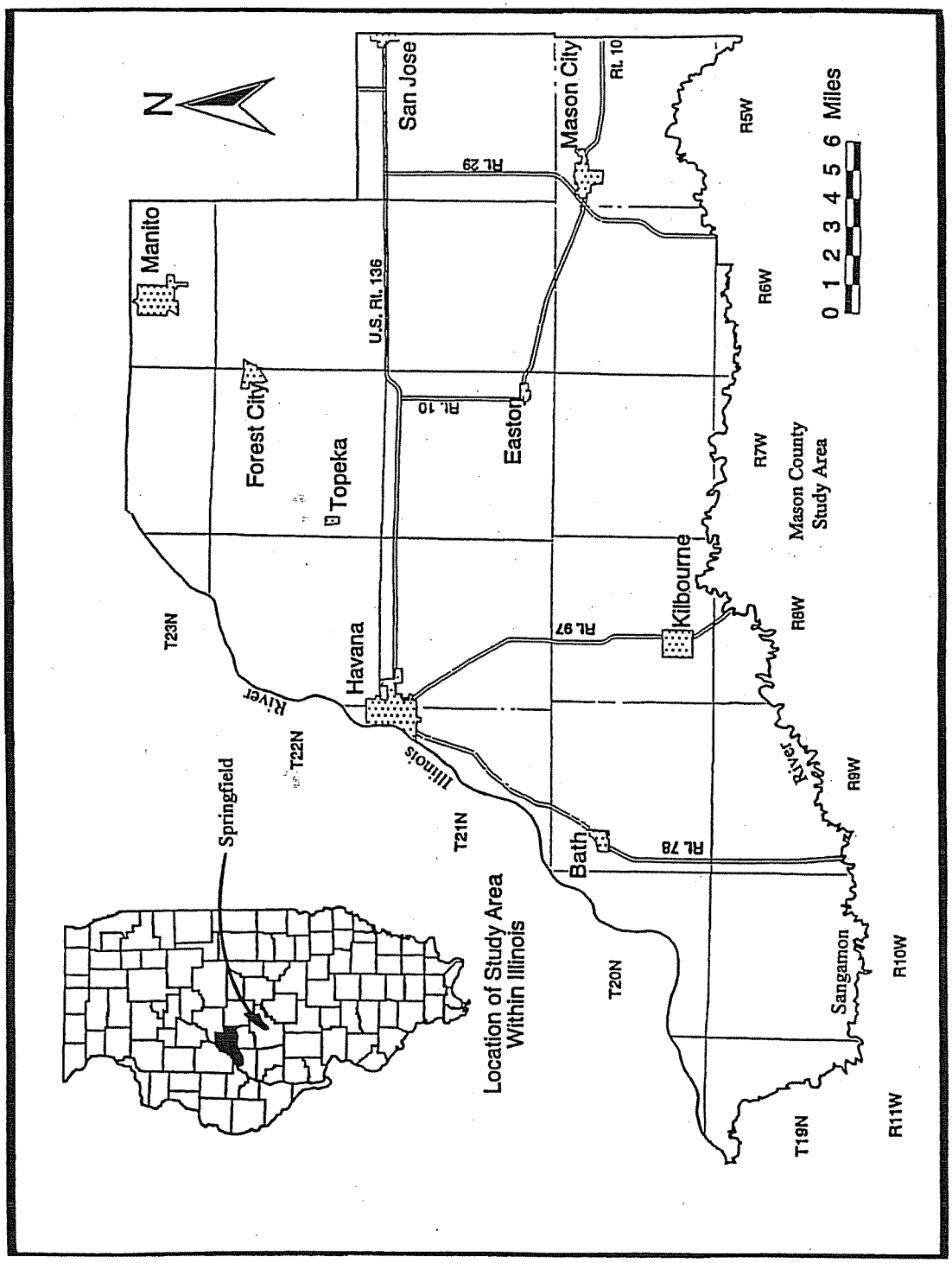
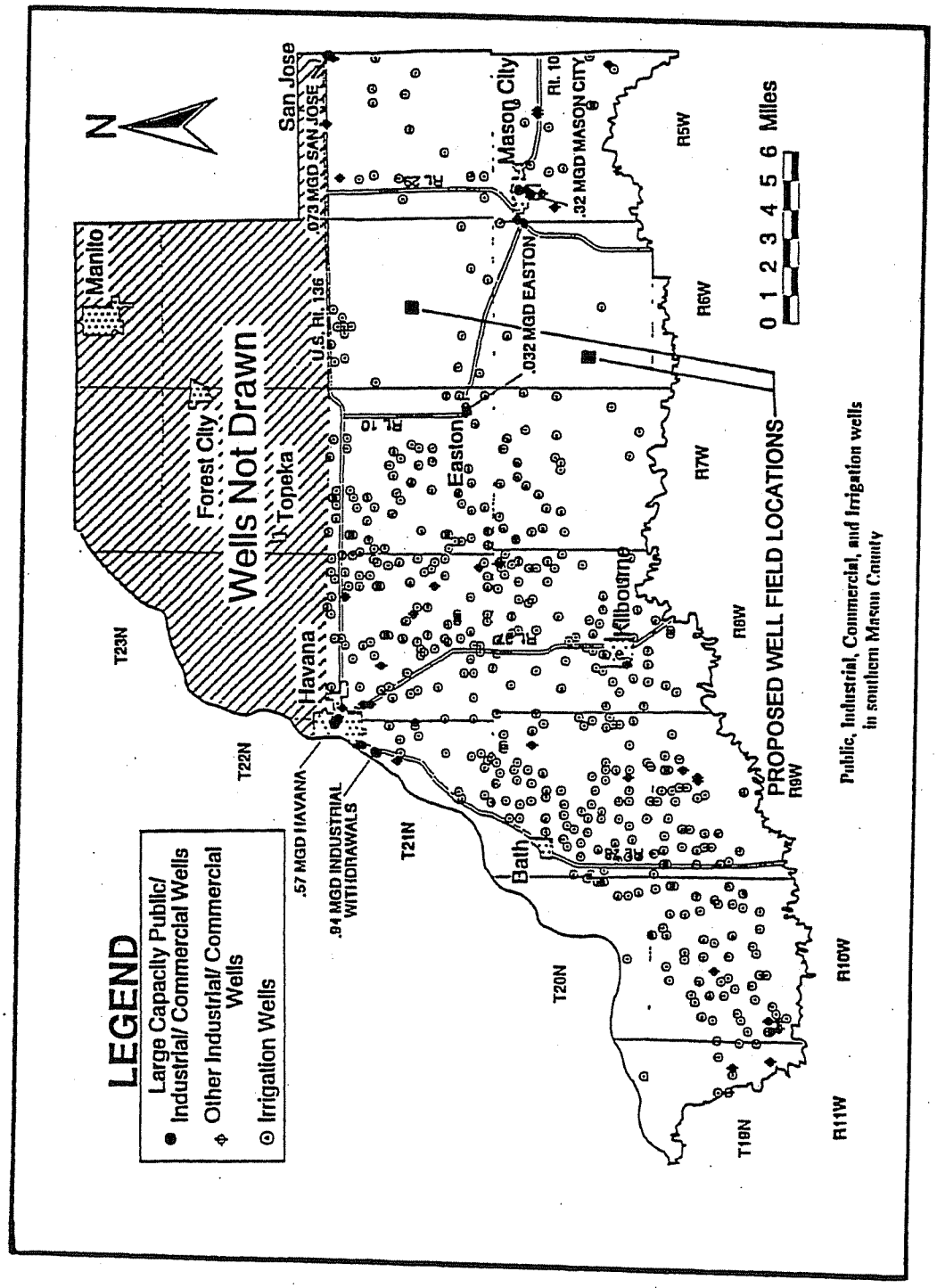


**Figure 2.3.6.2** **Location of Havana Lowland Wells**



### 2.3.6.4 System Design

There are three main components of the water supply system:

- Wells
- Pump Stations (Including Head Tanks)
- Piping

The potential water supply systems consist of vertical wells, pump stations, head tanks, and over 40 miles of piping to transfer 12 mgd and over 51 miles of piping to transfer 16 mgd of water from the Havana Lowlands to Lake Springfield. Both systems are shown schematically in Figures 2.3.6.3 and 2.3.6.4. The water is pumped from the aquifer through a series wells to a transmission main. Water is then transferred through the piping with the help of additional pump stations along the transmission main. The water main discharges into the northern end of Lake Springfield. These general systems were developed because they proved to be the most economical and technically feasible method of obtaining both 12 mgd and 16 mgd of groundwater from the Havana Lowlands. The 16 mgd system is shown in Figure 2.3.6.5.

### 2.3.6.5 Water Collection and Transmission

The well site locations within the Havana Lowlands used for this analysis were established due to the relatively low number of existing wells in the area. Some assumptions were made to facilitate the placement and design of the well field. The following assumptions would need to be verified and possibly modified if this alternative is pursued further:

- Required well yield is obtainable at proposed site
- Land is available for acquisition
- Appropriate power supply is accessible within ½ mile
- No nearby sources of groundwater contamination exist
- No prohibitive environmental factors exist (e.g., endangered species, archeological sites, etc.)

Typical characteristics of the aquifer and existing wells near the proposed well field were used to derive appropriate pump and motor design characteristics for the wells. Minimum spacing between the wells required to avoid drawdown and yield interferences was established at 500 feet (Anliker 1997).

For the 12 mgd system, water is extracted from the aquifer through a well field consisting of six standard vertical gravel-packed wells. Each well would be sized to produce 2 mgd (1,390 gpm). The proposed well field location is approximately 7 miles west of Mason City and 4 miles south of Easton. The aquifer in this area is up to 300 feet deep, with a typical saturated thickness of approximately 130 feet (Anliker 1997).

The transmission system consists of two pump stations and the required piping from the well field to Lake Springfield. There is one pump station at the well site and an additional one along the transmission main. The intermediate pump station was included to keep pipe friction losses below 100 psi. The transmission main consists of over 40 miles of 30-inch ductile-iron pipe including river-crossing pipes where required. Pipes were sized to keep water velocity below 5 feet per second during normal operating conditions transmitting 12 mgd.

**Figure 2.3.6.3** **Havana Lowlands Well System - 12 MGD - Schematic**

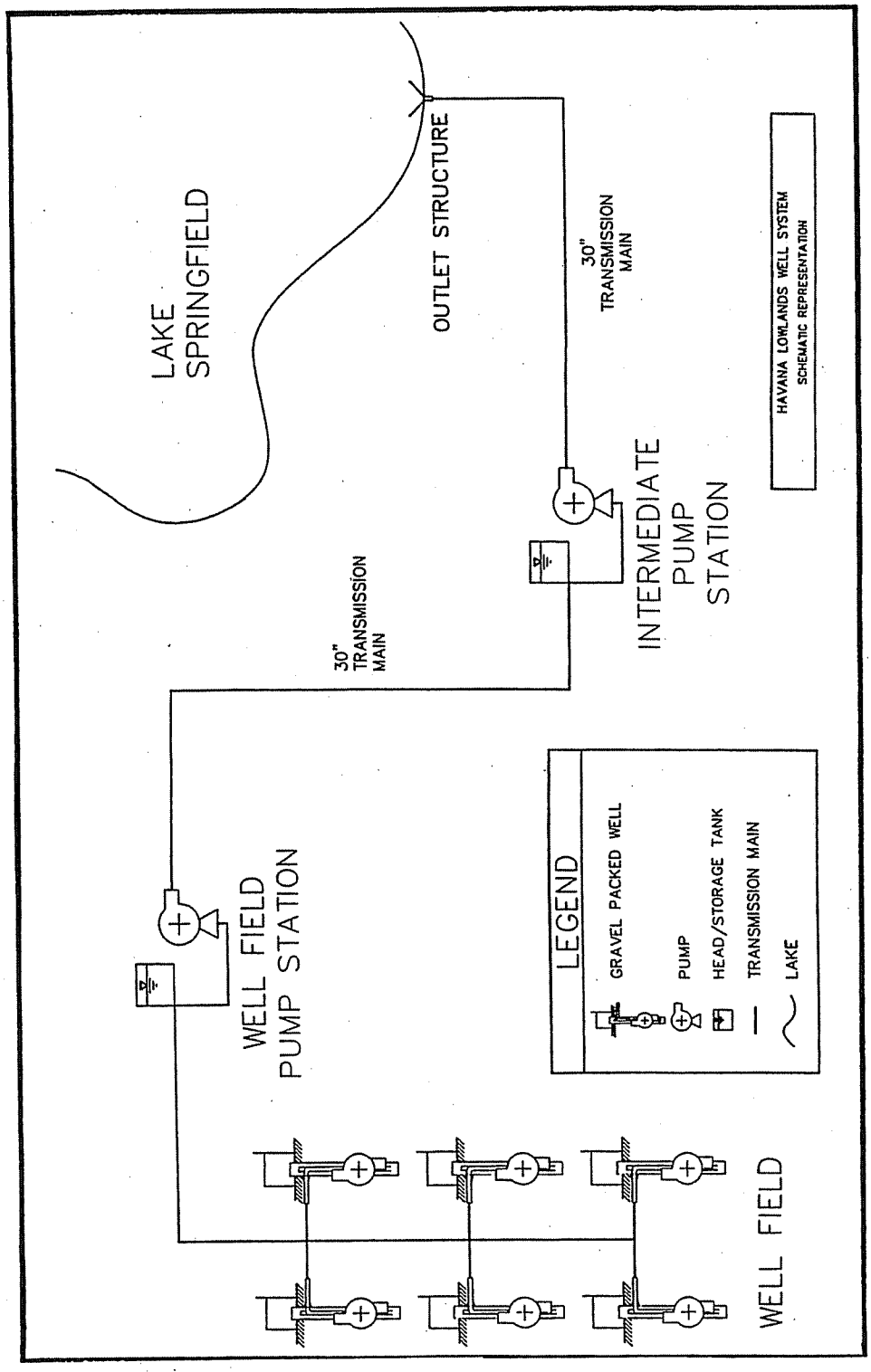


**Figure 2.3.6.4** **Havana Lowlands Well System - 16.0 MGD - Schematic**

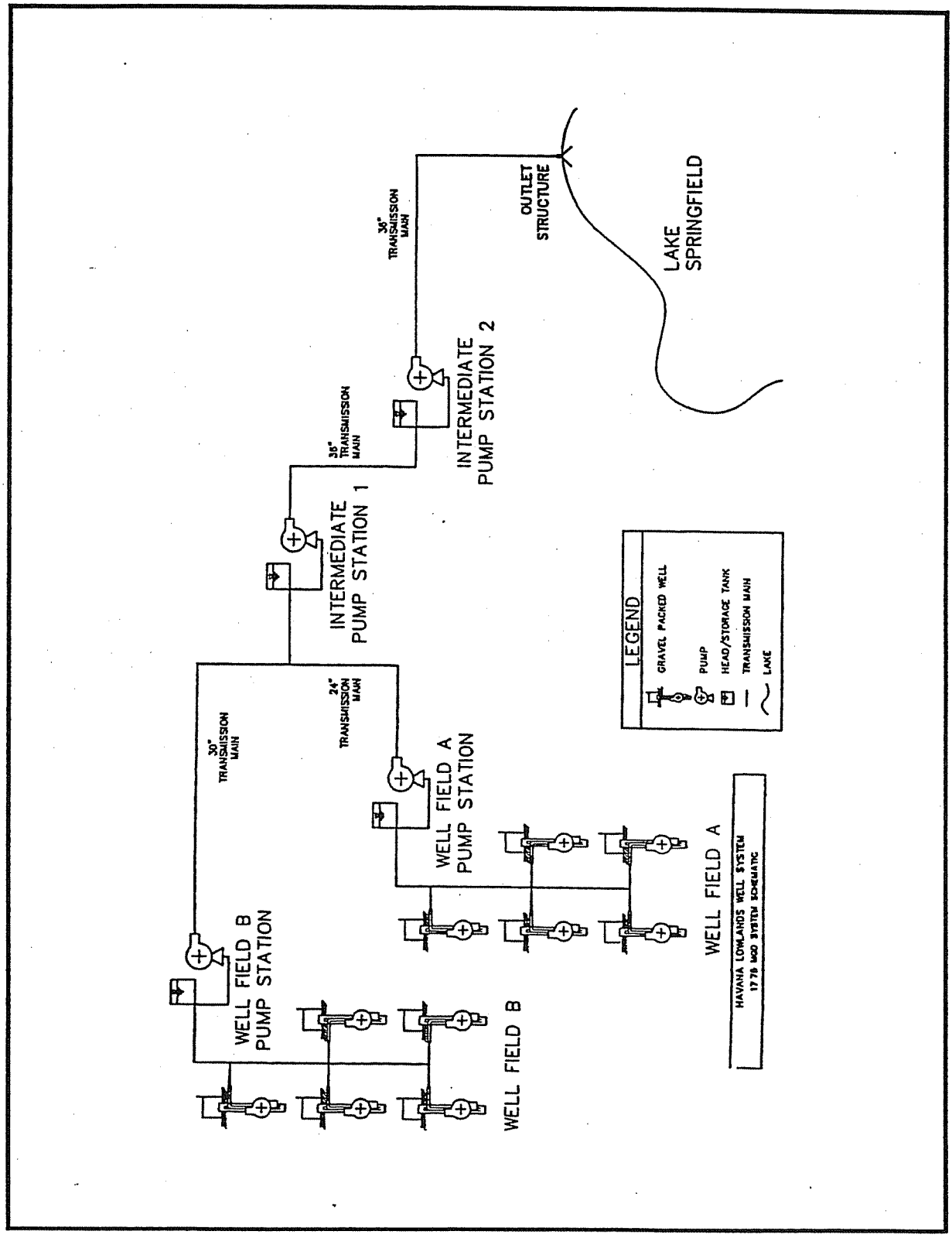
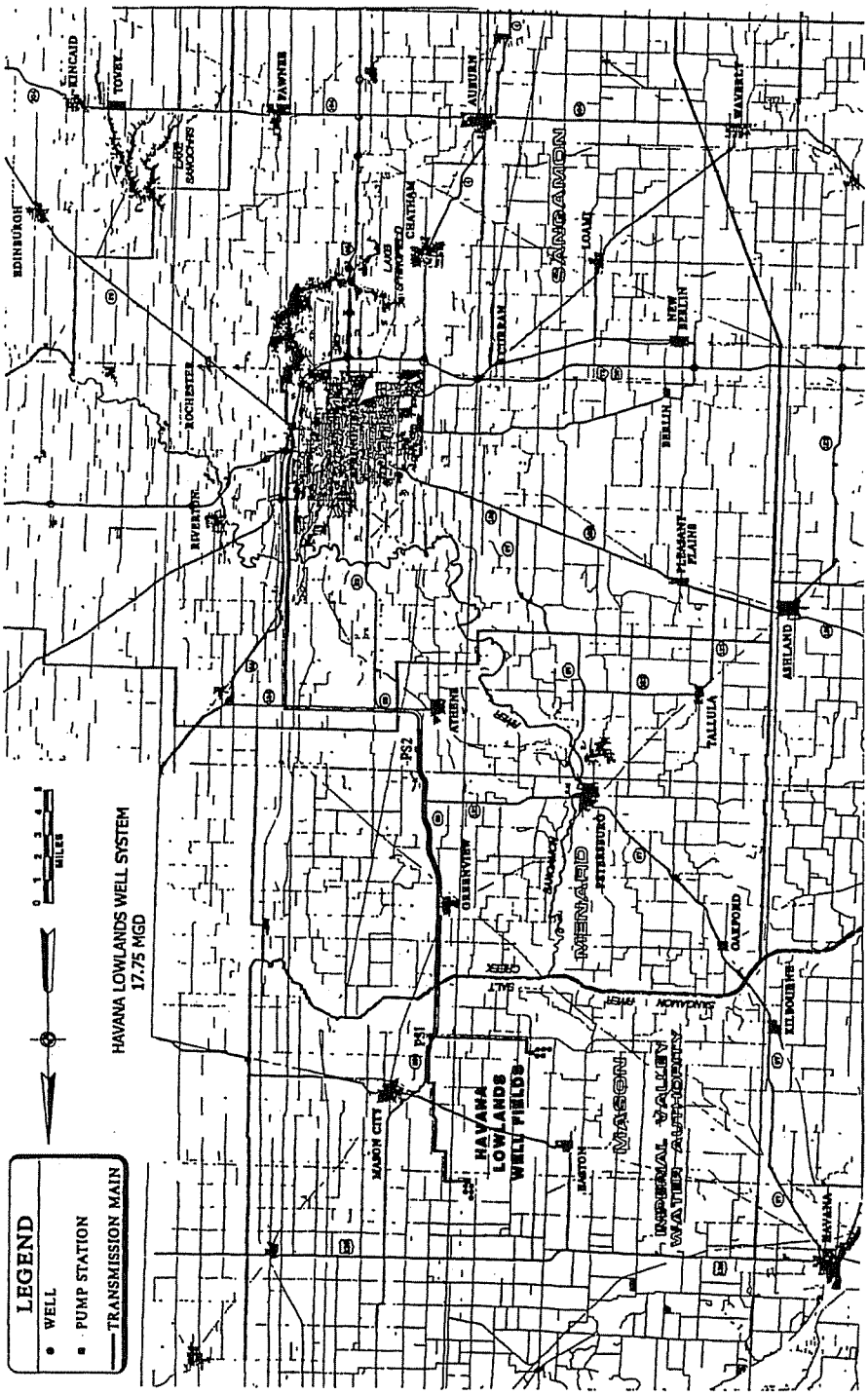


**Figure 2.3.6.5** **Havana Lowlands Well System - 16.0 MGD**



For the 16 mgd system, water is extracted from the aquifer through two well fields. Proposed Well Field A is located approximately 3.5 miles west of and 4.4 miles north of Mason City. Proposed Well Field B is located approximately 6.3 miles west of Mason City and 4.0 miles south of Easton. A conservative spacing of 7 miles between well fields was used to avoid excessive drawdown interferences between them. One well field would consist of five wells, and another well field would consist of four wells, each well producing 1.8 mgd. The wells would gather water and pump it to a head tank at a pump station at each well field. The pump stations would then transmit the water to a common point approximately 7 miles away. The water would continue through an additional 37 miles of 36-inch piping with three intermittent pump stations and head tanks, and discharge into Lake Springfield. Pipes were sized to keep water velocity below 5 feet per second, and line pressures below 100 psi during normal operating conditions transmitting full design flow.

The following assumptions were made to facilitate locating the pump stations:

- Land is available for acquisition
- Existing road is accessible within 100 feet
- Adequate power supply is accessible within ½ mile
- No prohibitive environmental factors exist (e.g., endangered species, archeological sites, etc.)

There are two pumps and motors at each pump station. The pumps are sized to collectively transmit full flow against the calculated design head. Two pumps are used so that if one pump fails, partial flow can continue without the need for stand-by pumps.

One storage tank is included at each pump station to provide a relatively constant head for the wells and pump stations to operate more efficiently. The tanks also serve as reservoirs, adding storage capacity to the system and giving the pump stations a buffer to continue operating before going dry if there is failure upstream in the system. Each tank is a standard ground storage tank of 1 million gallons capacity.

The piping is routed adjacent to existing roadways and property lines whenever possible to facilitate right-of-way acquisition. The transmission main includes combination air release and vacuum valves at every high point and drain valves at every low point. Gate valves open to the atmosphere are included stemming off of 'Y' sections within a valve box so that sediment and deposits can be periodically flushed or pigged from the system.

The outlet structure at Lake Springfield consists of a 30-inch or 36-inch pipe, erosion control, and flap gate, located at the north end of Lake Springfield. The outlet would be placed so as not to interfere with existing structures and water activities. The outlet would be designed to reduce excessive erosion to protect existing banks and sediment.

#### 2.3.6.6 Operation and Maintenance

Operation of either system would be through a wireless communication network linking the wells and pump stations to a central control station located at the existing water treatment plant and integrated with the existing SCADA System. Each well and pump station would also have local controls.

A maintenance crew would consist of two full-time employees, at least one being a certified well operator, and a part-time electrician. General conditions of the pump stations and wells should be inspected at least monthly. Recommended maintenance for the pumps in the system involves

exercising the motors and pumps every 2 weeks. Typically, pumps and motors are exercised at least once a month by running them for short periods. Maintenance runs might need to be coordinated with the electric utilities to avoid operation during peak power usage. Pump stations should be run to fully circulate the water through the transmission main.

Maintenance of the wells would include periodic acid and chlorine treatment of the screens to combat clogging from calcium carbonate and iron bacteria. Periodic flushing and cleaning of the transmission lines would be required to remove accumulated sediment and deposits and iron corrosion. Tanks would need to be drained and inspected seasonally. Steel tanks typically need to be painted every 15 years and sand blasted and painted every 30 years. The access roads would require regular maintenance as they wear from use, seasonal changes and flooding.

#### 2.3.6.7 Cost

The estimated capital cost for design and construction of the Havana Lowlands Well System was determined for each complete system (Table 2.3.6.1). For the 12 mgd system, the total estimated capital cost is $72,342,000, or about $6,029,000 per mgd. Total estimated construction cost is $55,972,000, or approximately 77% of the total capital cost. For the 16 mgd system, total estimated capital cost is $134,635,000 or $8,415,000 per mgd. Total estimated construction cost is $104,787,000 or 78% of the total capital cost.

Property costs are estimated at $1,255,000 (12 mgd) and $1,554,000 (16 mgd). Legal and mitigative work involved with land acquisition are included as part of the Legal and Administrative Costs.

Design and construction engineering costs are estimated based on requirements from past projects. Legal and Administrative costs include the extensive permitting, land acquisition, and studies required for the completion of such a project.

Operation costs were based on the minimum required operation for an 18-month drought. Costs include electricity costs, increased labor costs for additional certified well operators, 20% of annual maintenance costs (to cover increased maintenance due to increased usage), and an additional 10% for miscellaneous expenses. Operation costs for an 18-month drought period are approximately $2,045,000 for the 12 mgd system, $3,047,000 for the 16 mgd version.

Total maintenance costs are based on a percentage of total capital costs accounting for the items mentioned above. Maintenance costs are approximately $704,000 per year (12 mgd) and $1,307,000 (16 mgd).

**Table 2.3.6.1 Havana Lowlands Well System Project Costs**
**12 MGD**

| | |
|---|---|
| Well | $1,728,000 |
| Pump Stations | 500,000 |
| Tanks | 1,402,000 |
| Piping | 42,888,000 |
| Lake Outlet Structure | 25,000 |
| Control Center | 100,000 |
| **Subtotal** | **$46,643,000** |
| Contingencies - 20% | 9,329,000 |
| **Total Estimated Construction Cost** | **$55,972,000** |
| Land Acquisition (Property Costs) | 1,255,000 |
| Design Engineering - 10% | 5,598,000 |
| Construction Engineering - 7% | 3,919,000 |
| Legal/Administrative - 10% | 5,598,000 |
| **Total Estimated Capital Cost** | **$72,342,000** |

**Havana Lowlands Well System Project Costs**
**16 MGD**

| | |
|---|---|
| Wells | $2,592,000 |
| Pump Stations | 1,000,000 |
| Tanks | 2,804,000 |
| Piping | 80,801,000 |
| Lake Outlet Structure | 25,000 |
| Control Center | 100,000 |
| **Subtotal** | **$87,322,000** |
| Contingencies - 20% | 17,465,000 |
| **Total Estimated Construction Cost** | **$104,787,000** |
| Land Acquisition (Property Costs) | 1,554,000 |
| Design Engineering - 10% | 10,479,000 |
| Construction Engineering - 7% | 7,336,000 |
| Legal/Administrative - 10% | 10,479,000 |
| **Total Estimated Capital Cost** | **$134,635,000** |

Total costs of the system including operation and maintenance have been compiled and listed in Table 2.3.6.2.

**Table 2.3.6.2 Total Cost Summary - Havana Lowlands Well System**

| 12 MGD | |
|---|---|
| Total Capital Cost | $72,342,000 |
| Total Capital Cost per mgd | $6,029,000 |
| 18-Month Operation Cost | $2,045,000 |
| Annual Maintenance Cost | $704,000 |
| 50-Year Total Present Worth | $85,484,000 |
| 50-Year Total Present Worth per mgd | $7,124,000 |
| 50-Year Equivalent Uniform Annual | $5,424,000 |

| Havana Lowlands Well System 16 MGD | |
|---|---|
| Total Capital Cost | $134,635,000 |
| Total Capital Cost per mgd | $8,415,000 |
| 18-Month Operation Cost | $3,047,000 |
| Annual Maintenance Cost | $1,307,000 |
| 50-Year Total Present Worth | $158,283,000 |
| 50-Year Total Present Worth per mgd | $8,918,000 |
| 50-Year Equivalent Uniform Annual | $10,043,000 |

### 2.3.7 Combinations of Alternatives

Combining the Lick Creek Reservoir (LCR) with various clusters of Sangamon River wells and/or individual sand and gravel pits results in at least 16 system variations that will provide the desired yield (Table 2.3.7.1). Each of these permutations has its own associated cost and set of impacts. For this analysis, three of the possible combinations, designated as 6B, 1, and 2 that represent a high, intermediate, and low combined cost, respectively, are described. These three combinations also provide a comparison of the range of impacts that may be expected in any such system of combinations.

Combining Sangamon River Valley wells with the 12 mgd yield versions of the Illinois River Valley wells and Havana Lowland wells are also presented as combinations that will meet the stated yield requirements of the City.

**Table 2.3.7.1** **Lick Creek Reservoir/Sangamon River Valley Combinations**

| Alternative | Total Yield (mgd) | Total Capital Cost per mgd | 50-Year Total Present Worth per mgd | Comments |
|---|---|---|---|---|
| 5B - LCR, Sangamon Valley Well Clusters 6-9, Sand & Gravel Pits B &C | 18.23 | $5,170,000 | $6,100,000 | |
| 2 - LCR, Sangamon Valley Well Cluster 6-7, Sand & Gravel Pits A,B &C | 16.43 | $5,354,000 | $6,172,000 | All gravel pits - Alternative analyzed |
| 5A - LCR, Sangamon Valley Well Clusters 1-4, Sand & Gravel Pits B &C | 17.56 | $5,355,000 | $6,264,000 | |
| 4 - LCR, Sangamon Valley Well Clusters 4-9, Sand & Gravel Pits A & B | 17.43 | $5,389,000 | $6,308,000 | |
| 7A - LCR, Sangamon Valley Well Clusters 5-9, Sand & Gravel Pit A | 15.84 | $6,251,000 | $7,189,000 | Alternative analyzed |
| 7B - LCR, Sangamon Valley Well Clusters 1-4 & 6, Sand & Gravel Pit B | 17.89 | $5,588,000 | $6,531,000 | |
| 7C - LCR, Sangamon Valley Well Clusters 6-9 & 4, Sand & Gravel Pit B | 18.22 | $5,590,000 | $6,543,000 | |
| 8B - LCR, Sangamon Valley Well Clusters 1-4 & 6-7, Sand & Gravel Pit C | 18.38 | $5,814,000 | $6,789,000 | |
| 8D - LCR, Sangamon Valley Well Clusters 3-4 & 6-9, Sand & Gravel Pit C | 18.31 | $5,865,000 | $6,840,000 | |
| 8C - LCR, Sangamon Valley Well Clusters 2-4 & 6-8, Sand & Gravel Pit C | 18.31 | $5,875,000 | $6,851,000 | |
| 1 - LCR & Sangamon Valley Well Clusters 4-9 | 16.3 | $6,023,000 | $7,197,000 | No gravel pits - Alternative analyzed |
| 6A - LCR, Sangamon Valley Well Clusters 1-4 & 6-7, Sand & Gravel Pit A | 17.83 | $6,014,000 | $6,984,000 | |
| 8A - LCR, Sangamon Valley Well Clusters 4-9, Sand & Gravel Pit C | 17.64 | $6,033,000 | $6,989,000 | |
| 6C - LCR, Sangamon Valley Well Clusters 3-4 & 6-9, Sand & Gravel Pit A | 17.84 | $6,067,000 | $7,037,000 | |
| 3 - LCR, Sangamon Valley Well Clusters 2-4 & 6-7, Sand & Gravel Pits A & C | 17.51 | $6,094,000 | $7,037,000 | |
| 6B - LCR, Sangamon Valley Well Clusters 2-4 & 6-8, Sand & Gravel Pit A | 17.84 | $6,077,000 | $7,047,000 | |

Combinations of alternatives: All of the above utilize LCR plus some combination of sand and gravel pits/Sangamon Valley aquifer.

### 2.3.7.1 Lick Creek Reservoir and Sangamon River Valley Groundwater

This alternative combines 8 mgd development of the Sangamon River Valley aquifer system with LCR (8.3 mgd). Yield from the combined system would be adequate to meet Springfield's needs for the planning horizon, and has expansion capabilities for future system needs. Development of the Sangamon River Valley aquifer well system to yield 8 mgd would require construction of clusters 4 and 5 in the West Section and clusters 6 through 9 in the East Section. Section 2.3.3 of this document describes the entire Sangamon River Valley well system; Section 2.3.2 describes the LCR.

#### 2.3.7.1.1 Cost

For this combined alternative, total capital costs for construction and operation/maintenance were determined for a system producing 16.3 mgd (Table 2.3.7.1.1). Costs for the partial development of the aquifer system are derived from applicable portions (clusters 4-9) of the full system and utilize the same assumptions and constraints.

The total estimated capital cost is $98,172,000. Total estimated construction cost is $48,764,000 or approximately 50% of the capital cost. Total capital cost per mgd is approximately $6,023,000.

**Table 2.3.7.1.1 Total Cost Summary - Lick Creek Reservoir/ Sangamon River Groundwater**

| | |
|---|---|
| Total Capital Cost | $98,172,000 |
| Total Capital Cost per mgd | $6,023,000 |
| 18-Month Operation Cost | $1,407,000 |
| Annual Maintenance Cost | $879,000 |
| 50-Year Total Present Worth | $113,434,000 |
| 50-Year Total Present Worth per mgd | $6,960,000 |
| 50-Year Equivalent Uniform Annual | $7,197,000 |

### 2.3.7.2 Lick Creek Reservoir, Sand & Gravel Pits A, B, C, Sangamon River Valley Groundwater

This alternative combines 3.33 mgd development of the Sangamon River Valley aquifer system with the full Sand and Gravel Pit system (4.8 mgd) and LCR (8.3 mgd). Yield from the combined system would be adequate to meet Springfield's needs for the planning horizon, and has expansion capabilities for future system needs. Development of the Sangamon River Valley aquifer well system to yield 3.33 mgd would require construction of clusters 6 and 7 in the East Section. Section 2.3.3 of this document describes the entire Sangamon River Valley aquifer system, Section 2.3.4 describes the sand and gravel pit system, and Section 2.3.2 presents the LCR.

#### 2.3.7.2.1 Cost

For this combined alternative, total capital costs for construction and operation/maintenance were determined for a system providing 16.43 mgd (Table 2.3.7.2.1). Costs for the partial development of the aquifer system are derived from applicable portions (clusters 6 and 7) of the full system and utilize the same assumptions and constraints. The total estimated capital cost is $87,952,000.

Total estimated construction cost is $44,276,000, or approximately 50% of the capital cost. Total capital cost per mgd is approximately $5,354,000.

**Table 2.3.7.2.1 Total Cost Summary - Lick Creek Reservoir/ Gravel Pits A, B, C & Sangamon River Valley Groundwater**

| | |
|---|---|
| Total Capital Cost | $87,952,000 |
| Total Capital Cost per mgd | $5,354,000 |
| 18-Month Operation Cost | $1,949,000 |
| Annual Maintenance Cost | $764,000 |
| 50-Year Total Present Worth | $101,944,000 |
| 50-Year Total Present Worth per mgd | $6,205,000 |
| 50-Year Equivalent Uniform Annual | $6,498,000 |

### 2.3.7.3 Lick Creek Reservoir, Sand and Gravel Pits A, Sangamon River Valley Groundwater

This alternative combines 6.67 mgd development of the Sangamon River Valley aquifer system with Sand and Gravel Pit A (0.87 mgd) and LCR (8.3 mgd). Yield from this combined system would be adequate to meet Springfield's needs for the planning horizon and has expansion capabilities for future system needs. Development of the Sangamon River Valley aquifer well system to yield 6.67 mgd would require construction of clusters 5 through 9 in the East Section. Section 2.3.3 of this document describes the entire Sangamon River Valley aquifer system, Section 2.3.4 describes the Sand and Gravel Pit system, and Section 2.3.2 presents the LCR.

#### 2.3.7.3.1 Cost

For this combined alternative, total capital costs for construction and operation/maintenance were determined for a system providing 15.84 mgd (Table 2.3.7.3.1). Costs for the partial development of the aquifer and gravel pit systems are derived from applicable portions of the full systems and utilize the same assumptions and constraints. The total estimated capital cost of this alternative is $99,013,000. Total estimated construction cost is $51,957,000, or approximately 52% of the capital cost. Total capital cost per mgd is approximately $6,251,000.

**Table 2.3.7.3.1 Total Cost Summary - Lick Creek Reservoir/Gravel Pit A & Sangamon River Valley Groundwater**

| | |
|---|---|
| Total Capital Cost | $99,013,000 |
| Total Capital Cost per mgd | $6,251,000 |
| 18-Month Operation Cost | $1,421,000 |
| Annual Maintenance Cost | $947,000 |
| 50-Year Total Present Worth | $113,311,000 |
| 50-Year Total Present Worth per mgd | $7,154,000 |
| 50-Year Equivalent Uniform Annual | $7,189,000 |

### 2.3.7.4 Havana Lowlands Well Field (12 mgd) and Sangamon River Valley Groundwater

This alternative combines the 12 mgd Havana Groundwater system with 3.33 mgd development of the Sangamon River Valley groundwater. Yield from this combined system would be adequate to meet Springfield's needs for the planning horizon and has expansion capabilities for future system needs. Development of the Sangamon River groundwater system to yield 3.33 mgd would require construction of clusters 6 through 9 in the East Section. Section 2.3.3 of this document describes the entire Sangamon River Valley aquifer system, and Section 2.3.6 describes the Havana Lowlands Well Field system.

#### 2.3.7.4.1 Cost

For this combined alternative, total capital costs for construction and operation/maintenance were determined for a system providing 15.33 mgd. Costs for the partial development of the aquifer system are derived from applicable portions of the full system and utilize the same assumptions and constraints. The total estimated capital cost is $88,582,000. Total estimated construction cost is $65,051,000, or approximately 73% of the capital cost. Total capital cost per mgd is approximately $5,537,000 (Table 2.3.7.4.1).

**Table 2.3.7.4.1 Total Cost Summary - Havana Lowlands/ Sangamon River Valley Groundwater**

| | |
|---|---|
| Total Capital Cost | $88,582,000 |
| Total Capital Cost per mgd | $5,537,000 |
| 18-Month Operation Cost | $2,632,000 |
| Annual Maintenance Cost | $983,000 |
| 50-Year Total Present Worth | $106,708,000 |
| 50-Year Total Present Worth per mgd | $6,670,000 |
| 50-Year Equivalent Uniform Annual | $6,770,000 |

### 2.3.7.5 Illinois River Wells (12 mgd) and Sangamon River Valley Groundwater

This alternative combines 3.33 mgd development of the Sangamon River Valley aquifer system with the 12 mgd Illinois River Wells system. Yield from this combined system would be adequate to meet Springfield's needs for the planning horizon and has expansion capabilities for future system needs. Development of the Sangamon River Valley groundwater system to yield 3.33 mgd would require construction of clusters 6 and 7 in the East Section. Section 2.3.3 of this document describes the entire Sangamon River Valley aquifer system, and Section 2.3.5 describes the Illinois River Valley Well system.

#### 2.3.7.5.1 Cost

For this combined alternative, total capital costs for construction and operation/maintenance costs were determined for a system providing 15.33 mgd. Costs for the partial development of the Sangamon River aquifer system are derived from applicable portions of the full system and utilize

the same assumptions and constraints. Operation and maintenance costs have been adjusted to eliminate overlap of additional labor and equipment requirements, where applicable. The total estimated capital cost is $110,614,000. Total estimated construction cost is $85,441,000, or approximately 77% of the capital cost. Total capital cost per mgd is approximately $7,216,000 (Table 2.3.7.5.1).

**Table 2.3.7.5.1 Total Cost Summary - Illinois River Wells/ Sangamon River Valley Groundwater**

| | |
|---|---|
| Total Capital Cost | $110,614,000 |
| Total Capital Cost per mgd | $7,216,000 |
| 18-Month Operation Cost | $3,455,000 |
| Annual Maintenance Cost | $1,224,000 |
| 50-Year Total Present Worth | $133,362,000 |
| 50-Year Total Present Worth per mgd | $8,670,000 |
| 50-Year Equivalent Uniform Annual | $8,461,000 |

# SECTION 3.0
# AFFECTED ENVIRONMENT

## 3.1 HUNTER LAKE RESERVOIR - APPLICANT'S PREFERRED ALTERNATIVE

Hunter Lake would be located within the Sangamon River drainage basin in Sangamon County, Illinois, southeast of Lake Springfield (Figure 2.3.1.2). The project area for Hunter Lake includes approximately 7,795 acres of property for the construction of the lake and surrounding buffer. An earthen dam would be constructed along Horse Creek in Section 31 of Rochester Township (T. 15 N., R. 4 W.) to create a normal pool elevation of 571 ft. msl. The proposed reservoir would inundate portions of Horse Creek and Brush Creek for a distance of about 16 river miles upstream of the dam south to the Village of Pawnee. The surface area of the reservoir would be about 3,010 acres at normal pool elevation.

### 3.1.1 Socio-Economic Resources

Some residential growth has occurred to the north and west of the project area. It is reasonable to expect that development in and around the project area would progress rapidly if water and sewer service were extended to serve the area. The City of Springfield has no plans to allow residential development within the project area.

The Village of Pawnee is located directly south of the Horse Creek arm of the proposed Hunter Lake. The population of Pawnee is approximately 2,400. According to the October 1995 *Comprehensive Plan for the Village of Pawnee*, the project area is designated as Agricultural or Vacant.

The project area currently contains 69 inhabitable residences. Of this, the applicant owns and leases 66. Of the three residences in the project area not owned by the City, all are occupied. Based upon tenant information, the applicant estimates that the average population of these homes is 3.5 persons, or approximately 240 persons. The majority of the tenants are not original occupants of the homes, and do not generally have long-term ties to the project area. There are currently two active businesses—a KOA Campgrounds, and a family-owned fertilizer sales and service operation. The campground site is currently owned by the applicant and leased to the operator.

The values of the housing units within the area vary widely. Residential property purchases on less than 7 acres by the CWLP since November 1989 ranged between $68,000 and $237,000, with an average price of about $104,000. The total annual tax receipt loss to the 24 affected taxing bodies is approximately $150,000. This represents about 0.6% of total property tax receipts.

#### 3.1.1.1 Demographics

In 1990, the largest age category of people residing in Sangamon County was the group 15 years of age and under. This category represents 22% of the county's total population. The second largest category was between the ages of 25 and 34, which represents 17% of the total population. Ranking third was the category between 35 and 44 years of age, which accounts for 15% of the county's total population. Of these three categories, which make up 54% of the county's total population, two have seen an increase in population; only the 25 to 44 age group saw a reduction. The population of the 65 and older group has increased nearly 33% since 1970 and is projected to show a modest increase by the year 2000.

The most frequent employment among residents in Sangamon County is in clerical and sales areas (35.4%), followed by skilled workers (16.8%), service workers (13.4%), managers (13.3%), professional (13.1%), semi-skilled & laborers (6.1%) and farmers (1.9%). Within the Hunter Lake project area, the occupations of the tenants are primarily nonfarm. The owners of two of the residences not owned by the City are engaged in agriculture, and one is an owner of the fertilizer business mentioned in Section 3.1.1 above. The population of the proposed lake area and surrounding area was identified in the 1992 SSU report as virtually all white, working or middle class (72% of households had incomes between $20,000 and $60,000), living in family households that in most cases (86%) had at least one economically active person.

#### 3.1.1.2 Public Facilities/Services

Each of the areas (Chatham, Divernon, Pawnee, Rochester, and Lake Springfield) surrounding the project area is provided fire protection services through a protection district. These districts, excluding Lake Springfield, are staffed by volunteers. The Lake Springfield District is serviced by the City of Springfield Fire Department. Area municipalities provide police protection, with the outlying regions, including the project area, protected by the Sangamon County Sheriff's Department and the Illinois State Police. There are no hospitals within the area.

Nine cemeteries (Beam, Brunk, Eldridge, Funderburk, Horse Creek, Oakridge, Rusk, Vigal, and Zion) are within or near the project area, and there are five churches in the surrounding area. Portions of three public school districts are in the Hunter Lake project area: Ball-Chatham Community Unit District No. 5, Pawnee Community Unit District No. 11, and Rochester Community District No. 3A. No private schools are located in the area. Portions of two library districts, the Chatham library district and the Rochester library district, are located within the study area. There are no library facilities located in the project area.

Seven point source discharge facilities are located in the Hunter Lake watershed. These facilities are Ball Elementary School; Panhandle Eastern Pipe Line Co.-Glenarm; Peabody Coal Co. Mine #10 South Portal (discharge out of service); Divernon, Pawnee, and Virden East Sewage Treatment Facilities; and Freeman United Crown III Mine. Each of these discharges is covered by an individual permit issued to the facility's owner by the Illinois Environmental Protection Agency under the National Pollution Discharge Elimination System (NPDES).

Electric service within the area is provided by Central Illinois Public Service Company, Rural Electric Convenience Cooperative Company, and Soyland Power Cooperative, Inc. Telephone service is provided by GTE North Incorporated and Ameritech. Natural gas service is provided by Central Illinois Light Company and Panhandle Eastern Pipe Line Company. There are no water or sewer services available in the project area.

The existing roadway network consists of three Sangamon County highways (Nos. 28, 29, 40) and various township roads in portions of Ball, Rochester, Pawnee, and Cotton Hill Townships. No State or Federal highways would be affected by the proposal.

### 3.1.2 Agricultural Lands

The vast majority of land in the project area is zoned for agricultural purposes. Construction of a lake conforms to the Sangamon County zoning ordinance and the comprehensive land use plan.

A relatively low amount of cropland, approximately 3,781 acres (48.5%), currently exists in the project area when compared to the percent of cropland in the watershed (88%).

Within the project area, 34% of the soils are classified as prime farmland. When including acreages that could be considered prime if modified, 59.3% of the project area, or approximately 4,622 acres, can be classified as prime farmland. Within Sangamon County as a whole, 83.7% of the soils or approximately 475,205 acres is classified as prime or prime if modified. Important farmland acreage constitutes about 2,292 acres, or 29.4% of the project area. Approximately 900 acres (11.3%) of the project area is classified as neither prime nor important farmland. These areas either have steep slopes (greater than 5%), are severely eroded, are both steep and severely eroded, or are sand pits or water bodies.

### 3.1.3 Cultural Resources

The Illinois State Museum Society (ISMS) was contracted by the City of Springfield, Illinois, to conduct archeological and architectural inventory of the proposed Hunter Lake area of potential effect. The investigations were conducted in 1990 and 1991 and resulted in the documentation of 727 historic properties. The ISMS summarized the results of the investigation as follows:

> Of the 727 sites in the project area, 635 are artifact scatters and 92 contain architectural remains. Of the artifact scatters, 65 sites yielded only historic materials and the remaining 570 sites contained either prehistoric material (445 sites) or both historic and prehistoric artifacts (125 sites). Of the prehistoric sites, 110 can be assigned to specific time periods ranging from 12,000 to 500 years in age. The historic artifact scatters and architectural sites range in age from the 1820's to the present. Nine cemeteries are located within or near the project area; three will be affected by reservoir construction. (Ahler *et al.* 1992:xii)

The ISMS originally identified 129 historic properties that required additional evaluation before a determination of their eligibility to the NRHP could be made. The Illinois Historic Preservation Agency (IHPA) concurred with the finding regarding archeological sites by letter dated August 15, 1994 (IHPA LOG #940523020MSG, Appendix B). The IHPA disagreed with the ISMS evaluation of architectural sites, however, and recommended reducing the number by 12 in a letter dated March 25, 1993 (IHPA LOG #07102092). Consequently, 117 historic properties require further evaluation before a determination of eligibility for inclusion to the NRHP can be made.

### 3.1.4 Air Quality

The project site is within Air Quality Control Region (AQCR) 75. This region is known as the West Central Illinois Intrastate AQCR and encompasses 17 counties in west-central Illinois. In discussions with IEPA staff, all townships within the Hunter Lake project area are designated as attainment areas for the criteria pollutants.

### 3.1.5 Natural Resources

Information on existing natural resources in the Hunter Lake project area was developed by the Illinois Natural History Survey (INHS) under contract for the City of Springfield. Surveys of biotic resources in the study area (soils; vegetation; mammals; birds; amphibians and reptiles; butterflies, skippers, and moths; fish; phytoplankton and zooplankton; mussels and other aquatic macroinvertebrates) were conducted by INHS researchers during 1991 and 1992. Detailed results

of these investigations were compiled in a report titled, *Hunter Lake Environmental Studies* (INHS 1993) and are summarized below.

#### 3.1.5.1 Natural Divisions

The State of Illinois has 14 defined natural divisions based on topography, glacial history, bedrock, soil, and distribution of native plants and animals. The Hunter Lake area is located within the Springfield section of the Grand Prairie natural division. The Grand Prairie division is a vast plain formerly occupied primarily by tall-grass prairie. Soils were developed from recently deposited loess, lake bed sediments, and outwash. Natural drainage was poor, resulting in many marshes and prairie potholes. Forest bordered the rivers and occasional groves were present on moraines and glacial hills.

#### 3.1.5.2 Soil Type

Eight soil series comprise about 92.5% of the soils within the project area. These soils include (in descending order of dominance) Fayette, Radford, Elco, Hickory, Tama, Lawson, Keomah, and Ipava. Fayette, Elco, Hickory, Tama, Keomah, and Ipava are all upland soil series formed in loess or upland till. Radford and Lawson are bottomland soil series formed on floodplains or alluvial deposits. Drainage of the project area is typically to the north towards the South Fork of the Sangamon River. The South Fork of the Sangamon River drains into the Sangamon River, which flows westwardly to the Illinois River.

#### 3.1.5.3 Land Cover/Vegetation

Existing land cover was estimated based on GIS analysis of filtered satellite data conducted by the INHS. These data were grouped into five cover classes (cropland, forest, grassland, urban/built-up, and water) and were adjusted to reflect a known value for urban/built-up acreage that includes right-of-way areas that are lost with the GIS methodology. Figure 3.1 shows the vegetative land cover of the project area.

Of the 7,795 acres in the project area, approximately 3,781 (48.5%) was classed as cropland. Of the remaining 4,014 acres, approximately 2,705 acres (34.7%) was identified as forest, 1,075 acres (13.8%) as grassland, 203 acres (2.6%) as urban/built-up, and 31 acres (0.4%) as permanent open water (excluding farm ponds).

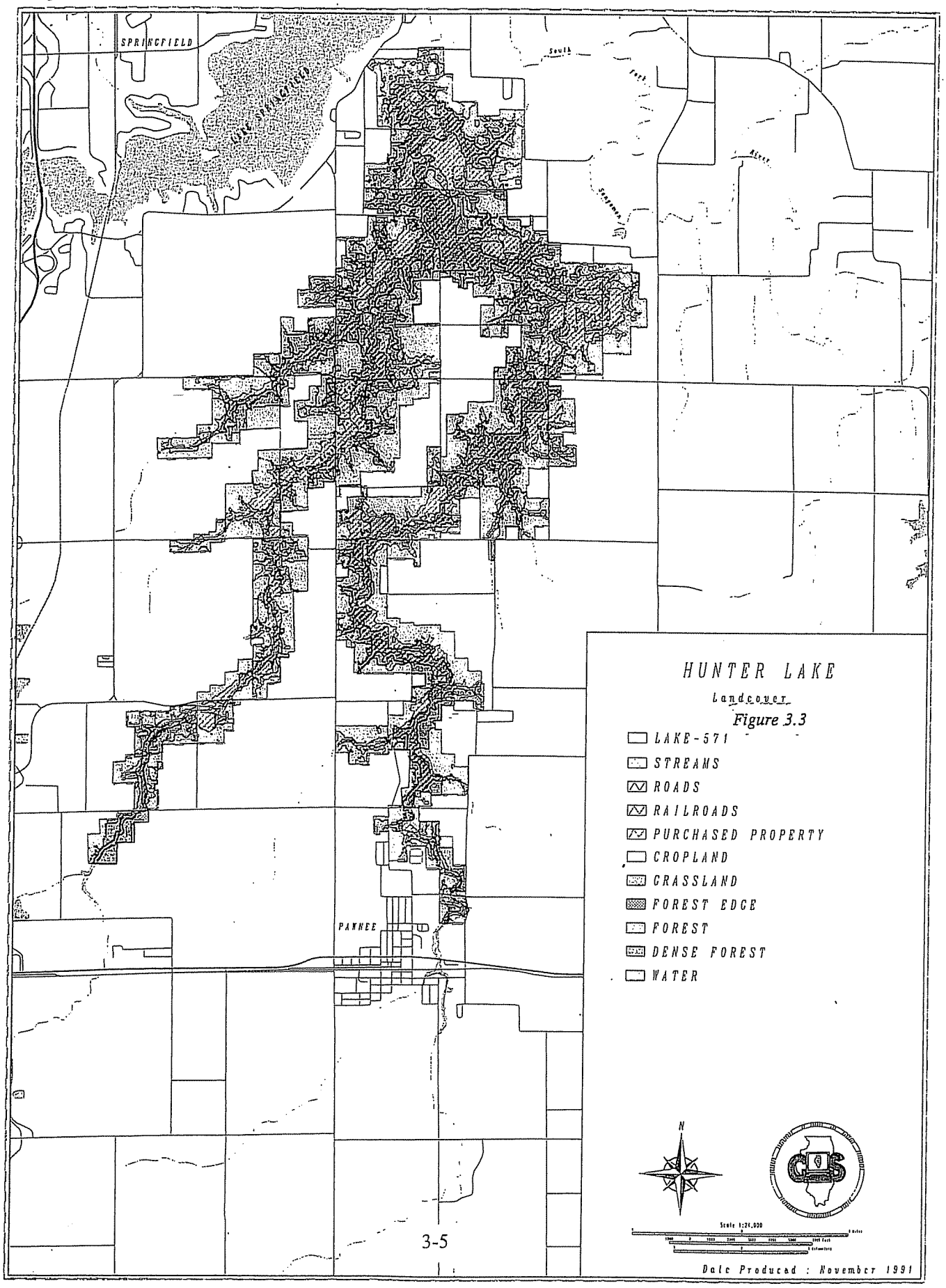
An analysis and inventory of forest ecosystems in the project area identified some 148 species of woody and herbaceous plants. All forested areas within the project area showed considerable evidence of past disturbance by livestock grazing and were dominated by plant species adapted to this type of disturbance.

Mature native grassland and prairie areas were not found in the project area.

#### 3.1.5.4 Fauna

Thirty-seven mammal species are known or likely to occur in Sangamon County. The project area includes a mosaic of habitats. However, patches of mature vegetation are generally missing from the region, reflecting its agricultural past and present. As a result, the mammalian community contains those species usually found in areas where agricultural fields are interrupted by small stands of second-growth trees and by streams paralleled by thin ribbons of forest. In accordance with this regional picture, the vast majority of mammals inhabiting the Hunter Lake project area

**Figure 3.1** **Vegetative Land Cover - Hunter Lake Project Area**



(e.g., white-footed mouse, raccoon, opossum, white-tailed deer) are common and ubiquitous across wide portions of Illinois. The mammalian fauna of the project area is typical of disturbed areas that make up much of central Illinois. As such, it supports an unremarkable fauna.

There were 184 species of birds noted for the project area. The 184 species were ranked by abundance. Those that live in many different habitats or are associated with man-made habitats were near the top. The ubiquitous Common Grackle and Red-Winged Blackbird, ranked first and second, are found in many different habitats and benefit mainly from agriculture. Next are two introduced species, the European Starling and House Sparrow that are indicative of a human-manipulated environment. The American Robin, Mourning Dove, Northern Cardinal, and Blue Jay were also found in abundance, are present all or most of the year, and can be found in both residential and natural areas. The Indigo Bunting, the most abundant neotropical migrant that nests in the Hunter Lake project area, was ranked 17th. When compared to other areas in Sangamon County and Illinois, the Hunter Lake project area was lower in bird species diversity and abundance.

In a letter of comment received by the Corps during public review of the DEIS (Appendix A), a local resident reported the presence of a heron rookery in the project area. Subsequent investigation of this report by the IDNR in May 1999 confirmed the presence of a heron rookery of 20 nests occupying three large sycamore trees adjacent to Horse Creek northwest of Zion Cemetery. All nesting birds observed were great blue herons—no egrets, night herons, or other species were observed. This rookery was not identified during the INHS surveys of 1990-91 and may not have existed in the project area at that time.

There are an estimated 1,500 species of Lepidoptera (butterflies, skippers, and moths) within the proposed Hunter Lake project area. A relatively unknown species of moth, *Pachypolia atricornis*, was collected. Additional research studies have shown that *P. atricornis* larvae will survive on wild cherry, and records from Menard and Ford Counties indicate that this species is not rare.

The distribution and abundance of amphibians and reptiles in the project area are those typically abundant in the prairie/grassland areas of central Illinois.

Thirty species of fish were found in the Hunter Lake project area during surveys conducted in the spring, summer, and fall of 1990. All fishes found at sampling sites on Horse and Brush Creeks are common in central Illinois streams and tend to be those most tolerant of the stream degradation associated with present farm practices. No threatened, endangered, or otherwise rare fishes were found.

The zooplankton collections consisted of species that are common and widely distributed in the United States. None of the taxa observed is limited to a unique or restricted habitat. The macroinvertebrate communities of Horse Creek, Brush Creek, and their tributaries are typical of slow, silt-laden, agricultural streams occurring in the central Midwestern Plains. Nine freshwater mussel species were collected in the Hunter Lake project area in 1990. Overall diversity was low. The three most abundant species found were the pondmussel, pondhorn, and giant floater.

#### 3.1.5.5 Threatened or Endangered Species

Two federally designated endangered or threatened species—the bald eagle (*Haliaeetus leucocephalus*) and the Indiana bat (*Myotis sodalis*)—are listed as occurring or potentially occurring in Sangamon County. The bald eagle is an increasingly common winter resident of the Illinois and Mississippi River floodplains and their major tributaries. This species also may

regularly be found wherever suitable large roost trees and open water are available during winter months. The INHS study conducted during 1990 and 1991 recorded this species as an occasional visitor to the project area during spring and fall migration. The study noted that the bald eagle also occurs in low numbers at nearby reservoirs, Lake Springfield and Lake Sangchris State Park, but it has not been known to nest in Sangamon County.

Riparian and upland woodlands provide summer maternity, roosting, and foraging habitat for the Indiana bat. Field surveys conducted by the INHS during 1990 documented only low densities of all bat species in the Hunter Lake project area. No Indiana bats were encountered during the survey. The extreme low density of suitable roost trees in the project area and the absence of potential roost trees in nearby areas limit the potential occurrence of the Indiana bat in the study area.

Another federally endangered species not listed for Sangamon County, the peregrine falcon (*Falco peregrinus*), has been observed as a flyover during migration and is observed in low numbers almost yearly at nearby Lake Springfield. This species does not nest in the project area. There were 13 species of birds recognized as endangered in Illinois observed during field surveys in the Hunter Lake project area. All of these were either migrants or winter residents. As such, they do not nest in the area. Of the three Illinois threatened species (loggerhead shrike, brown creeper, and veery) observed in the project area, the loggerhead shrike was the only one found to nest in the Hunter Lake project area. The habitat was brushy upland pasture outside the normal pool elevation. The shrikes did not produce any young and did not return the following spring. The brown creepers and veerys seen in the project area were migrants, with some brown creepers staying over winter.

Specimens of the freshwater mussel *Uniomerus tetralasmus*, the pondhorn, have been collected in Horse and Brush Creeks 5 to 7 miles upstream of the proposed reservoir. No specimens have been collected at sites within the proposed reservoir area. While this species was listed as a State threatened species at the time biological surveys were performed for the Hunter Lake project, the pondhorn was removed from the Illinois Endangered Species List in 1994 because the species was found to be more common than previously thought. Another species not listed at the time of the biological surveys, which subsequently was placed on the State list of threatened/endangered species, is the Kirtland's water snake (*Clonophis kirtlandii*). While this species was not found in the Hunter Lake project area, it does occur around Lake Springfield and suitable habitat is present in the study area.

### 3.1.6 Water Quality/Resources

#### 3.1.6.1 Geology/Groundwater

Bedrock in the Hunter Lake area is Pennsylvanian Shale interbedded with limestone, sandstone and coal. Groundwater flow in the bedrock is principally through joints, fractures, and bedding planes. These formations are up to 1,700 feet thick but yield no more than a few gallons per minute. Below a depth of approximately 150 to 200 feet, the groundwater is too mineralized for most purposes.

Located on top of the Pennsylvanian bedrock is glacial drift. The source of groundwater in the glacial drift is from local precipitation. The availability of groundwater from the drift is related to drift thickness. A thicker drift results in a greater chance of encountering water yield in sand and gravel deposits. The drift in Sangamon County is generally less than 50 feet thick. The most favorable area of groundwater in drift is the Sangamon River Valley; however, sand and gravel is

not present at all locations. The buried bedrock valley in Sangamon County is largely filled with relatively impermeable glacial deposits rather than sand and gravel. The sediments of the drift and bedrock have generally low permeability and therefore usually yield only minimal groundwater supplies. Domestic water supplies can be obtained from drift wells.

#### 3.1.6.2 Surface Water Resources

Horse Creek, Brush Creek, and their tributaries are typical of slow, silt-laden streams draining agricultural areas in the central Midwestern Plains. These streams, located in heavily farmed areas in central Illinois, are characterized by heavy silt deposition and retain little of the exposed gravel and sand substrate that characterized them prior to the development of agriculture. Several man-made ponds are located in the uplands. Although most are used to water livestock, a few are used as brine ponds near oil wells or ornamental ponds. Occasionally, these ponds have a narrow fringe of vegetation. Some are no longer used for any of the above purposes and have better developed vegetation.

### 3.1.7 Floodplains

Regulatory floodplains are those within a designated 100-year floodplain that are mapped on National Flood Insurance Rate Maps by the Federal Emergency Management Agency (FEMA). Regulatory floodplains exist throughout the length of both Horse Creek and Brush Creek in the project area and on into the South Fork of the Sangamon River and beyond.

During normal conditions, regulatory floodplains totally inundated by construction of the proposed reservoir extend from the dam upstream approximately 12.7 river miles along Horse Creek and along Brush Creek from its confluence with Horse Creek upstream for a distance of approximately 6.0 river miles. Farther upstream from these points, the full pool elevation of the proposed reservoir will inundate progressively smaller proportions of the regulatory floodplains until the reservoir backwaters are contained within existing streambanks.

### 3.1.8 Wetland Resources

Potential wetlands initially were identified through a review of the U.S. Fish and Wildlife Service's National Wetlands Inventory (NWI) mapping. NWI mapping is primarily based on an interpretation of satellite imagery. While it represents only a gross approximation of potential wetlands within an area and can not accurately delineate jurisdictional wetlands according to Section 404 of the Clean Water Act, it sometimes is a useful tool in determining where 404 wetlands may be located. Generally, in the central Illinois area, NWI maps tend to overestimate the extent of forested wetlands and may underestimate the extent of farmed wetlands. The NWI maps depict about 602 acres of wetlands within the Hunter Lake project area. Approximately 87% of the NWI areas were classified as temporarily flooded. According to the NWI maps, the Sangamon County Soils Survey, and the Natural Resources Conservation Service (NRCS) list of hydric soils in Sangamon County, this acreage represents 407 areas, 167 of which occur in areas mapped as having hydric soils. According to the NWI maps, 318 of the 407 areas are located within the pool area of the proposed lake. Field surveys are required to best determine the extent of regulatory (jurisdictional) wetlands.

In January 1998, the City of Springfield submitted a copy of the *Wetlands Survey of the Hunter Lake Project Area* as part of the data gathering process for use in the preparation for the Environmental Impact Statement for the proposed Hunter Lake project. The survey included wetland delineations completed by a consultant for the City. The consultant's delineations

identified approximately 42.8 acres of jurisdictional wetlands within the project area boundary, with 29.6 of these located in the pool area. In June and July 1998, representatives from the Corps of Engineers and the NRCS visited various sites within the project area to verify the wetland delineation work. Representatives of the City of Springfield and the consultant also were present during the field visits.

The Corps and NRCS field work indicates that according to the 1987 Delineation Manual, approximately 102 acres of actual jurisdictional wetlands are located within the pool area of the proposed lake. In addition to jurisdictional wetlands, approximately 88.3 acres of stream channel (Horse Creek, Brush Creek, and their tributaries) and 4.0 acres of ponds were identified within the pool boundary.

The wetland delineations resulting in approximately 102 acres of jurisdictional wetlands were conducted utilizing the methodology described in the Corps of Engineers Wetland Delineation Manual (Technical Report Y-87-1, January 1987). Wetland vegetation and indicators of wetland hydrology were found throughout the forested portions of the Horse Creek and Brush Creek floodplains. The channels of Horse Creek and Brush Creek are relatively deeply incised, with the normal water surface more than 6 feet below the surrounding terrain. In many areas, there is a slight natural berm along the creek banks. In some areas, there are slightly lower lying areas behind this natural berm and at the base of the surrounding low bluffs.

A review of the Sangamon County Soil Survey indicates that the soils in the lowest portions of the Horse Creek and Brush Creek floodplains are predominantly Radford and Lawson. Radford and Lawson soils are mollisol soils characterized by very dark colors at and near the surface. The dark colors can mask indicators of hydric soils that may be present. According to the "Clarification and Interpretation of the 1987 Manual" memo dated March 6, 1992, issued by Corps of Engineers headquarters, mollisols are "problem soils" that may not be successfully identified by observing the upper layers. To assist with the identification of hydric soils in problem soils, the NRCS developed *Field Indicators of Hydric Soils in the United States, A Guide for Identifying and Delineating Hydric Soils*. During the Corps and NRCS field visits, NRCS soils specialists used the field indicators in conjunction with procedures in the 1987 manual to make soils determinations. Specifically, soils were evaluated utilizing the special soil evaluation criteria developed for use in mollisols (Tests F3, F5, F6, and TF7).

The areas selected for field visits primarily were timbered areas along the stream channels where the soils were mapped by the NRCS as mollisols. The City of Springfield's *Wetlands Survey of the Hunter Lake Project Area* generally did not include areas containing mollisols as wetlands due to the absence of visible indicators in the upper part of the soil profile. The areas selected for field visits were further defined by choosing lower areas within the watershed where the wetter areas were expected to be located. The areas selected were at least 100 feet from any deeply incised stream and within 5 feet elevation of the top of the bank, or within closed depressions according to the United States Geological Survey topographic maps. Reviews of available stream gauge data on similar streams indicate that direct flooding from Horse Creek and Brush Creek is not likely to be of sufficient duration to alone provide wetland hydrology in most of the project area. Except for areas within closed depressions, areas more than 5 feet above the top of the stream banks are not likely to have wetland hydrology. Areas within 100 feet of a deeply incised stream are usually drained by the lateral effect and also many times contain a natural berm.

Approximately 600 acres of the project area (acres below the lake's proposed normal pool elevation of 571 msl or otherwise impacted by the proposed project) met the selection criteria. Approximately 220.2 acres (or 36.8%) of the 600 acres were examined during the June and July

1998 field visits. Approximately 27 acres of wetland area were found within this area. Extrapolating this data resulted in an estimate of 73.4 acres of wetland within the project area. Added to this total were 28.6 acres of wetland areas located by the consultants and not duplicated in the Corps of Engineers findings. The 28.6 acres of wetland were located in farmed areas, at farm ponds, or in obvious depressions. This resulted in estimated impacts to 102 acres of wetlands.

### 3.1.9 Special Waste

Based on Illinois Environmental Protection Agency files, no sites listed on the Comprehensive Environmental Response and Liability Act of 1980 (CERCLA) exist in the project area.

Since the project area does contain large tracts of farming operations, there is the potential to uncover waste sites from these sources.

### 3.1.10 Aesthetics

The Hunter Lake project area contains disturbed forested areas and streams and highly modified communities such as cropland and pasture. All forested areas appear to have been heavily grazed in the past and are dominated by tree species adapted to such disturbance. Streams within the area are deeply entrenched and carry heavy silt load. Corridor communities along all small streams within the area have been highly modified.

## 3.2 LICK CREEK RESERVOIR

Lick Creek Reservoir would be situated in Sangamon County between the Village of Loami on the west and Chatham/Springfield on the east. The dam would be located on Lick Creek in Sections 26 and 35 of Curran Township (T. 15 N., R. 6 W.). A reservoir pool elevation of 590 ft. msl would back up water along the creek channel to Section 26 of Loami Township. The resulting lake would cover 1,948 acres with an average depth of 10 feet. This would provide a capacity of about 20,000 acre-feet of storage. The total project area evaluated encompasses 5,555 acres, which includes the potential normal pool elevation of 590 ft. msl and surrounding buffer zone (Figure 2.3.2.1).

Information on existing natural and constructed resources in the Lick Creek Reservoir project area was developed by Hanson Engineers, Inc. under contract for the City of Springfield. Resources were identified based on review of published information, analysis of existing maps and aerial photos, and qualitative on-site observations. Results of these investigations were documented in a report titled, *Evaluation of Significant Environmental Impacts Associated with Lick Creek Reservoir* (Hanson 1998) and are summarized below.

### 3.2.1 Socio-Economic Resources

One 14-lot subdivision is under development in Sections 32 and 33 of Curran Township. There are no other planned developments within the project limits. Rural areas south and southwest of Springfield experienced rapid growth since 1970. Development pressure is high through this region, especially in the eastern areas of the project site. It is reasonable to expect that development of the project area would progress rapidly if water and sewer service were extended to serve the area.

An estimated 89 residences are within the project limits. Approximately eight of these residences are located within the area of proposed inundation. The only business identified within the project limits is Leisure Lakes, a fee fishing area. This privately owned recreational business is not within the normal pool elevation area.

Based on the average value of homes in Chatham, Loami, and Curran Townships (excluding towns) of $100,000, the estimated total value of residential structures within the project limits is $8,900,000. The estimated total value of residences within the area of the normal pool elevation is $800,000.

The average home property tax assessment for Chatham, Loami, and Curran Townships for the 1994-1995 tax year is $2,333. Based on this assessment, the estimated total annual property tax revenue for homes within the project limits would be $207,637, and $18,664 for homes within the normal pool elevation.

The average 1994-1995 agricultural land and building tax assessment for Chatham, Loami, and Curran Townships is $63 per acre. Based on this assessment, the estimated total annual property tax revenue from agricultural land and buildings within the project limits is $263,529, and $79,695 for agricultural land and buildings within the normal pool elevation.

Based on the median average 1994-1995 tax rate of 7% and assessed property values for Chatham, Loami, and Curran Townships, the estimated potential annual tax loss for all property within the normal pool elevation is $98,359, and $471,166 for all property within the project limits.

#### 3.2.1.1 Demographics

The project site is located in rural Sangamon County approximately 1.5 miles west of Chatham and Springfield. The Village of Loami is located west of the proposed reservoir within 0.5 mile of the project limits. No development projects are planned within or near the project site. The populations of Loami, Chatham and Springfield are about 800, 6,600, and 117,000, respectively.

The most frequent employment among residents in Sangamon County is in clerical and sales areas (35.4%), followed by skilled workers (16.8%), service workers (13.4%), managers (13.3%), professional (13.1%), semi-skilled & laborers (6.1%), and farmers (1.9%).

#### 3.2.1.2 Public Facilities/Services

Fire protection districts within the Lick Creek project limits are comprised of Chatham, Maxwell and Loami townships by subscription, Waverly and Auburn. The project limits are protected by the Sangamon County Sheriff's Department and the Illinois State Police. There are no hospitals within the project limits.

Five cemeteries (Campbell, McGinnis, Oak Grove, Shelton, and Young) have been identified within or near the project limits.

There are portions of four public school districts (Chatham, New Berlin, Auburn, and Waverly) within the Lick Creek Reservoir project limits.

One point source discharge, Whispering Pines Mobile Home Park, is located near Loami in the Lick Creek Reservoir watershed.

Electric service within the area is provided by Central Illinois Light Company and Rural Electric Convenience Cooperative. Central Illinois Public Service Company owns a 138 KV transmission line that crosses the project site. Telephone service is provided by GTE North, Inc. No natural gas, water, or sewer services exist in the project area. A potable water transmission line to Loami crosses the project area along County Highway 40.

The existing roadway network consists of three Sangamon County Highways (18, 40, 48) and various township roads. No State or Federal highways would be affected.

One railway line, Union Pacific, crosses the project area. The railroad has petitioned for abandonment of this line.

### 3.2.2 Agricultural Lands

General soil associations within the project area of the Lick Creek Reservoir were identified based on the USDA Soil Survey of Sangamon County (1977). The agricultural soil types within the project limits were categorized into groups according to the USDA Natural Resources Conservation Service and designated as prime farmland, farmland of statewide importance (important), and other than prime or important (other) farmland. The acreage of each agricultural soil type group inundated by the potential reservoir is: 1,372 acres of prime, 338 acres of important, and 228 acres of other. The acreage of each agricultural soil type group was calculated for the project area delineated for a pool elevation of 595 ft. (rather than the 590 ft. eventually selected). The relative proportion of prime, important, and other was similar to the percentages estimated for the Hunter Lake project area.

### 3.2.3 Cultural Resources

The Illinois Archaeological Survey site location files maintained at the Illinois Historic Preservation Agency were examined to determine locations of known historic and prehistoric resources within the project area. No archaeological sites have been reported within the Lick Creek project limits. Most of the project area has not been surveyed by a professional archaeologist. However, based on the topography and proximity to Lick Creek, there is a high probability that archaeological sites are located within the project area. The sites found within the project area will most likely be on the bluff edges along the edge of the floodplain due to the small size of the floodplain and the proximity of high ground to the water source.

A review was conducted of the 1858, 1874, 1894, and 1914 atlas and plats for Sangamon County. The project area contained a large number of farmsteads, mills, and cemeteries. Some of the earlier structures shown in these sources are possibly extant. Intact historical archaeological deposits associated with former structures may also exist. A proportional number of historic resources and historical archaeological sites can be expected to exist as were identified for the Hunter Lake project area.

### 3.2.4 Air Quality

The project site is within AQCR 75 and is designated as an attainment area for the criteria pollutants.

### 3.2.5 Natural Resources

#### 3.2.5.1 Natural Divisions

The Lick Creek Reservoir is located within the Springfield section of the Grand Prairie natural division. Community classes have been defined within each natural division based on topography, soil, water, and dominant vegetation. Land use and plant community classes within the Lick Creek Reservoir area were identified based on aerial photography and on observations from public roads.

#### 3.2.5.2 Soil Type

The Sawmill-Radford-Tice Association is situated beneath and along the Lick Creek channel. This association is composed of nearly level, poorly drained to somewhat poorly drained, moderately permeable soils in floodplains. The majority of the soils occupying the rest of the area within the potential normal pool elevation belong to the Fayette-Elco-Keomah Association. This association is composed of nearly level to moderately steep, well drained to somewhat poorly drained, moderately permeable to moderately slowly permeable soils in uplands.

#### 3.2.5.3 Land Use

Over 86% of the project area is in uses created by human disturbance. Cropland is the most common land use type encountered within the project area and accounts for 48.3% (2,688 acres) of the project area. Grasslands, which include pasture/hayland, non-native grassland, and successional fields, comprise an estimated 1,462 acres, or approximately 26.3% of the project area. Forested areas, including tree plantations, total approximately 511 acres, or 9.2% of the total. Urban areas (residences, farmsteads and businesses) total some 490 acres, or about 8.9% of the project acreage. Aquatic areas (perennial streams and riparian areas, ponds, and intermittent streams) are estimated to total 404 acres, or approximately 7.3% of the project area. Forested areas within the Lick Creek Reservoir project area show considerable evidence of disturbance by livestock grazing, logging and other human activities.

#### 3.2.5.4 Fauna

Thirty-seven mammal species are known or likely to occur in Sangamon County. The project area includes a mosaic of habitats. Patches of mature vegetation are generally missing from the region, reflecting its agricultural past and present. As a result, the mammalian community would contain those species usually found in areas where agricultural fields are interrupted by small stands of second-growth trees and by streams paralleled by thin ribbons of forest. In accordance with this regional picture, the vast majority of mammals that would inhabit the project area (e.g., white-footed mouse, raccoon, opossum, white-tailed deer) are common and ubiquitous across wide portions of Illinois, typical of disturbed area that make up much of central Illinois.

There were 184 species of birds noted for the Hunter Lake project area. Many of these species would also appear in the Lick Creek Reservoir area, with possibly less diversity and abundance due to less forested area in the Lick Creek site. Those species that live in many different habitats or are associated with man-made habitats would be common. The ubiquitous Common Grackle and Red-Winged Blackbird are found in many different habitats and benefit mainly from agriculture. Two introduced species, the European Starling and House Sparrow, indicative of man-manipulated environment, would also be present. The American Robin, Mourning Dove, Northern Cardinal, and Blue Jay can be found in both residential and natural areas.

The distribution and abundance of amphibians and reptiles in the Hunter Lake project area are those typically abundant in the prairie/grassland areas of central Illinois. These species would also be found in the Lick Creek project area.

All fishes found at sampling sites on Horse and Brush Creeks are common in central Illinois streams and tend to be those most tolerant of the stream degradation associated with present farm practices. A similar species assemblage would be found in Lick Creek and its tributaries upstream of Lake Springfield.

The macroinvertebrate and zooplankton communities of Horse Creek, Brush Creek, and their tributaries are typical of slow, silt-laden agricultural streams occurring in the central Midwestern Plains. A similar fauna would be found in the Lick Creek system. Nine freshwater mussel species were collected in the Hunter Lake project area. Overall diversity was low. The three most abundant species found were the pondmussel, pondhorn, and giant floater. These would also be found in Lick Creek upstream of Lake Springfield.

#### 3.2.5.5 Threatened or Endangered Species

One nesting site of an Illinois threatened bird species, the loggerhead shrike (*Lanius ludovicianus*), from 1994 has been documented in the northern portion of the project area, north of the Lick Creek channel in the southwest corner of Section 33. This location is near the edge of the normal pool elevation of the potential reservoir.

### 3.2.6 Water Quality/Resources

Lick Creek is typical of streams located in heavily farmed areas in central Illinois, characterized by heavy silt deposition and retaining little of the exposed gravel and sand substrate that characterized them prior to the development of agriculture.

### 3.2.7 Floodplains

Approximately 1,421 acres of the 100-year floodplain area is located within the normal pool elevation of the proposed Lick Creek Reservoir.

### 3.2.8 Wetlands

The U.S Fish and Wildlife Service's National Wetlands Inventory (NWI) mapping depicts about 241 potential wetland areas within the project limits with a total area of about 478 acres. A total of 205 wetland areas, comprising about 391 acres, were depicted within the normal pool area.

### 3.2.9 Special Waste

There are no known Special Waste Sites in the Lick Creek project area. Since the project area does contain large tracts of farming operations, there is a potential to uncover waste sites from these sources.

## 3.3 SANGAMON RIVER VALLEY WELLS/GRAVEL PITS

The Sangamon River well field and pipeline area is displayed in Figure 2.3.3.1. The well field and pipeline area considered in this evaluation includes 36 separate well locations on either side of the

Sangamon River. The wells are connected by their individual pipelines to one of two main pipelines that follow the Sangamon River Valley from northwest of Springfield east of Salisbury to east of Springfield near Mount Auburn. The wells and associated pump stations are numbered consecutively from northwest to southeast. Well number 1 is located northwest of Springfield at R. 6 W., T. 17 N. in Section 27 in Sangamon County. Well number 36 is located east of Springfield at R. 2 W., T. 15 N., Section 3 in Christian County. The total pipeline corridor length is about 63.8 miles. The individual well pipelines, together with the two main transmission pipelines, total about 74.9 miles.

The gravel pit water source alternative and appurtenant pipelines are also in the Sangamon River Valley (Figure 2.3.4.4). This source consists of three gravel pit locations along the Sangamon River from south of Riverton to near Buckhart, Illinois. The Clear Lake gravel pit (Pit A) is located south of Interstate 72/36 in Section 22 of Clear Lake Township. The Hidden Valley Lake pit (Pit B1) and the Sangamon Valley Sand and Gravel pit (Pit B2) are pits with a narrow strip of land separating the two. They are located southwest of the Clear Lake gravel pit in Section 36 of Clear Lake Township and Section 1 of Rochester Township. Builders Sand and Gravel pit (Pit B3) is located immediately south of the Sangamon Valley gravel pit in Section 1 of Rochester Township and would use the same pipeline spur as the Hidden Valley/Sangamon Valley gravel pit. The Buckhart/Bi-Petrol gravel pit (Pit C) is located just north of Buckhart in Section 8 of Cooper Township. All of the individual gravel pit pipelines and associated pump stations are connected to a main transmission pipeline that runs west to the Spaulding Dam area of Lake Springfield. The combined length of all pipelines in this alternative is about 13.8 miles.

Information on existing resources in the study area for the Sangamon River Valley Wells and gravel pit water sources were developed by Hanson Engineers, Inc. under contract for the City of Springfield (Hanson 1998). Because the exact delineation of pipeline routes has not been determined, a 400-foot wide corridor was considered for assessment of existing resources potentially existing in the project area. Environmental resources were identified based on review of published information, existing maps, and aerial photographs. Detailed field studies were not conducted for this assessment.

### 3.3.1 Socio-Economic Resources

The total number of housing units in Christian County in 1990 was 14,640, a 0.3% increase since 1980. Sangamon County had a 5.5% increase (76,873 housing units) reported in 1990.

Christian and Sangamon Counties reported 7.2% and 6.1%, respectively, of their total housing units being vacant in 1990.

The median values in 1990 of owner occupied housing were $37,400 in Christian County and $60,900 in Sangamon County. This compares with the median value of $80,900 for Illinois in 1990.

#### 3.3.1.1 Demographics

Population trends were reviewed for the project area counties. Sangamon County experienced a slight population increase (3.0%) between 1992 and 1990. Christian County had a population decrease of 6.0%. These data reflect a general national trend of population decline in rural, primarily agricultural counties and population increase in counties with urban centers.

The largest age category of people residing in these two counties was the group 5 years of age to 17 years. This category averaged 18.4% of the counties' total population. The second largest category was between the ages of 25 and 34, which represents 15.8% of the counties' total population. Ranking third was the category between 35 and 44 years of age, which accounts for 14.8% of the counties' total population.

### 3.3.2 Agricultural Lands

According to the 1992 Census of agriculture, Christian County had 892 farms with an average size of 437 acres, with land averaged at $1,934 per acre, and producing $132,518 of agricultural products per farm. Sangamon County had 1,046 farms with an average size of 427 acres, with the land averaged at $2,123 per acre and producing $131,772 of agricultural products per farm.

### 3.3.3 Cultural Resources

Site records of the IHPA were reviewed for the area encompassing the entire Sangamon River Valley well field including: all wells, all pipeline segments, and all land area from the Sangamon River to Spaulding Dam. More than 210 archaeological sites are known within this area. The potential Sangamon River Valley well field and appurtenant pipelines have a very high probability of encountering archaeological sites.

Site records of the IHPA were reviewed for the area encompassing the gravel pits and all of the associated pipelines routes. The IHPA records depict more than 140 known archaeological sites for the general area of Clear Lake Township, and portions of Rochester and Cooper Townships encompassing the gravel pits and associated pipelines. The gravel pit pipeline corridors have a high probability of encountering archaeological sites.

### 3.3.4 Air Quality

These alternatives are located within areas considered as "attainment" for all of the criteria pollutants except particulate matter (PM-10). For this pollutant, the areas are "unclassified."

### 3.3.5 Natural Resources

#### 3.3.5.1 Natural Divisions

The project areas all lie in the Springfield Plain Section. Characteristics of the Springfield Plain Section are described in Section 3.2.5.1.

#### 3.3.5.2 Geology

The uppermost bedrock strata are nearly evenly divided between Pennsylvanian and Mississippian Systems. The majority of the bedrock closest to the surface is Pennsylvanian. The bedrock in the affected counties is overlain predominately by material that was deposited as a result of glacial advances during the Illinoisan stage of the Pleistocene Epoch. Except for major drainage areas, the surface materials consist of hard, compact sandy till with sand and gravel. Major drainage areas are comprised of Holocene-aged Cahokia Alluvium. These soils consist of poorly sorted sand, silt or clay. The glacial till deposits are generally blanketed by a relatively thick veneer of windblown deposits called loess which are composed principally of very fine sand and silt.

### 3.3.5.3 Land Use

The existing land use of the areas included in the alternatives is largely influenced by the region's suitability for agriculture. The lands affected by these alternatives consist of well-drained, good to very good soil and moderately level terrain. A variable-width band of bottomland forest exists throughout the riparian corridor of the Sangamon River Valley. Significant areas of the floodplain are in agricultural production. Developed areas include residential homes, farm buildings, feedlots, schools, commercial and industrial buildings.

### 3.3.5.4 Threatened and Endangered Species/Parks and Natural Areas

The IDNR Natural Heritage Database documented no threatened or endangered species within or near any of the Sangamon River Valley pipeline corridors or gravel pit pipeline segments.

Carpenter Park is a dedicated Illinois Nature Preserve and an Illinois Natural Area Inventory site located north of Springfield, and is crossed by the Sangamon River Valley wells northern main transmission pipeline route in Section 35 of Fancy Creek Township. The South Fork Natural area is located along both sides of the South Fork of the Sangamon River from the confluence of the South Fork with Sugar Creek to directly east of Rochester towards the middle of the northern half of Section 17 or Rochester Township. The connection pipeline from well numbers 17 and 18 to the main transmission pipeline extending along I-55 passes through the South Fork Natural Area located in Section 28 of Clear Lake Township. The southern main transmission pipeline route connecting wells 19 through 36 to Lake Springfield passes through the South Fork Natural Area in Section 9 of Rochester Township. The main transmission pipeline route extending east to Lake Springfield from the gravel pit areas also passes through the South Fork Natural Area in Section 9 of Rochester Township.

### 3.3.5.5 Floodplains

The Federal Emergency Management Agency (FEMA) flood insurance mapping depicts about 39.8 miles (62%) of the Sangamon Valley pipeline to be within an area of the 100-year flooding potential. The stream floodplains with a 100-year flooding potential through which the pipelines pass are associated with the South Fork of the Sangamon River, Buckhart Creek, the Sangamon River, Cantrall Creek, Fancy Creek, and Sugar Creek.

FEMA mapping depicts about 4.5 miles (33%) of the total gravel pit pipelines to be within an area of the 100-year floodplain. The stream floodplains with a 100-year flooding potential, through which the pipelines pass, are associated with the Sangamon River, the south Fork of the Sangamon River, and Buckhart Creek.

### 3.3.5.6 Wetlands

The Sangamon River Valley wells and pipeline corridors pass through or directly adjacent to about 137 NWI wetland areas. About 103 (76%) of the NWI wetland areas encountered were within the Sangamon River Valley. Twenty-eight of these wetland areas are depicted on NWI mapping as palustrine emergent shallow marshy areas. Sixty-two of these areas are designated as palustrine forested wetlands, which are wet, wooded areas located near streams. Thirty of the areas are depicted as palustrine with unconsolidated bottoms that have been diked or impounded. These areas are generally man-made ponds. Seven of the NWI wetland areas are designated as palustrine scrub-shrub which are wet areas with shrubby vegetation. Five of the areas have a combined designation of palustrine emergent and palustrine scrub-shrub. Three of the areas are riverine

wetlands that are associated with stream channels. Two of the areas have the combined designation of palustrine forested and palustrine emergent.

The gravel pit pipeline corridors pass through or directly adjacent to about 16 NWI wetland areas. Five of these areas are depicted on NWI mapping as palustrine forested wetlands. Two of the wetlands are designated as shallow-marshy palustrine emergent areas. The area where the pipeline crosses the South Fork channel is depicted as a riverine wetland. Three of the areas are designated as palustrine scrub-shrub wetlands. One area is a man-made pond designated as palustrine unconsolidated bottom, diked or impounded. The four gravel pits are each designated as lacustrine, limnetic, unconsolidated bottom, permanently flooded areas formed by excavation.

## 3.4 ILLINOIS RIVER WELL SYSTEM

The Illinois River well field alternative is shown in Figure 2.3.5.5. The northern well field area considered in this evaluation is located along the east side of the Illinois River in Scott County, Illinois, and includes portions of Sections 25 and 36 at R. 14 W., T. 14 N., and portions of Sections 30 and 31 at R. 13 W., T. 14 N. The southern well field is 2.8 miles south of the northern field, the southern limit being in Section 17 in T. 13 N., R. 13 W. The proposed pipeline route runs from the northern well field north and then east for about 54 miles to where it enters Lick Creek at R. 6 W., T. 15 N. in Section 33 in Sangamon County. The proposed pipeline route runs north from the well field to Interstate 72/36 and then east along the south side of Interstate 72/36 to east of Jacksonville. The route then runs parallel with Interstate 72/36 along old Route 36 passing south of New Berlin and east to Bates. At Bates the route heads south to near Loami and then east to Lick Creek, which flows into Lake Springfield.

Well fields, pump stations, and flush out points would occupy 3 acres and 2.7 acres for the full-scale and partial systems, respectively. Pipelines would be constructed on easements within the affected corridors.

### 3.4.1 Socio-Economic Resources

The total number of housing units in Scott County in 1990 was 2,442, a 3.7% decrease since 1980. Morgan County had a 1.1% increase (14,724 housing units) reported in 1990. Sangamon County had a 5.5% increase (76,873 housing units) reported in 1990.

Scott, Morgan, and Sangamon Counties reported 10.3%, 7.1% and 6.1%, respectively, of their total housing units being vacant in 1990.

The median values in 1990 of owner occupied housing were $32,800 in Scott County, $47,700 in Morgan County, and $60,900 in Sangamon County. This compares with the median value of $80,900 for all of Illinois in 1990.

#### 3.4.1.1 Demographics

Population trends were reviewed for the project area counties. Sangamon County experienced a slight population increase (3.0%) between 1992 and 1990. Scott County had a population decrease of 8.6%, and Morgan County had a population decrease of 3.3%. These data reflect a general national trend of population decline in rural, primarily agricultural counties and population increase in counties with urban centers.

The largest age category of people residing in these three counties was the group 5 years of age to 17 years. This category averaged 18.7% of the counties' total population. The second largest category was between was between the ages of 25 and 34, which represents 15.9% of the counties' total population. Ranking third was the category between 35 and 44 years of age, which accounts for 14.3% of the counties' total population.

### 3.4.2 Agricultural Lands

According to the 1992 Census of agriculture, Scott County had 337 farms with an average size of 382 acres, with an average land value of $1,073 per acre, and produced $91,539 of agricultural products per farm. Morgan County had 864 farms with an average size of 360 acres, with land averaged at $1,688 per acre, and produced $98,425 of agricultural products per farm. Sangamon County had 1,046 farms with an average size of 427 acres, with the land averaged at $2,123 per acre, and produced $131,772 of agricultural products per farm.

### 3.4.3 Cultural Resources

Site records of the IHPA depict six known archaeological sites within the Illinois River potential pipeline corridor. Two of these sites, located in the Illinois River floodplain near the toe of the bluff, are complex multi-site areas. The IHPA site records show the general bluff/floodplain region to have high occurrences of known archaeological sites with more than 200 documented from the town of Bluffs to east of the area of the potential well field. This indicates the pipeline corridor has a high probability for occurrence of more archaeological sites within or near the Illinois River bluff/floodplain area. Based on archaeological studies for other central Illinois projects, such as the Hunter Lake alternative, a moderate probability of occurrence of archaeological sites within the pipeline corridor is expected for the portion of the proposed route from the Illinois River bluff area to Lake Springfield.

### 3.4.4 Air Quality

This alternative is located within areas considered as "attainment" for all of the criteria pollutants except particulate matter (PM-10). For this pollutant, the areas are "unclassified."

### 3.4.5 Natural Resources

#### 3.4.5.1 Natural Divisions

The project area lies in the Springfield Plain Section. The Springfield Plain Section is a subdivision of the Central Lowlands Physiographic Province. The Springfield Plain is underlain almost continuously by Illinoisan and older glacial drift, which is thick enough to obscure all but the major variations in the bedrock topography. A cover of loess occurs over the glacial drift in almost all of this area. Generally, there is relatively low relief within the study corridor. Surface topography is mostly level to slightly undulating, except where dissected by creeks and drainage ways.

#### 3.4.5.2 Geology

The uppermost bedrock strata are nearly evenly divided between Pennsylvanian and Mississippian Systems. Except for areas adjacent to the Illinois River, the majority of the bedrock closest to the surface is Pennsylvanian. The bedrock in the proposed counties is overlain predominately by material that was deposited as a result of glacial advances during the Illinoisan stage of the

Pleistocene Epoch. Except for major drainage areas (i.e., Illinois River), the surface materials consist of hard, compact sandy till with sand and gravel. Major drainage areas are comprised of Holocene-aged Cahokia Alluvium. These soils consist of poorly sorted sand, silt, or clay. The glacial till deposits are generally blanketed by a relatively thick veneer of windblown deposits called loess, which are composed principally of very fine sand and silt.

#### 3.4.5.3 Land Use

The existing land use of the area included in the alternative is largely influenced by the region's suitability for agriculture. The land within the alternative consists of well-drained, good to very good soil and moderately level terrain. Developed areas include residential homes, farm buildings, feedlots, schools, commercial and industrial buildings.

#### 3.4.5.4 Threatened and Endangered Species/Parks and Natural Areas

The IDNR Natural Heritage Database documented only one listed species within the pipeline corridor. The State-threatened bunchflower (*Melanthium virginicum*) was shown within the corridor along a railroad line in Section 26 on the south side of Orleans. The preferred habitats of the bunchflower are meadows, wet thicket, and damp woods. No parks or natural areas were listed within the pipeline corridor.

#### 3.4.5.5 Floodplains

FEMA flood insurance mapping depicts about 7.9 miles (14%) of the Illinois River Valley pipeline to be within an area of the 100-year flooding potential. The stream floodplains with a 100-year flooding potential through which the pipelines pass are associated with the Illinois River, Plum Creek, Walnut Creek, Sandy Creek, Lick Creek, and Mauvaise Terre Creek.

#### 3.4.5.6 Wetlands

The well field area and the 400-foot-wide pipeline route pass through or directly adjacent to about 30 wetland areas as depicted on NWI mapping. Eleven of these are depicted on NWI mapping as palustrine areas with an unconsolidated bottom which is intermittently exposed and is diked or impounded. These areas are generally man-made ponds. Six of these wetland areas are palustrine forested areas found near streams. Three of the areas are designated as palustrine emergent. Nine of the areas are riverine and are associated with the stream channels. One of the wetland areas is designated as a lacustrine area and is within the Mauvaise Terre Creek channel, which is an extension of the eastern end of Lake Mauvaise Terre.

## 3.5 HAVANA LOWLANDS WELL SYSTEM

The Havana Lowlands well fields alternative is shown in Figure 2.3.6.5. The potential well fields considered in this evaluation are situated southwest and northwest of Mason City in Mason County, Illinois. The northern well field is in the northern part of Section 22 and the southern portion of Section 15, both within T. 21 N., R. 6 W. The northern 9.8-mile-long transmission main runs southeast to Route 29 southwest to Mason City and continues south along Route 29 where it joins the west transmission leg. The southern well field is located in Section 19, R. 6 W., T. 20 N. southwest of Mason City. The western 6-mile transmission route runs east from the well field to Route 29 where it joins the northern transmission leg. The remaining joint transmission pipeline proceeds for another 34 miles south along the east side of Illinois Route 29 to Athens where it turns

eastward and follows Illinois Route 124 to an old railroad grade at Van Wood. The pipeline then proceeds south along the west side of the railroad grade to the west side of Interstate 55 near Sherman. The pipeline crosses to the east side of I-55 between Hoover Branch and the intersection of I-55 and Interstate 72/36 and proceeds south to Lake Springfield to the east side of Spaulding Dam.

The well locations, pump stations, and flush-out points would occupy 4.8 acres and 3.1 acres for the full-scale and partial systems, respectively. Pipelines would be constructed on easements in the affected corridors.

### 3.5.1 Socio-Economic Resources

The total number of housing units in Mason County in 1990 was 7,684, a 9.3% decrease since 1980. Menard County had a 0.9% increase (4,650 housing units) reported in 1990. Sangamon County had a 5.5% increase (76,873 housing units) reported in 1990.

Mason, Menard and Sangamon Counties reported 17.5%, 9.7% and 6.1% of their total housing units being vacant, respectively, in 1990.

The median values in 1990 of owner occupied housing were $35,800 in Mason County, $51,500 in Menard County and $60,900 in Sangamon County. This compares with the median value of $80,900 for all of Illinois in 1990.

#### 3.5.1.1 Demographics

Population trends were reviewed for the project area counties. Sangamon County experienced a slight population increase (3.0%) between 1992 and 1990. Mason County had a population decrease of 15.5% and Menard County had a population decrease of 2.9%. These data reflect a general national trend of population decline in rural, primarily agricultural counties and population increase in counties with urban centers.

The largest age category of people residing in these three counties was the group 5 years of age to 17 years. This category averaged 19.4% of the counties' total population. The second largest category was between was between the ages of 25 and 34, which represents 15.3% of the counties' total population. Ranking third was the category between 35 and 44 years of age, which accounts for 15.2% of the counties' total population.

### 3.5.2 Agricultural Lands

According to the 1992 Census of agriculture, Mason County had 489 farms with an average size of 577 acres, with land averaged at $1,223 per acre, and producing $149,070 of agricultural products per farm. Menard County had 375 farms with an average size of 438 acres, with the land average at $1,539 per acre, and producing $126,679 of agricultural products per farm. Sangamon County had 1,046 farms with an average size of 427 acres, with the land averaged at $2,123 per acre, and producing $131,772 of agricultural products per farm.

### 3.5.3 Cultural Resources

Site records of the IHPA depict no identified archaeological sites within the potential well fields or the pipeline corridor north of Sherman. However, relatively few archaeological surveys have been conducted for the areas of the pipeline corridor from the Havana Lowlands well fields to the

Sherman area. A moderate probability for occurrence of sites is expected along this portion of the proposed route based on other central Illinois project studies, such as the cultural resource studies for the Hunter Lake alternative. The remaining portion of the pipeline route from Sherman to Lake Springfield traverses a portion of the Sangamon River Valley that has been extensively surveyed for cultural resources. The area of the Sangamon River Valley encompassed by Sherman, located north of Springfield; Spaulding Dam and Rochester, located southeast of Springfield; and Riverton, located northeast of Springfield contains over 110 known archaeological sites. The portion of the Havana Lowlands potential pipeline south of Sherman has a relatively high probability of encountering archaeological sites.

### 3.5.4 Air Quality

This alternative is located within areas considered as "attainment" for all of the criteria pollutants except particulate matter (PM-10). For this pollutant, the areas are "unclassified."

### 3.5.5 Natural Resources

#### 3.5.5.1 Natural Divisions

The majority of the project area lies in the Springfield Plains Section. Characteristics of the Springfield Plain Section are described in Section 3.4.5.1. The northern well field is located in the Illinois River section of the Illinois River and Mississippi River Sand Areas Natural Division. This section includes both dry and wet sand prairie habitats.

#### 3.5.5.2 Geology

Geology in the project area is essentially the same as that described in Section 3.4.5.2 above.

#### 3.5.5.3 Land Use

Existing land use in the project area is essentially the same as that described in Section 3.4.5.3 above.

#### 3.5.5.4 Threatened and Endangered Species/Parks and Natural Areas

The IDNR Natural Heritage Database documented two listed species within or near the pipeline corridor. The State-endangered broomrape (*Orobanche ludoviciana*) was identified within about 1,200 feet west of the pipeline route at R. 6 W., T. 19 N., Section 2 within the Salt Creek valley. Suitable habitats for the broomrape are dry sand prairies and sandy alluvium along streams. The State threatened pied-billed grebe (*Podilymbus podiceps*) has been documented in the ash ponds north of Lake Springfield's Spaulding Dam. The pied-billed grebe inhabits fairly large, well vegetated lakes, ponds, sluggish streams, and marshes. No parks or natural areas were identified within the pipeline corridor.

While the Natural Heritage Database contains no records of occurrence for any threatened or endangered species for the northern well field, this area provides a very sandy substrate which could potentially support a number of threatened or endangered species not always found in pristine habitat, such as the western hognose snake, umbrella sedge, Patterson's bindweed, Illinois chorus frog, or Hall's bulrush. Database records do report the occurrence of the threatened Illinois chorus frog (*Pseudachris streckeri*) and the endangered Hall's bulrush (*Scirpus hallii*) in sections adjacent to the northern well field.

### 3.5.5.5 Floodplains

FEMA flood insurance mapping depicts about 7.3 miles (18%) of the pipeline to be within an area of the 100-year flooding potential. The stream floodplains with a 100-year flooding potential through which the pipeline corridor passes are associated with the Sangamon River, Salt Creek, Cantrall Creek, Fancy Creek, and Sugar Creek.

### 3.5.5.6 Wetlands

The well field and the 400-foot-wide pipeline route pass through or directly adjacent to about 36 NWI wetland areas. Thirteen of these wetland areas are depicted on NWI mapping as palustrine forested, most of which are located near streams. Ten of the wetland areas are designated as riverine and are associated with stream channels. Three of the NWI wetland areas are depicted as palustrine emergent shallow water areas. Five of the areas are designated as palustrine with unconsolidated bottom that is intermittently exposed and had been diked or impounded. These areas are generally man-made ponds. Two of the wetland areas are designated as palustrine scrub-shrub. Two of the areas have a combined designation of palustrine scrub-shrub and palustrine emergent. One of the areas has a combined designation of palustrine forested and palustrine emergent.

# SECTION 4.0
# ENVIRONMENTAL CONSEQUENCES

Impacts of all identified feasible alternatives are compared in Table 4.1. Impacts of each individual alternative are addressed in Sections 4.1 through 4.8.

## 4.1 HUNTER LAKE

### 4.1.1 Socio-Economic Impacts

Examining tax losses as a percent of total property tax receipts, those authorities projected to have the greatest losses include the Chatham Area Library District (-3.04%), Cooper-Cotton Hill Multi-Township Assessment District (-9.59%), Cotton Hill Township (-17.07%), Pawnee Fire Protection District (-5.82), and Cotton Hill Township's Single Townships Road District (-17.07%). The remaining authorities should see reductions in property taxes of less than 2%. In absolute dollar losses, the Ball-Chatham Community Unit District, Sangamon County, Pawnee Community Unit District, Cotton Hill Township, Lincoln Land Community College, Rochester Community Unit District, Pawnee Fire Protection District, Chatham Area Library District, and Ball Township are projected to see the greatest reduction. The total annual tax loss to the 24 authorities is estimated at about $150,000. This loss in property taxes, however, represents only about 0.6% of the total property tax receipts. Less services would need to be provided to the project area.

This alternative would displace 69 homes in the project area. Overall, the social impacts of lake construction would be negative for 60% to 80% of the residents in the project area for whom relocation may cause serious hardships. For most residents living in the rural areas around the lake and in Pawnee, social impacts would be slight. No minority or low-income communities are likely to be disproportionately affected by the proposed action.

There are currently two businesses located within the project area—KOA Campgrounds and a family-owned fertilizer and sales operation. The KOA Campground site is owned by the City and is leased to the operators by CWLP. This lease would not be renewed if Hunter Lake is constructed. The applicant does not plan to relocate the campground. The City would expect that the fertilizer operators would relocate their operation to a different farmstead. The project is not anticipated to affect the occupations of the residential tenants. It is anticipated that the agricultural occupants would continue their pursuits at remaining agricultural holdings and replace their residences near the project area with proceeds from their sales to the City.

All homes or businesses would be compensated at Fair Market Value.

**Table 4.1** **Feasible Alternatives Impacts**

| Alternative | Pipeline Total Length (Miles) | 100 yr. Floodplain (Acres)* | Agricultural Land (Acres)* | Non-Agricultural/ Forested Land (Acres)* | NWI Wetlands+ | Stream Crossings (Pipelines) | Threatened & Endangered Species | Designated Natural Areas and Parks |
|---|---|---|---|---|---|---|---|---|
| Hunter Lake (21.3 mgd) | N/A | 2350 | 3781 | 4014 | 318 | N/A | 1# | |
| Illinois River Wells (15.8 mgd) | 56.0 | 130 | 662 | 55 | 32 | 41 | 1 # | |
| Havana Lowlands Wells (16 mgd) | 50.7 | 98 | 556 | 47 | 38 | 37 | 1 # | |
| Lick Creek Reservoir (8.3 mgd)/Sangamon River Wells (8.0 mgd) | 57.3 | 1745 | 4560 | 1001 | 335 | 61 | 1# | Carpenter Park 15 acres; Riverside Park 6 acres; South Fork Natural Area 2 acres |
| Lick Creek Reservoir (8.3 mgd)/Sangamon River Wells (3.33 mgd)/All Pits (4.8 mgd) | 32.2 | 1585 | 4439 | 821 | 262 | 30 | 1# | South Fork Natural Area 2 acres |
| Lick Creek Reservoir (8.3 mgd)/Sangamon River Wells (6.67 mgd)/Pit A (0.87 mgd) | 59.0 | 1781 | 4564 | 1021 | 358 | 51 | 1# | Carpenter Park 25 acres; Riverside Park 6 acres; South Fork Natural Area 2 acres |
| Illinois River Wells (12 mgd)/ Sangamon River Wells (3.33 mgd) | 89.7 | 295 | 901 | 187 | 89 | 74 | 1 # | South Fork Natural Area 2 acres |
| Havana Lowlands Wells (12 mgd)/Sangamon River Wells (3.33 mgd) | 73.4 | 287 | 719 | 171 | 95 | 64 | 1# | South Fork Natural Area 2 acres |

* - Based on 100-foot-wide pipeline construction corridor.
+ - Jurisdictional wetlands impact would be less than indicated.
# - Avoidance probable.

| Table 4.1 | Feasible Alternatives Impacts | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Alternative** | **Energy Requirements (System Horsepower)** | **Cultural Resources Impact Probability** | **Farm Displacement** | **Housing/ Business Displacement** | **Reservoir Pool Area (Acres)** | **Total Project Area (Acres)** | **Impact on Local Taxing Bodies** | **Increased Recreation Potential** |
| Hunter Lake (21.3 mgd) | 600~ | High | 60 | 91 | 3010 | 7795 | Negative | Yes |
| Illinois River Wells (15.8 mgd) | 2551 | High | 0 | 0 | N/A | 719 | Neutral | No |
| Havana Lowlands Wells (16 mgd) | 2118 | Moderate/ High | 0 | 0 | N/A | 608 | Neutral | No |
| Lick Creek Reservoir (8.3 mgd)/ Sangamon River Wells (8.0 mgd) | 536 | High | 85 | 90 | 1948 | 6260 | Negative | Yes |
| Lick Creek Reservoir (8.3 mgd)/Sangamon River Wells (3.33 mgd)/All Pits (4.8 mgd) | 360 | High | 85 | 91 | 1948 | 5952 | Negative | Yes |
| Lick Creek Reservoir (8.3 mgd)/Sangamon River Wells (6.67 mgd)/Pit A (0.87 mgd) | 374 | High | 85 | 90 | 1948 | 6281 | Negative | Yes |
| Illinois River Wells (12 mgd)/ Sangamon River Wells (3.33 mgd) | 2551 | High | 0 | 0 | N/A | 939 | Neutral | No |
| Havana Lowlands Wells (12 mgd)/Sangamon River Wells (3.33 mgd) | 1649 | High | 0 | 0 | N/A | 780 | Neutral | No |

~ Existing Facility Capacity

### 4.1.2 Agricultural Lands

Construction of Hunter Lake would cause a reduction in agricultural production due to the inundation of croplands in the pool area, and the active or passive conversion of croplands in the marginal lands to native forest or grassland cover. Based on the average per acre farm income for Sangamon County of $308, the estimated potential annual loss of farm income from agricultural lands within the total project area would be $1,164,000 per year. Approximately 1,108 acres of cropland within the proposed Hunter Lake normal pool elevation would be inundated. A total of 3,781 acres of cropland would become idle in the full project area. Sixty farm units would be displaced by this project.

### 4.1.3 Land Use Impacts

Land use changes expected to occur as a result of the construction of Hunter Lake include a reduction in row crop cultivation given the change of landscape from terrestrial to aquatic in the pool area and less intensive uses of those marginal lands where mitigation would convert croplands to natural landscapes.

Within the Hunter Lake project area boundary, 34% of the soils are classified as prime farmland. When including acreage that could be considered prime if modified, 59.3% of the project area or approximately 4,622 acres can be classed as prime farmland. Approximately 519 acres which represents 16% of the area within the normal pool elevation (571 MSL) can be considered prime farmland. When including acreage that could be classified as prime if modified, the total acreage of prime farmland is 62.4% of the pool area or 2,066 acres. The applicant's proposed mitigation plan described in Section 4.1.9.2 of this document includes the conversion of approximately 118 acres of City-owned property on Sugar Creek north of Lake Springfield (soils classified as prime or prime if modified) from cropland to forested wetland. The proposed project (with implementation of the mitigation plan as currently proposed by the applicant) would therefore result in the conversion of a total of 4,740 acres of soils classed as prime or prime if modified to other land uses. Inundation by the reservoir would represent a loss of natural resource value to approximately 2,066 acres. The conversion of the remaining 2,674 acres in the marginal lands to forest or grassland cover should not diminish the natural resource value identification of the soils as prime farmland.

Hunter Lake might influence residential development pressure due to the pleasing aesthetics of the proposed lake and surrounding buffer of natural area. The lack of sanitary sewer and water lines, however, would limit the likelihood for residential subdivision or commercial development to occur.

The Springfield City Council has committed by ordinance to protect the marginal lands under City control surrounding the proposed Hunter Lake. No leases on lake margins would be issued to any private party for any purpose.

Recreation opportunities would increase in the Hunter Lake area due to the establishment of conservation areas on the marginal lands surrounding Hunter Lake and lake access facilities. These opportunities would help ease the 1,500-acre deficit in open space lands in Sangamon County and provide additional fishing opportunities for which demand currently exceeds supply in central Illinois. Recreation development would be mainly outdoor in nature, such as picnicking, hiking, bicycling, camping, fishing, hunting, and boating. Two lake access areas would be developed for boaters and fishermen. A fisheries management agreement would be established with the Illinois Department of Natural Resources (IDNR) for development of fisheries resources in the reservoir.

An analysis of Hunter Lake recreational opportunities (Booker 1998) estimated recreational use would range from 50,000-150,000 visitor days annually. Local spending by recreational users of Hunter Lake would range from $3.50-$6.50 per person per day. Depending on the number of recreational users and

how much they spend in the area, Hunter Lake would generate between $131,000 and $1,215,000 annually in economic output and create 1 to 15 jobs. The recreational facilities currently proposed for Hunter Lake, if built, would be limited in comparison with those available at Lake Springfield or Sangchris Lake to the east of the Hunter Lake project area. Both of these reservoirs feature intensive recreational development and provide numerous facilities for a variety of activities. Recent annual visitor days to Sangchris Lake State Park have ranged from 450,000 to 500,000 (annualized at 1,235–1,370 people per day).

### 4.1.4 Cultural Resources

A Programmatic Agreement (PA) has been negotiated per 36 CFR Section 800.13 (Protection of Historic and Cultural Properties) between the Rock Island District, U.S. Army Corps of Engineers; the Advisory Council on Historic Preservation; the Illinois Historic Preservation Officer; and the City of Springfield, Illinois, that details what actions the Corps has to take in order to be in compliance with Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1966 (P.L. 89-665), as amended. The PA is appropriate for meeting the Corps' NHPA compliance requirements due to the complexity of the project and the fact that effects on historic properties cannot be fully determined prior to issuance of the permit. A copy of the PA is included as Appendix C to this EIS.

This PA stipulates the measures to be undertaken by the Corps or its representative for inventory, evaluation, preservation, and/or mitigation of National Register of Historic Places eligible or listed archeological, historical, and architectural properties in the project's area of potential effect. Approximately 75 acres of the Hunter Lake project area has not been surveyed for historic properties. This acreage, in addition to any land outside the present project boundary that is directly affected by ancillary project construction activities (such as utility corridor realignments, road relocations, borrow activities, additional land acquisition, etc.) shall be subjected to historic properties survey and evaluation as stipulated in the PA.

There are a total of 117 historic properties that are potentially eligible for the National Register of Historic Places (NRHP), 89 of which are located within inundation and/or shoreline impact zones. Historic properties within these zones cannot be avoided and therefore will require a determination of effect. The remaining 28 potentially eligible historic properties are located in upland zones where impacts are unlikely but cannot be fully determined at this time. These properties, as well as any cultural resources that are documented by surveys yet to be conducted in support of the Hunter Lake alternative, will be evaluated on a case-by-case basis as stipulated in the PA.

Additional stipulations in the PA cover archeological mitigation, curation and dissemination of information, provisions for undetected historic properties discovered during project implementation, identification and evaluation of architectural standing structures, treatment of historic and architectural standing structures, reporting provisions, dispute resolution, amendments, and termination provisions. Execution of this PA and implementation of its terms evidence that the Corps has afforded the Council an opportunity to comment on the Hunter Lake alternative and its effects on historic properties, and that the Corps has taken into account the effects of the undertaking on historic properties pursuant to Sections 106 and 110 of the NHPA and its implementing regulations 36 CFR Part 800.

### 4.1.5 Natural Resources

#### 4.1.5.1 Biological Impacts

Inundation of the proposed pool area would change the land cover from predominantly terrestrial areas to aquatic habitat. Land cover categories indicate that approximately 1,108 acres of cropland, 1,526 acres of

forest, and 310 acres of grass/CRP lands would be converted to aquatic areas. Approximately 18 acres is currently aquatic habitat.

While all land cover types except open water will experience some reduction in acreage as a result of inundation, the loss of forested areas represents the greatest negative effect to natural terrestrial habitats in the study area. The 1,526 acres of existing forest that would be converted to aquatic habitat represents a substantial percentage of the existing forested acreage not only in the project area, but also in the entire Horse and Brush Creek watershed.

Building the lake will displace the terrestrial mammals in the pool area. Impacts will be mostly negative with regard to bird populations due to the removal of forest and grassland habitat. Populations of most bird species will likely decrease; impacts will be neutral for some and positive for others that rely on aquatic habitats and standing dead timber. The trees supporting the heron rookery described in Section 3.1.5.4 and in IDNR correspondence are located approximately 20-30 yards from Horse Creek and are likely to die as a result of permanent inundation of their root systems. This will probably result in abandonment of the rookery if other suitable roost trees are not currently present nearby. Over time, as forests mature in the marginal lands, trees suitable for use as rookeries may be reestablished in the project area. Some species of amphibians and reptiles within the project area are expected to decrease in abundance as a result of constructing the lake, while others will likely increase due to the creation of permanent lentic habitats. Most of the species predicted to decline are wide-spread and relatively common in Illinois.

In general, impoundments have a negative impact on native stream fishes. With the conversion from free-flowing to lake-like conditions, those species that require flowing water, well-oxygenated gravel/sand riffles for egg deposition, or other natural stream attributes are usually reduced in numbers or eliminated. Using Lake Springfield as a model, it is likely that some species, including the red shiner, fathead minnow, bigmouth buffalo, black bullhead, and yellow bullhead, would survive in Hunter Lake and populations of some species, such as gizzard shad, carp, golden shiner, channel catfish, green sunfish, bluegill, largemouth bass, white crappie, and freshwater drum, would increase. A few species, including the bluntnose minnow, bullhead minnow, quillback, tadpole madtom, and blackstripe topminnow, would decrease in numbers of individuals and several species, such as central stoneroller, striped shiner, redfin shiner, hornyhead chub, bigmouth shiner, sand shiner, suckermouth minnow, creek chub, white sucker, pirate perch, and Johnny darter, would not survive and reproduce in the lake. Some species are not present in the stream system but are likely to gain access to the lake and successfully reproduce. As is evident with Lake Springfield, a productive sport fisheries program in Hunter Lake would be possible with active management of the fish fauna.

Impounding a stream leads to major changes in available aquatic habitats, and, therefore, quantitative and qualitative changes in the phytoplankton and periphyton flora are expected; phytoplankton densities would increase. The habitat of the project area would change from a small stream, littoral habitat to primarily a limnetic habitat due to the large volume of open water that would be created by the impoundment. This would result in a decline of several littoral zooplankton species and an increase in populations of limnetic species. The relative abundance of littoral versus limnetic species would depend upon shoreline development. Using Lake Springfield as a model, it is likely that all species of freshwater mussels found in the area would survive in Hunter Lake.

Floodplain mosquitoes, particularly *Aedes vexans,* occur in areas of low topographic of relief wherever shallow, transient ground pools occur in grassy or forested regions. Floodplain mosquitoes have not been problematical in the upper arms of Lake Springfield. Greater frequencies of occurrence are noted during wet years when substantial upland and floodplain areas are soggy. The relatively steep-side character of the proposed lake would make predators available to assist in control of mosquito larvae.

The Sangamon County Health Department has investigated numerous occurrences of discarded tires, or other junk that pool water and present suitable mosquito rearing sites. Disease-carrying mosquitos are most typically found in these types of habitat and in areas that may have high organic content such as sewage lagoons or failing septic tanks. None of these conditions would be typical of areas found at the proposed lake.

Mitigation measures to enhance the terrestrial habitat of the marginal lands and aquatic areas are addressed in Section 4.1.9.

#### 4.1.5.2 Potential Threatened and Endangered Species/Parks and Natural Areas

The only threatened or endangered species reported for the project area is the freshwater mussel, *Uniomerus tetralasmus*, the pondhorn. This species was removed from the State list of threatened species in 1994 because recent data show it to be more common than originally thought. The specimens collected were all upstream of the proposed reservoir. The potential impacts to the *U. Tetralasmus* are hard to predict. No *U. Tetralasmus* were found in Lake Springfield in 1953 or 1977, but they continue to survive above the lake. Whether or not they were present in Sugar Creek before it was impounded is unknown. The pondhorn was found in the 1950's in the South Fork Sangamon River and its headwater tributary Flat Branch, and it still may persist in other streams in the drainage.

Because freshwater mussels require an intermediate host to complete their life cycle, the existence of this species depends directly upon the continued presence of the appropriate host. The only reported host for the pondhorn is the golden shiner, *Notemigonus crysoleucas*. The golden shiner is one of the most widespread and common fishes in Illinois. The pondhorn and golden shiner occupy similar habitats, and both would be expected to reproduce and survive in upper Horse and Brush Creeks if Hunter Lake was constructed.

No significant impacts to the Kirtland's water snake (*Clonophis kirtlandi*) would be expected to occur from construction of Hunter Lake. The Kirtland's water snake is found primarily in open habitats such as prairie fens, wet prairies, wet meadows, lakeside wet prairies, and associated open and wooded wetlands. Although several of these habitat types are present within the Hunter Lake property boundary, little optimum habitat for this species currently exists in the project area (less than 30 acres as determined by the INHS). While the loss of existing habitat to inundation could adversely affect the species if it is in fact present in the project area, creation of the lake and removal of marginal lands from agricultural production could potentially have a minor beneficial effect on the species, if present.

No parks or natural areas were identified within the project area.

### 4.1.6 Water Quality/Resources

#### 4.1.6.1 Groundwater

Two locations were analyzed to estimate the impacts of Hunter Lake on local groundwater levels (Anliker 1996). The two locations are near the southeastern shoreline of Lake Springfield. Location A lies between Lake Springfield and the proposed Hunter Lake, approximately 3,000 feet west of Hunter Lake. Location B lies about 3,000 feet north of Hunter Lake.

The modeling approach predicted a range of increases in the water table level at Location A dependent upon actual present depth to water and to bedrock (Table 4.1.6.1).

**Table 4.1.6.1 Calculated Increase (Ft.) in Water Table Elevation at Location A**

| | Assumed Present Depth to Water at Location A, ft | | | | |
|---|---|---|---|---|---|
| Assumed Bedrock Elevation, ft. msl | 11 | 16 | 21 | 26 | 31 |
| 530 | 1.7 | 3.3 | 5.1 | 7.1 | 9.4 |
| 520 | 2.5 | 4.1 | 5.9 | 7.8 | 9.9 |
| 510 | 3.0 | 4.7 | 6.4 | 8.3 | 10.3 |
| 500 | 3.4 | 5.1 | 6.8 | 8.6 | 10.5 |
| 490 | 3.7 | 5.3 | 7.0 | 8.8 | 10.7 |
| 480 | 4.0 | 5.6 | 7.3 | 9.0 | 10.8 |

Within the boundaries of Area A, one well record was available which included depth-to-water information. This record indicated that the primary water-yielding materials were penetrated at a depth of about 21 feet. With an assumed depth of 21 feet, predicted increased water table depths range from 5.1 to 7.3 feet due to Hunter Lake.

No substantial rise in the local water table at Location B due to the proposed lake is expected. First, it is not expected that the average flow of water in Horse Creek would increase downstream of the proposed dam. Therefore, an increase in the average water depth in Horse Creek, which could cause a rise in the local water table, would not be expected.

Secondly, in considering the effects of Hunter Lake on local water table conditions north of the proposed dam, the following can be observed. For the dam to function properly, it would have to be designed to dissipate a hydraulic head of near 571 ft. msl to a level at least lower than 530 ft. msl, which is the approximate land surface elevation "below" the dam and near Horse Creek. Groundwater would essentially "seep" from the ground on the downstream face of the dam if this was not accomplished. For these reasons, no impact to the local water table at Location B is anticipated.

### 4.1.6.2 Surface Water Resources

The U.S. Army Corps of Engineers HEC-5Q model for Simulation of Flood Control and Conservation Systems with Water Quality Analysis (Bora *et al.* 1997) was used to predict water surface elevations and constituent concentrations in Lake Springfield and the proposed Hunter Lake Reservoir, individually and in combination, during a 20-month drought represented by meteorological data and estimated flows in 1953-1954 and current water supply and power plant withdrawal rates. Water temperature and dissolved oxygen (D.O.). concentrations were highly dependent on meteorological conditions, i.e., time of year. Concentrations of nitrate-nitrogen and phosphate-phosphorus in lake waters were highly dependent on upstream contributions. Due to greater water depth, the proposed lake had distinct and prolonged gradients of water temperature and D.O. concentrations compared to Lake Springfield. Nitrate-nitrogen levels in the proposed lake were predicted to be higher than Lake Springfield but below the drinking water limit. Phosphate-phosphorus levels in the proposed lake were similar to Lake Springfield. Although there were no significant changes in D.O. concentrations in Lake Springfield as a result of

supplemental storage from Hunter Lake, total D.O. amounts in Lake Springfield improved (higher concentration for deeper water) due to the supplemental storage.

An analysis of erosion and sedimentation potential in the Hunter Lake watershed (INHS 1993) indicated that the average soil erosion rate for the Hunter Lake watershed is approximately 2.4 tons/acre/year. The sediment budget developed for Hunter Lake (CMT 1994) calculated estimates of sediment delivery ranging from 0.71 to 1.0 tons/acre/year. While sediment delivery to Hunter Lake is expected to be similar to that which has been observed for Lake Springfield, there are a number of areas along Horse and Brush Creeks that currently experience moderate to severe erosion. If existing land use patterns in the marginal lands of the Hunter Lake project area were to continue after creation of the reservoir, most of the soils eroded after the lake is completed would be deposited in the lake. The CMT analysis calculated an expected 0.13% annual loss in storage capacity for Hunter Lake. Using this estimate, Hunter Lake's storage capacity would be reduced from an initial 15.6 billion gallons at construction to 15.0 billion gallons 30 years after construction.

Since 1983, the applicant has provided funding to the Sangamon County Soil and Water Conservation District (SCSWCD) to implement cost-share programs for best management practices in the Lake Springfield watershed, such as construction of terraces, grassed waterways, and ponds; the purchase of no-till planting equipment; and other conservation programs. The applicant has also worked with the SCSWCD to acquire other funding such as the Federal PL-566 watershed program.

In 1990, a resource planning committee was assembled by the applicant to develop a protection plan for the Lake Springfield watershed. The Lake Springfield Watershed Resource Planning Committee concentrates on the resource concerns of agriculture, sedimentation and water quality, and urban issues. A comprehensive resource plan was developed to include a variety of management practices meeting multiple environmental objectives. The group remains active and currently is involved with a multi-year research program on the efficiency of various tillage practices on the reduction of nutrient, pesticide, and sediment runoff.

The City has expressed willingness to initiate efforts to form and actively participate on a watershed resource planning committee for Hunter Lake if a permit is issued for lake construction. The Lake Springfield Watershed Resource Planning Committee has prepared a preliminary list of possible participants for a similar committee to form a watershed management plan for Hunter Lake. The applicant would initiate the planning efforts and has made initial contact with the SCSWCD for its assistance. The District can arrange for facilitation for the USDA Natural Resource Conservation Service's three-phase, nine-step planning process for the watershed planning.

### 4.1.7 Floodplains

FEMA mapping showed that approximately 2,350 acres of the 100-year floodplain would be inundated at the normal pool elevation of the proposed Hunter Lake.

Section 702.60 of Title 92 Illinois Administrative Code requires the City to obtain title or flood easements on lands that are subject to increased flood heights due to construction of the project. Increased flood height is generally defined as a water surface profile increase greater than 0.1 foot in urban areas and 0.5 foot in rural areas for events up to and including the 100-year frequency flood.

Extensive modeling of the 100-year event has identified areas impacted by this requirement. The total area of flood easements required is approximately 142 acres (Hanson 1993), all located upstream of the proposed reservoir. In addition, flood easements would be required for 53 structures located downstream of the proposed Hunter Lake Dam that would be affected by construction of the dam. These structures

that currently receive flood damage from existing flood events; however, the proposed lake would cause an increase in flood heights ranging from 0.16 foot to 0.48 foot during the 100-year flood event, for a duration of approximately one day. No new structures and no additional downstream lands would otherwise be impacted. If Hunter Lake is constructed, a potential effect downstream of the dam could be a lowering of the channel bed elevation during normal (non-flood) flow periods, if the reduction of sediment load and increased head differential increase the scouring capacity of the outflow discharge from the lake. Lowering of the bed elevation could increase the potential for bank erosion along the stream channel. The scope and degree of this potential effect cannot be effectively measured. Aside from the direct conversion of floodplain areas due to dam construction and inundation, no indirect impacts contributing to floodplain development are expected to result from the applicant's preferred alternative.

### 4.1.8 Wetlands

Based on information collected during the field visits, as well as the information in the Wetlands Survey Report, impacts to aquatic resources resulting from the proposed Hunter Lake project total approximately 102 acres of wetland, 88.3 acres of creek channels, and 4.0 acres of ponds. Comprising the 102 acres of wetland are 5.7 acres of palustrine unconsolidated bottom wetlands (abandoned farm ponds with littoral fringe of emergent vegetation with an open water area near the center), 8.9 acres of emergent wetlands (abandoned farm ponds that have silted in and wet meadows), 6.8 acres of palustrine scrub-shrub wetlands (late successional emergent wetlands transitioning to forested wetlands), 2.8 acres of farmed wetlands, and 77.8 acres of forested wetlands.

The estimated sum total of impacts to aquatic resources attributable to the proposed Hunter Lake project is approximately 194 acres. This estimation was compiled using field data submitted, information gathered during the Corps and NRCS field visits, and available soils and elevation data in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual.

No indirect impacts to wetlands in the buffer area surrounding the reservoir would occur as a result of the proposed roadway network realignments and marginal land management. Given the nature of this reservoir project, wetland impacts within the pool area cannot be avoided. Certain wetlands similar to those impacted would be created along the shoreline of the reservoir. Additionally, 815.3 acres of littoral shore lacustrine areas would be created by the reservoir. This is a new habitat type not presently occurring in the project area. The wetland function and values for existing conditions and predicted post-impoundment conditions are largely undifferentiated. The differences in sediment stability, toxicant retention (if any), and nutrient removal/transformation are consistent with the conversion of flowing water habitat to impoundment. Prolonged drawdown during severe drought conditions would limit the function and value of these newly created areas. Impacts to these and other aquatic resources resulting from operation of the Hunter Lake reservoir are discussed in further detail in Section 4.1.12.

### 4.1.9 Mitigation Measures for Hunter Lake Environmental Impacts

#### 4.1.9.1 Overview

There are approximately 7,795 acres in the Hunter Lake project area; 3,010 acres of this total would be the lake pool, leaving 4,785 acres of lands marginal to the lake. Among these 4,785 acres, approximately 2,673 acres are currently croplands. The remaining 2,112 acres is a mix of primarily existing upland forest and grassland with some roadways and residential/farm facility acreage (Figure 4.1.9.1). Objectives of this natural areas mitigation plan include:

LAKE SPRINGFIELD

PAWNEE

LEGEND

PROPERTY LINE

STREAMS

ROADS

POOL ELEVATION 571

LAND COVER

Cropland

Forest

Grassland

Water

FIGURE 4.1.9.1
PROPOSED HUNTER LAKE
EXISTING UPLAND CONDITIONS

LAKE SPRINGFIELD

PAWNEE

LEGEND

- PROPERTY LINE
- NEW BRIDGES
- NEW ROADS
- EXISTING ROADS
- STREAMS
- NEW EMERGENT WETLANDS
- POOL ELEVATION 571
- EXISTING WATER
- NEW PRAIRIE AREAS
- NEW FOREST AREAS
- EXISTING FOREST AREAS
- NATURAL SUCCESSION

FIGURE 4.1.9.2
PROPOSED HUNTER LAKE
NATURAL AREAS
MITIGATION PLAN

1. Replace impacted jurisdictional wetlands with in-kind, on-site or same-watershed restorations and enhancements.
2. Mitigate for impacted, non-wetland forest areas.
3. Mitigate for lost riparian corridors.
4. Minimize additional impacts to prime and important farmland outside of the current project area.
5. Create large tracts of forest and forested wetlands to provide suitable habitat for area-sensitive species.

The City has proposed that the marginal uplands on City-owned property surrounding the Hunter Lake pool be converted to forest and grassland habitats as part of the mitigation plan. This strategy would create a unique wildlife area around the lake to serve as both a wildlife reservoir and buffer from the agriculturally dominated areas adjacent to this site (Figure 4.1.9.2). Forest, forested wetland, and stream corridors inundated by the project would be mitigated on City-owned lands north of Lake Springfield and additionally in Riverside Park along the Sangamon River. Impacted emergent and shrub-scrub wetlands would be mitigated in several coves of the proposed Hunter Lake. In addition to stream restoration areas that are proposed for Riverside Park, other restoration areas would be acquired in the form of conservation easements from willing landowners in the Horse Creek, South Fork, and Sangamon River valleys downstream of Hunter Lake. Also, the numerous unnamed intermittent stream drainages upstream of Hunter Lake where flood easements would be needed are candidates for conservation enhancements. The total mitigation package is estimated to cost approximately $1.5 million.

Portions of the mitigation plan are further described in the subsections below:

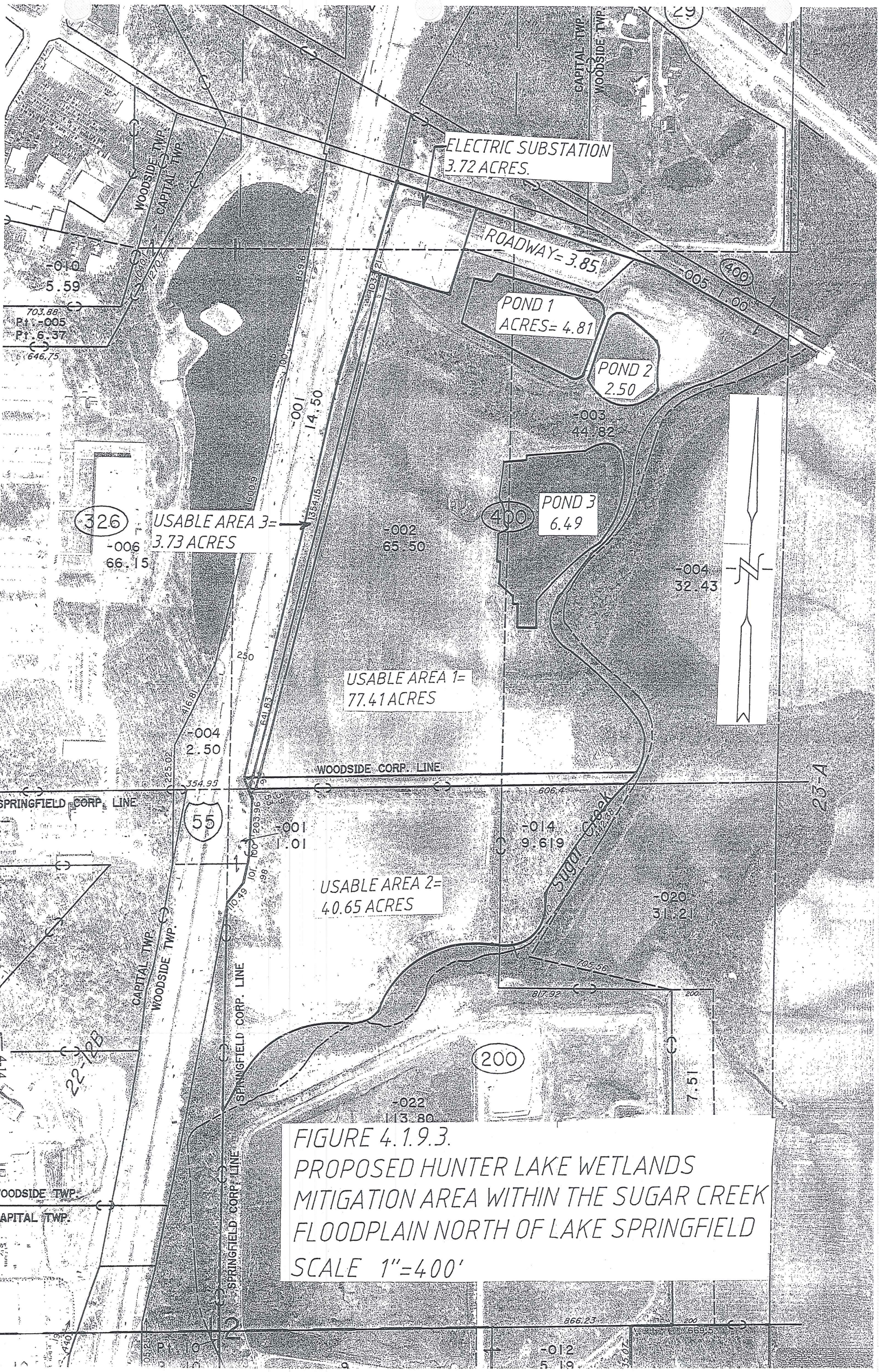
**A. Forested Wetlands**
**B. Emergent Wetlands**
**C. Forest/Prairie/Natural Succession**
**D. Stream Corridor Restoration and Enhancement**

### 4.1.9.2 Forested Wetlands

Forested wetlands impacted by the creation of Hunter Lake total approximately 77.8 acres. The City proposes a 2:1 mitigation ratio for forested wetlands replacement, which would require approximately 156 acres of wetlands be created/restored and permanently dedicated to a conservation easement (Table 4.1.9.1).

The City currently owns a 136-acre floodplain area north of Lake Springfield along Sugar Creek east of Interstate 55 (Figure 4.1.9.3). The site contains approximately 118 acres of floodplain suitable as a mitigation site for forested wetland restoration. The majority of the site is currently cropland, which would be reforested with a combination of bur oak, pin oak, swamp white oak, green ash, black walnut, and Ohio buckeye. Amid this forested wetland site, the habitats of Sugar Creek will border the entire site on the east. At the north end of the site is a relatively shallow (10-foot maximum depth) 4.8-acre borrow pit from where soil was removed to build an adjacent electric substation. Also, a very shallow 2.5-acre intermittent pond is adjacent to the aforementioned pond. A relatively deep (20-foot maximum depth) 6.5-acre borrow pit pond exists in the middle of the site adjacent to Sugar Creek. The mix of aquatic resources and forested wetlands will provide a good diversity of habitats in this 136-acre area.

The remaining 38 acres of forested wetland restoration/dedication are available for permanent preservation in the bottomlands of the 280-acre Riverside Park located in north Springfield along the Sangamon River (Figure 4.1.9.4). Hydric soils (i.e., Sawmill silty clay loam) comprise most of the acreage. Enhancement of the existing 159 acres of forested wetlands would be provided at Riverside Park with interplanting of selected tree species. Additionally, approximately 36 acres of lands used now


ELECTRIC SUBSTATION
3.72 ACRES.
ROADWAY= 3.85
POND 1
ACRES= 4.81
POND 2
2.50
POND 3
6.49
USABLE AREA 1=
77.41 ACRES
USABLE AREA 2=
40.65 ACRES
USABLE AREA 3=
3.73 ACRES
WOODSIDE CORP. LINE
SPRINGFIELD CORP. LINE
CAPITAL TWP.
WOODSIDE TWP.
Sugar Creek
-010
5.59
-005
1.00
-001
14.50
-003
44.82
-002
65.50
-004
32.43
-006
66.15
-004
2.50
-001
1.01
-014
9.619
-020
31.21
-022
113.80
-012
5.19
326
400
55
200
23-A
22-12B
4-14
703.88
Pt. -005
Pt. 6.37
646.75
1354.15
859.6
1600.3
641.83
416.81
225.02
354.95
203.96
606.4
817.92
705.56
866.23
669.5
442.58
FIGURE 4.1.9.3.
PROPOSED HUNTER LAKE WETLANDS
MITIGATION AREA WITHIN THE SUGAR CREEK
FLOODPLAIN NORTH OF LAKE SPRINGFIELD
SCALE 1"=400'

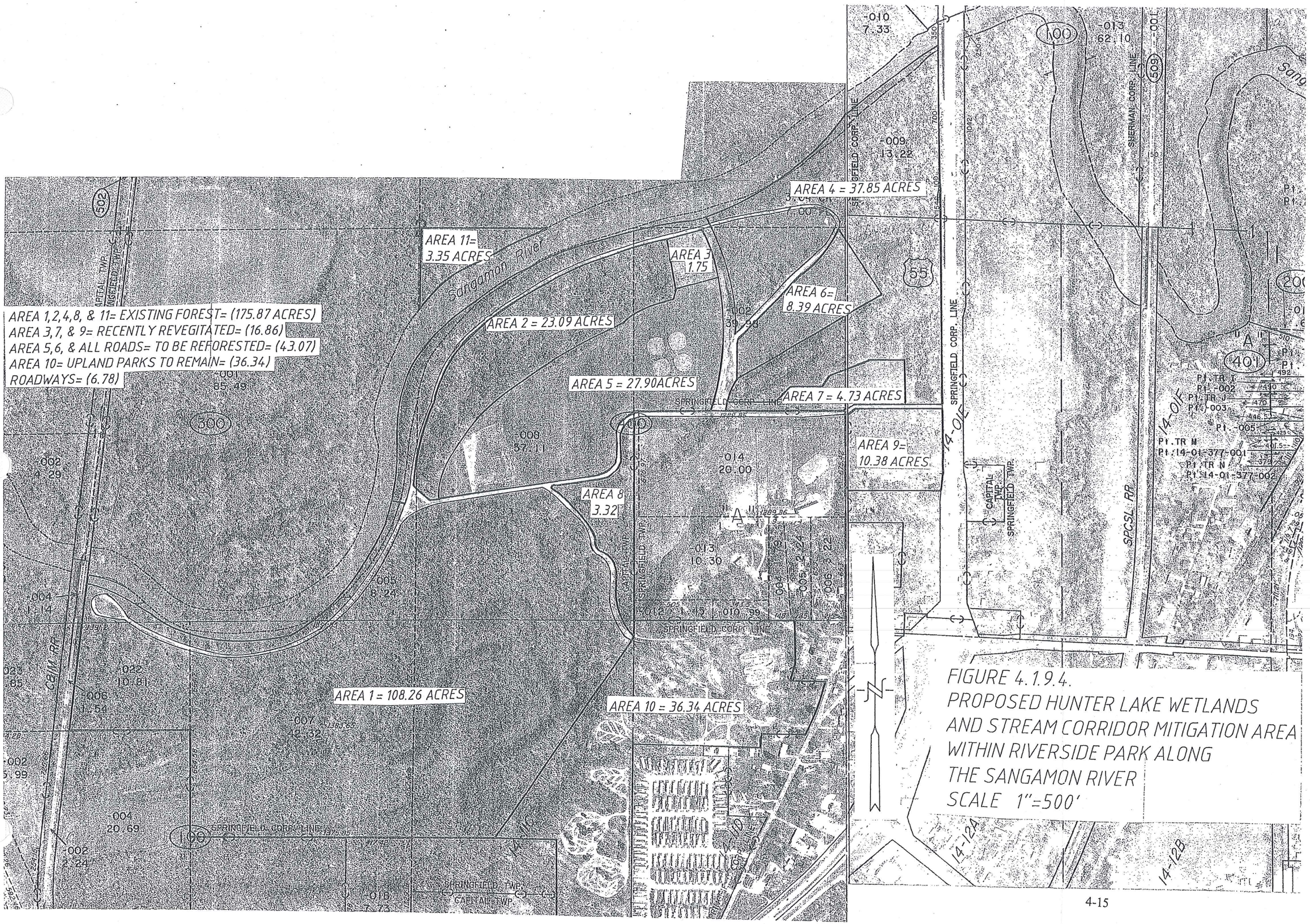



FIGURE 4.1.9.4.
PROPOSED HUNTER LAKE WETLANDS
AND STREAM CORRIDOR MITIGATION AREA
WITHIN RIVERSIDE PARK ALONG
THE SANGAMON RIVER
SCALE 1"=500'

primarily for softball diamonds and parking lots would be converted to forested wetlands or other bottomland forest. Based on an Illinois Nature Preserves Commission recommendation, a maximum of 302 trees per acre would be planted. An enhanced explanation of the dedication of Riverside Park is described below under Stream Corridor Restoration.

Fifty to 100 acres of these forested wetlands would be planted per year depending on seedling availability until the 156 acres are completed. Where agricultural tiling has been added to sites to promote drainage, these tiles will be cut and plugged to restore a more natural hydrologic regime. The agricultural lease on the Sugar Creek site will be phased out coincidentally with the staged replanting of the site. A randomized planting of trees would be done to avoid the nursery-like plantings of trees in straight rows.

#### 4.1.9.3 Emergent Wetlands

Affected wetlands constituting abandoned ponds with littoral fringes of vegetation, emergent wetlands, shrub-scrub wetlands, and farmed wetlands combined represent approximately 24.2 acres. It is proposed that these wetlands be mitigated with the creation of new emergent wetlands at a 1.5:1 replacement ratio.

The proposal is to build 36.3 acres of emergent wetlands within three coves of the Hunter Lake project area (Figure 4.1.9.2). In-lake water detention structures would be installed at the mouths of the shallow coves such that as Hunter Lake recedes due to natural or induced drawdown, the emergent wetland sites would retain water and maintain hydrologic conditions. A variety of wetland plant species (Table 4.1.9.2) would be planted depending on availability. Approximately 10 acres of wetlands could be planted per year until completion, dependent on plant stock availability.

#### 4.1.9.4 Forest/Prairie/Natural Succession

The pool of Hunter Lake would inundate approximately 1,526 acres of non-wetland forest resources. To offset these losses and to create a diversity of habitats in the marginal buffer area, a combination of mitigative habitats is proposed. The City proposes to plant 1,531 acres of the existing croplands in mast-producing upland forest species (white, red, black, and post oaks; shagbark, pignut, and mockernut hickories; and green ash). These species contrast with both the current upland forest composition and the bottomland forest species lost to inundation; however, these species would provide better wildlife food sources than are presently available in this locale.

Prior to mitigation, the remaining upland forest tracts after lake-fill would be fragmented with over 1,750 parcels being less than one acre and with no contiguous tracts greater than 50 acres. The proposed forest tracts would be planted in areas around the entire reservoir, among which there would be eight large, contiguous tracts of forest greater than 100 acres when planted as infill with existing upland forest areas. Among these eight sites, 4 are between 262 and 274 acres in size. These large forest tracts will enhance the nesting potential and overall habitat for area-sensitive bird species. A density of 109 trees per acre would be planted in these sites. Approximately 150 acres would be planted each year for 10 years given the availability of seedlings from IDNR and private sources.

In addition, two large prairie restoration areas are proposed. While there is no prairie currently in the project area, the addition of two large prairie sites of 124 acres and 128 acres would add greatly to the diversity of habitats appropriate to this area of central Illinois (Figure 4.1.9.2). Species planted (Table 4.1.9.3) would be from an appropriate ecotype seed similar to the prairie restorations around Lake Springfield. Approximately 50 acres would be planted each year for 6 years based on seed availability. Additional acres or supplemental seeding would be possible depending on seed and rootstock availability from IDNR. The remaining 890 upland acres of cropland would be allowed to develop wildlife habitat cover through natural succession. Appropriate recreational sites such as picnic and camping areas as

described in Section 4.1.3 would be mixed within the buffer areas surrounding the lake. Vegetated habitats would border virtually the entire lake perimeter and result in some 4,700 acres of permanently dedicated wildlife habitats around the 3,010-acre reservoir.

#### 4.1.9.5 Stream Corridor Restoration and Enhancement

The creation of Hunter Lake results in the loss of stream corridor habitat along Brush and Horse Creeks. Assuming a 100-foot corridor along the stream sections affected, this equates to approximately 449 acres of riparian corridors affected. Aside from the 95 miles of lacustrine littoral shore riparian areas created with the new reservoir, the City proposes, as the keynote strategy in this plan, to mitigate these losses primarily with the City's dedication and enhancement of a prime section of the Sangamon River Valley corridor known as Riverside Park. This area was evaluated by the Illinois Nature Preserves Commission (INPC) in its 1998, "Management Recommendations for the Enhancement of Wildlife Habitat and Other Natural Resources at Riverside Park, Springfield, Illinois." Many of the following comments are based on excerpts from that document.

Riverside Park is a 280-acre park located in north Springfield (Figure 4.1.9.4). All but approximately 36 acres is in the Sangamon River floodplain and serves as important wildlife habitat during all seasons of the year. The 36-acre upland campground area would remain as a campground under this proposal. The wildlife habitat value of Riverside Park is enhanced by the presence of Carpenter-Gurgens Park (707 acres) directly across the river. Carpenter Park (a dedicated Illinois Nature Preserve) contains the highest quality upland and bottomland forest in Sangamon County. The combined resources totaling approximately 951 acres comprising both sides of the river would be an exceptional natural resource for the Springfield/central Illinois area.

It is proposed that the aforementioned management plan serve as an overall guide to the dedication of these lands, but that it be revisited to remove the intensive recreational aspects of the park. Removal of the softball diamonds and some parking lots in favor of natural habitats would promote a more complete naturalization of the site. The removal of softball diamonds from Riverside Park is integral to making one goal of this plan work, which is to work toward the habitat improvement of large tracts of land. This effort would reduce the fragmented habitat of this parkland. Fragmentation is a common problem with habitats statewide. To further reduce habitat fragmentation, the boat ramp at the central west end of the park should be relocated to the north end of the park near Area 3. As one of only two public boat ramps on the Sangamon River between Riverton and New Salem State Park, this recreational feature is an important aspect to maintain. It is further recommended that, except for the road leading to the new boat ramp location, the remaining roads be closed to all non-maintenance vehicular traffic. These roads could be re-designated as pedestrian and bicycle trails through the entire park. Where roads can be reduced in width while maintaining an adequate cycling corridor, it is recommended that these be milled and removed to further promote natural growth.

This proposal is consistent with the INPC recommendation to dedicate Area 1 (Figure 4.1.9.3) as an Illinois Land and Water Reserve, and expands on that recommendation by further dedicating the remaining bottomlands in the entire park area. There are ongoing discussions regarding the possible merger of the Springfield Recreation Department and the Springfield Park District. It is possible that the management of this larger Carpenter Park/Gurgens Park/Riverside Park system could fall under the umbrella of one organization, which would afford management contiguity for all of these parklands. It is recommended that additional discussion be initiated with resource agency personnel to further refine appropriate strategies for the renaturalization and management of this site.

The Riverside Park corridor (244 acres) and the Sugar Creek corridor (118 acres) combined represent 362 acres of riparian enhancements. Further stream corridor mitigation would be provided as possible

with the acquisition of conservation easements along Horse Creek, the South Fork of the Sangamon River, and the Sangamon River north of the proposed Hunter Lake. Negotiation would be conducted with willing riparian landowners of the above watercourses in an attempt to acquire conservation easements. If such easements were granted to the city, a minimum of 100 feet on either side of the watercourse would be requested for reforestation to enhance the riparian corridor. For required flowage easement areas needed in the small drainages above the reservoir, a minimum of 50 feet on either side of the drainage would be requested, but whatever buffer is allowed by the landowner would be accepted.

The flow regime of Horse Creek below the dam would be enhanced over the existing condition based on the release rate proposed for reservoir. Horse Creek is a Q7, 10 = 0 stream naturally, but under the request by IDNR for a release rate, a minimum flow of the existing monthly Q75 flow to protect (enhance) aquatic resources below the dam (see City's response to Comment S2 (IDNR), Item 4) would be provided via release from the reservoir.

This mitigation plan provides for a mosaic of habitats in the Hunter Lake area. The marginal lake areas would consist primarily of remaining upland forest, prairie sites, planted and natural succession forests, along with the transition of these habitats through 95 miles of lacustrine wetland shoreline to the open waters of the lake. Additionally, where appropriate, emergent-standing timber would be left in many shoreline and cove areas to provide habitat for variety of cavity-nesting birds. Also at selected sites, submerged timber would be maintained for fish habitat. These habitats along with the created emergent wetlands will create a diverse mix of wildlife areas uncommon in central Illinois. The wildlife reservoir/greenway corridors of the Hunter Lake properties will also provide for a continuous source of biota suitable for the preservation of the ongoing viability of Lincoln Memorial Garden, another important wildlife refuge on the southeast shore of Lake Springfield. The proposed mitigation sites are on City-owned land requiring little, if any, additional acquisition of agricultural lands. Willing landowners might provide some additional lands for conservation easements. The anticipated cost of mitigation measures is approximately $1.5 million (Table 4.1.9.4). These costs could be reduced depending on the availability of reduced-cost or no-cost stock from the IDNR. These mitigation strategies, including the further preservation and enhancement of the Riverside Park/Carpenter Park ecosystem as a keynote part of this plan will provide an excellent array of permanently preserved natural areas in Sangamon County.

**Table 4.1.9.1 Habitat Types and Areas Included in the Hunter Lake Mitigation Plan**

| Habitat Type | Impacted Area (acres) | Replacement Ratio | Compensated Area (acres) |
|---|---|---|---|
| **Forest** | 1526 | Min. 1:1 | Planted: 1531<br>Natural Succession: 890 |
| **Prairie** | 0 | N/A | 252 |
| **Forested Wetland** | 77.8 | 2:1 | 155.6 |
| **Emergent/Scrub-Shrub Wetland** | 24.2 | 1.5:1 | 36.3 |
| **Stream Corridor** | 449 | 1:1 | 449 |

**Table 4.1.9.2 Recommended Wetland Plant Species for the Proposed Hunter Lake Emergent Wetlands Mitigation Areas**

**Emergent Hydrophytic Species**

**Moist-1 ft. of water**

Blue Water Iris
Yellow Iris
Sweet Flag
Marsh Milkweed
Rice Cutgrass
Soft Rush
Sedges
Lizard Tail

**0.5-1.5 ft. of Water**

Spike Rush
Woolgrass
Bur Reed
River Bulrush
Water Plantain
Arrow Arum

**1-3 ft. of Water**

Hardstem Bulrush
Softstem Bulrush
Pickeral Plant
American Lotus
Spatterdock

**Scrub-Shrub Hydrophytic Species -0.5-1 ft. above water**

Buttonbush
Red-osier Dogwood
Swamp Privet
Spicebush

**Table 4.1.9.3 Native Plant Species Suitable for the Proposed Hunter Lake Prairie Restoration Areas**

BIG BLUESTEM (*Andropogon gerardii*)
INDIAN GRASS (*Sorgastrum natans*)
LITTLE BLUESTEM (*Andropogon scoparius*)
SIDE-OATS GRAMA (*Bouteloua curtipendua*)
SWITCH GRASS (*Panicum virgatum*)
PRAIRIE DROPSEED (*Sporobolus heterolepis*)
LEAD PLANT (*Amorpha canescens*)
PURPLE PRAIRIE CLOVER (*Petalostemum purpureum*)
WHITE PRAIRIE CLOVER (*Petalostemum candidum*)
SHOWY TICK TREFOIL (*Desmodium canadense*)
ILLINOIS TICK TREFOIL (*Desmodium illinoense*)
ROUND-HEADED BUSH CLOVER (*Lespedeza capitata*)
WHITE FALSE INDIGO (*Baptisia leucantha*)
BLUE FALSE INDIGO (*Baptisia australis*)
PRAIRIE BLAZING STAR (*Liatris pycnostacya*)
ROUGH BLAZING STAR (*Liatris aspera*)
PALE PURPLE CONE FLOWER (*Echinacea pallida*)
PURPLE CONE FLOWER (*Echinacea purpurea*)
WILD QUININE (*Parthenium integrifolium*)
COMPASS PLANT (*Silphium laciniatum*)
PRAIRIE DOCK (*Silphium terebinthinaceum*)
ROSIN WEED (*Silphium integrifolium*)
CUP PLANT (*Silphium perfoliatum*)
STIFF GOLDENROD (*Solidago rigida*)
SHOWY GOLDENROD (*Solidago speciosa*)
OLD FIELD GOLDENROD (*Solidago nemoralis*)
OHIO GOLDENROD (*Solidago ohiensis*)
SHOWY GOLDENROD (*Solidago speciosa*)
PRAIRIE COREOPSIS (*Coreopsis palmata*)
NEW ENGLAND ASTER (*Aster novae-angliae*)
HEATH ASTER (*Aster ericoides*)
SKY-BLUE ASTER (*Aster azureus*)
OTHER PRAIRIE ASTERS (*Aster laevis and others*)
BLACKEYED SUSANS (*Rudbeckia hirta*)
SWEET BLACKEYED SUSANS (*Rudbeckia subtomentosa*)
OXEYE FALSE SUNFLOWER (*Heliopsis helianthoides*)
YELLOW CONEFLOWER (*Ratibida pinnata*)
IRONWEED (*Vernonia sps.*)
RATTLESNAKE MASTER (*Eryngium yuccifolium*)
CULVERS ROOT (*Veronicastrum virginicum*)
MOUNTAIN MINT SP. (*Pycnanthemum sp.*)
PRAIRIE CINQUEFOIL (*Potentilla arguta*)
WILD BERGAMOT (*Monarda fistulosa*)
SPIDERWORT (*Tradescantia ohiensis*)
GOLDEN ALEXANDERS (*Zizia aurea*)
WHITE BEARDSTONGUE (*Penstemon digitalis*)
YELLOW GENTIAN (*Gentiana flavida*)
PENSTEMON (*Penstemon digitalis*)
BUTTERFLY WEED (*Asclepias tuberosa*)
PRAIRIE ROSE (*Rosa carolina*)
FALSE DRAGONHEAD (*Physostegia virginiana*)

**Table 4.1.9.4 Anticipated Expenses of the Hunter Lake Natural Areas Mitigation Plan**

| | | |
|---|---|---|
| **Forested Wetlands** | | |
| **Sugar Creek Area** | | |
| Reforestation 118 acres @ $750/acre | = | $88,500 |
| Tile cuts & plugs/site work l.s | = | 10,000 |
| **Riverside Park Area** | | |
| Reforestation 43 acres @ $750/acre | = | 43,000 |
| Road/Parking Area Removal 3 acres @ 8,200 an acre | = | 24,600 |
| Relocate Recreational Facilities and Services | = | 152,000 |
| Relocate boat ramp | = | 50,000 |
| Misc. Site Work l.s. | = | 40,000 |
| **Emergent Wetlands** | | |
| Hunter Lake area 36.3 acres @ 10,000/acre | = | 363,000 |
| **Reforestation Within The Hunter Lake Area** | | |
| 1,531 acres @ $400/acre | = | 612,400 |
| **Prairie Within The Hunter Lake Area** | | |
| 252 acres @ $300/acre | = | 75,600 |
| **Stream Corridor/Conservation Easement Restoration** | | |
| 87 acres @ $400/acre | = | 34,800 |
| **Total Cost of Mitigation** | | $1,493,900 |

### 4.1.10 Construction Impacts

The Hunter Lake site is within an attainment area for all the criteria air pollutants meeting the National Air Quality Standards. Once Hunter Lake is completed, there would be no local air impacts remaining after construction activity that could affect the local or regional air quality. Requirements for fugitive dust suppression would be included in construction contracts.

Implementation of the project would necessitate the removal and relocation of large volumes of earth and vegetation for construction of the dam and spillways, roadway relocation, bridge construction, and utility line relocation. In addition, construction access roads along with mobilization and storage areas would be needed. All of these would be potential sources of erosion and sedimentation. Short-term increases in sedimentation and turbidity levels within surface water resources may occur during construction in proportion to the proximity of excavated sites to surface waters, the frequency and intensity of storm events, and the effectiveness of erosion controls.

Permanent and temporary erosion and siltation control measures would be employed as needed to minimize silt loading and deposition in streams. Erosion control measures specified in the Illinois Department of Transportation (IDOT) *Standard Specifications for Road and Bridge Construction*

and the IEPA *Standards and Specifications for Soil Erosion and Sediment Control* would be utilized.

Areas of high erosion potential would be identified during final project design, and necessary erosion control measures would be incorporated into the construction plans. Due to the inherent trap efficiency of impoundments, turbidity levels in Horse Creek below the dam would be expected to drop below baseline levels upon project completion.

Movement of equipment along the existing roadways and use of trucks and heavy machinery during construction could cause an increase in noise levels that may impact people living in the vicinity. However, these impacts would be minimal because of the rural character of the project area. Specifications concerning construction noise outlined in the IDOT *Standard Specifications for Road and Bridge Construction* would be utilized.

### 4.1.11 Public Facilities and Services

#### 4.1.11.1 Area Roadway Network

The roadways and bridges would be built either under road closures/detours or staging, requiring single lane closures or temporary runarounds. A detailed traffic control, staging, and closure plan for the various road and bridge improvements would be developed during the design phase.

Access to all occupied properties would be maintained by staged construction, temporary access roads, or other appropriate means. Road closures, detours, and temporary access would be coordinated with the appropriate Township and County Highway officials. Sangamon County Highways 28 (3.0 E), 29 (12.0 S), and 40 (4.0 S) are affected by the proposed project. Relocation of the intersection of County Highways 28 and 40 is required. These two roadways are the primary thoroughfares in the project area. The alignment recommended and favored by the Sangamon County Highway Department most closely retains the existing configuration. Overall negative impacts to the county highway system would be limited to inconvenience and delays occurring during construction of the various elements, as well as any additional long-term maintenance requirements due to one additional bridge structure. Positive impacts include new roadways in realigned sections built to current standards that would result in lower maintenance costs. The County would also benefit from the replacement of existing bridges and culverts, many of which are nearing the end of their useful life. All new structures would also be capable of passing the design flood whereas most of the existing structures are not.

For the Township roadway system, a number of existing roads would be closed. Meetings with Township road commissioners identified areas of concern, and the final roadway network reflects additions to minimize adverse travel and emergency response time.

Detours during roadway realignments and reconstruction of drainage structures would cause temporary delays and adverse travel requirements.

Construction of Hunter Lake may require truck delivery of riprap materials via township roads. This additional heavy traffic has the potential to damage roadway base structures depending upon existing base strength and subsurface moisture content. Deliveries could be scheduled to avoid weaker road structures and weather conditions. Any damages would be repaired.

Road closures would result in lower Motor Fuel Tax (MFT) revenues for affected townships. Road closures and the resulting dead-ends have historically proven to be a maintenance problem

for the townships due to illegal dumping. "T" turnarounds were requested by township road commissioners instead of conventional cul-de-sacs and would be provided at closed roads near occupied housing. Other roads would be abandoned by the township at major thoroughfares with easements provided for private landowners or farm tenants where needed. These actions would minimize the potential for illegal dumping.

Fewer miles of roadways requiring maintenance would, to some extent, offset the reduced MFT revenues. Rebuilt drainage structures and approach roadways would be capable of passing the design flood without overtopping; many of the existing structures do not. Sangamon County and Cotton Hill Township have highway maintenance material storage yards that may need to be relocated.

State and Federal highway facilities would not be affected by construction of the project.

#### 4.1.11.2 Public Utilities

Construction activities would be coordinated with utility relocations in order to minimize planned interruptions of service. If service interruptions were unavoidable, every effort would be made to limit their duration. A number of utility services would be impacted by construction of the lake, primarily electric, natural gas, and telephone.

**Central Illinois Light Company** (CILCO) has approximately 3, 500 feet of 1.25-inch wrapped steel intermediate pressure gas main along 7.5 South Road and 4.0 East Road that may need to be replaced. A portion of the line is attached to the side of the bridge over Brush Creek. According to CILCO, this main may need to be replaced and installed underground so it can continue natural gas service to approximately six customers. CILCO also has a gas main along 7.25 South Road consisting of 387 feet of 1.25-inch wrapped steel and 200 feet of 2-inch plastic intermediate pressure gas main with two gas service connections. If the lake is developed, CILCO would no longer need these mains.

The total revenue loss from the disconnection of three customers is estimated to total $1,400 per year. Other gas facilities may be impacted by the building of the lake, but CILCO has not made any final decisions as to the relocation or renewal of these facilities. CILCO has no electric facilities that would be impacted by the construction of the lake.

**Central Illinois Public Service Company** (CIPS) - As a result of the lake's construction, CIPS may have to relocate single-phase and three-phase distribution lines operating at 7.2/12.5 kilovolt multiground wire. The rerouting of lines would be performed to avoid the crossing or overhanging of the lake. To date, the relocation route and the number of miles of power lines are not known.

CIPS estimates the loss of eight electric service connections from disconnected service along this line. The loss in revenue resulting from these disconnections totals $6,000 per year.

**GTE North Incorporated** (GTE) has six sites for which cables may have to be replaced or relocated if the lake is built. These adjustments and associated costs should have no impact on the rates charged its customers.

GTE has approximately 50 customers living in the project area. Each customer that is terminated at the current site results in lost revenue to the company of about $320 per year.

**Ameritech** - According to Ameritech officials, the company may have to relocate approximately 33,000 feet of buried cable, remove above-ground lines, add two 4-inch conduits on about 2,400 feet of bridges, and lay 400 feet of buried 4-inch conduit.

Ameritech has approximately 40 customers living in the project area. Each customer that is terminated results in a loss of the company's total revenue of about $320 per year. The final total impact would depend on whether or not the households relocate inside or outside of the Ameritech service territory.

**Panhandle Eastern Corporation** (Panhandle) has one 16-inch and one 24-inch Peoria lateral line and four mainlines consisting of 22-, 26- and 30-inch pipelines that would be impacted by the lake. Panhandle would have to make adjustments to these lines resulting from a body of water over them. Estimated cost of relocation of the lines is $5.7 million. Direct relocation costs would be borne by CWLP.

**Rural Electric Convenience Cooperative Company** (RECC) would lose 146 household and other building service connections located throughout much of the project area. It may have to remove about 20 miles of distribution lines (3.6 miles of three-phase primary lines and 16.1 miles of single-phase primary lines). Sections of these lines (7.7 miles of three-phase primary lines and 0.7 mile of single-phase primary lines) would have to be relocated. New right-of-way easements along proposed highways and structures would have to be negotiated.

The RECC would terminate the 146 connections, approximately 3% of its customers. Net income losses are estimated at $69,088 which reflect a total revenue loss of $243,840 less the cost of purchased power of $174,752. The losses in total revenue stemming from these disconnections would depend on the extent to which households are relocated within the RECC's service territory.

**Soyland Power Cooperative, Inc.** (Soyland) provides electricity to the Rural Electric Convenience Cooperative but has no facilities currently in the project or surrounding area. It would not be impacted by construction of the lake except for reduction in purchased power by RECC.

#### 4.1.11.3 Public Safety

The only impact on Emergency Services would be on the families living in remote areas next to the project site. A minimal increase in emergency response and travel time may be experienced by these residents. However, since all primary and secondary highways would remain and continue to be served by crossroads, no major increase in response times is foreseen.

Public safety concerns exist regarding the increased potential for drownings associated with a large water body. The greatest potential for drownings exists through accidents related to boating incidents. Education programs of the IDNR and CWLP focus upon safe boating since proper precautions related to boating practices could reduce the number of deaths from drowning. Additional precautions in populated areas of Pawnee could be addressed with fencing in localized, high traffic areas near the upper reaches of the reservoir.

#### 4.1.11.4 Cemeteries

Eldredge Cemetery would have to be relocated due to inundation, if a permit is issued for the construction of Hunter Lake. Under Illinois statutes, Eldredge Cemetery would be classified as an "abandoned" cemetery, and the City would be required to relocate the graves in accordance with

the rules and guidelines of the Illinois Historic Preservation Agency. The applicant anticipates that if a permit is issued for the lake and relocation therefore became necessary, that the graves would be moved to another active cemetery such as the Brunk Cemetery in the project area or Stout Cemetery (west of the project area and north of the Ball Elementary School), the new locations to be determined by the applicant in consultation with known relatives of the decedents. Four cemeteries near the lake's high water mark may potentially require levee protection.

### 4.1.12 Operational Impacts

As proposed, water from Hunter Lake would be used to supplement the storage in Lake Springfield during dry periods, when the water level in Lake Springfield has fallen below normal pool. At that time, water would be released from Hunter Lake into Horse Creek and would flow approximately 4 miles downstream where it would be retained by the existing channel dam on the South Fork of the Sangamon River. This water would then be pumped into Lake Springfield by the present pumping system. The existing South Fork pump station is rated at 600 horsepower, which is sufficient capacity to transfer any volume of water required from Hunter Lake.

Regarding the appropriate release zones in relation to water quality concerns, the proposed dewatering structure has gate configurations incorporated such that the release of water would range from a surface discharge to a maximum depth of 11 feet below the surface. Water quality of the receiving stream would not be compromised by this dewatering strategy.

Part of the operations modeling by the ISWS also included an evaluation of the rate of release from Hunter Lake when transferring water to Lake Springfield. It is actually beneficial in most scenarios to release water at a slower rate. The gradual transfer of water translates to a gain in yield, generally related to the concept that yields are typically higher when more water is retained in the second lake. This slower transfer would also help reduce potential erosion concerns downstream of Hunter Lake.

The Habitat Evaluation Procedures (HEP) study addressed possible impacts of reservoir drawdown on habitat quantity and quality. Potential changes in terrestrial habitats as a result of lake drawdown were determined to be minimal to non-existent. Such species as mink and great blue heron might be slightly more successful at finding food due to a temporary exposure of lake bottom (e.g., amphibians and small fishes trapped in isolated pools). Forest- and grassland-dwelling species would be unaffected by lake drawdown.

Two scenarios of severe reservoir drawdown were considered for the habitat evaluation. The first scenario involved an annual, July through August, drawdown sufficient to remove 6.6 feet of water level from the lake at 571 ft. msl. This drawdown, equivalent to 25% of the lake's surface area, would expose the entire littoral area of the lake. All macrophytic vegetation in the lake's 571 ft. msl littoral zone and the cover it provided to fishes and other aquatic life would no longer be a part of the lake's aquatic environment. The newly created littoral zone (area $\leq$6.6 feet deep) at the drawn down elevation of 565 ft. msl would then cover a larger percentage (36%; 892 acres) of the lake area and would contain $\leq$2% cover available to fishes in the form of logs and debris on the lake bottom.

The second scenario involved a drawdown sufficient to remove 20 feet of water level from the lake once every 15 years. This drawdown, equivalent to a 69% reduction in the lake's surface area, would expose 2,285 acres of the lake bottom. All macrophytic vegetation in the lake and the bottom cover provided to fishes and other aquatic life in that area would no longer be a part of the lake's aquatic environment. The newly created littoral zone (area $\leq$6.6 feet deep) at this drawdown

elevation of 550 ft. msl would contain no cover for fishes. All of the lake (100%) area would also then be less than 20 feet deep, creating the potential for a large amount of the remaining water to freeze in areas less than 3.3 feet deep.

If normal amounts of precipitation were significantly reduced, it is likely that Hunter Lake would not regain its normal pool until spring. The harsh, dry winter environment could have adverse effects on exposed (non-inundated) macrophytic vegetation shallowly rooted in the lake bottom. In addition, areas of deep water with cover that are essential for such fish species as largemouth bass to overwinter successfully would be limited. Also, reductions in the normal pool of Hunter Lake during the spawning season of certain sportfish species could have negative effects on spawning success for that year.

Under severe, 20-month drawdown conditions, as predicted by the HEC-5Q model, Hunter Lake would experience a drawdown of 17 feet but would help restore 13 feet of water in Lake Springfield during the 20-month drought. Although there were no significant changes in D.O. concentrations in Lake Springfield as a result of supplemental storage from proposed Hunter Lake, total D.O. amounts improved (higher concentration for deeper water) due to the supplemental storage. Supplemental storage from the proposed lake may favorably affect the water temperature at the existing power plant intake by creating a greater water depth in Lake Springfield but does not have much additional impact on lake temperatures. Temperatures of the lake surface are virtually unaffected by severe drawdown in proposed Hunter Lake but bottom temperatures may rise. Drawdown does not appear to significantly impact water quality characteristics other than temperature.

No significant impacts to the fisheries of Hunter Lake would be expected based on D.O. concentrations. Nitrate-nitrogen and phosphate-phosphorus were predicted to be practically unaffected by drawdown.

### 4.1.13 Special Waste

Waste materials from junk piles and underground storage tanks found on site have been or would be cleaned up and the materials disposed of following all IEPA regulations.

### 4.1.14 Point Source Discharges

The construction of Hunter Lake would impact three wastewater treatment plants that discharge into the Hunter Lake watershed. With the construction of the lake, the villages of Divernon, Pawnee, and Virden would face changes in permit limitations and must determine alternatives to their present method of effluent discharge. The least cost alternative would remove the discharge from the Divernon Sewage Treatment Plant (STP), Pawnee STP, and Virden-East STP from the watershed. Based on compiled information, this alternative relocates Virden-East's discharge to Sugar Creek, relocates Divernon's discharge to Sugar Creek, and relocates Pawnee's discharge to the South Fork of the Sangamon River.

### 4.1.15 Contamination Potential

Within the Hunter Lake watershed there are some potential sources and pathways for groundwater and/or surface water pollution as a result of various human activities. These potential sources include application of agricultural chemicals, abandoned water wells, abandoned oil and injection wells, junk piles, septic systems, and petroleum underground storage tanks. Analyses of the water, sediment, and nutrient budgets for the proposed Hunter Lake (CMT 1994) recognize that the 128-

square-mile watershed of Horse and Brush Creeks is approximately 88% agricultural, with row cropping of corn and soybeans the predominant activity. Currently over 4,000 acres are in cultivation within the project area. This acreage is typically sprayed with fertilizers as well as pesticides throughout the growing season. Livestock operations are few, and no large livestock operations are known to be located in the watershed. The only operation of any size is a 900 animal-unit hog operation without any associated water lagoons. None of these operations are expected to have a noticeable influence on the water quality of the lake and nothing uncharacteristic of central Illinois was noted in the water quality monitoring associated with the support data for the proposed lake.

The Illinois State Water Survey (ISWS) provided an evaluation of water quality in its modeling of the proposed Hunter Lake. The ISWS's Contract Report 621 (Bora *et al.* 1997) also utilized data derived in the DEIS referenced CMT (1994) investigation on the water, sediment, nutrient budget analyses of the proposed Hunter Lake. Nitrogen and phosphorus transported with sediment during runoff events were among those parameters modeled by the ISWS. Nitrate-nitrogen levels in the proposed lake were predicted to be higher than Lake Springfield but below the drinking water limit. Phosphate-phosphorus levels in the proposed lake were similar to Lake Springfield. The analyses concluded that the proposed reservoir would be similar to Lake Springfield and that drawdown would not impact water quality characteristics other than temperature, which would be expected.

All abandoned and currently domestic operating water wells would be filled following all Illinois Department of Public Health rules and regulations. One hundred and six wells have been filled to date.

Oil exploration and related drilling activities have occurred within the Hunter Lake watershed. All of the wells that would be impacted by the lake would need to be properly plugged to prevent groundwater contamination. The abandoned and plugged wells as well as any salt water brine injection wells would be properly sealed, following all Illinois Department of Natural Resources, Office of Mines and Minerals regulations.

As a predominantly rural setting, the Hunter Lake watershed has numerous spots where local residents have dumped household goods over the years. Typically, these junk piles have been found in ravines and partially covered with dirt. All of the junk piles would be appropriately cleaned.

Residential properties in the project area rely on septic systems for household sewage disposal. Houses that would be moved or torn down in the project area would have their septic systems pumped out and the tank filled in accordance with Illinois Department of Public Health regulations. Six have been filled to date.

Three petroleum underground storage tanks have been located in the Hunter Lake area. Two of these tanks have been removed. Any contaminated soil or groundwater is cleaned up according to IEPA standards. Any additional tanks discovered would be handled in a similar manner.

### 4.1.16 Aesthetics

Visual impacts as seen from upland areas surrounding the proposed reservoir would change from bottomland forests and farm fields to an overlook of an aquatic landscape. Much of the bottomland timber would be seen standing in the water such that it can serve as habitat for fish, birds, and other wildlife. Marginal area farmlands would be taken out of production as new

conservation areas are developed in the fringe acres around the lake. These areas would change visually to a greater density of forest and grassland plantings versus the more intensely farmed areas currently in row crops among scattered forest areas.

### 4.1.17 The Relationship Between Local Short-Term Use of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

Decreases in terrestrial biological productivity would occur initially until mitigation sites matured. The project would result in increases in aquatic resource productivity almost immediately upon inundation. Social changes would occur in the short-run, but stabilize over time. Short-term emissions of air pollutants, noise, and dust, while controlled to the extent possible, would occur during construction of this project. Erosion occurs as a result of any construction project, but temporary and permanent erosion control measures would be implemented to address areas requiring remediation.

### 4.1.18 Irreversible and Irretrievable Commitments of Resources Which Would Be Involved in the Proposal Should It Be Implemented

Implementation of the proposed action involves a commitment of a range of natural, physical, human, and fiscal resources. Land use in the construction of the reservoir is considered an irreversible commitment, for the life of the reservoir. However, if a greater need arises for the land or if refined measures of water production dictate that the facility is no longer needed for water supply purposes, the lake could be dewatered and the dam removed. At present, there is no reason to believe such a conversion would ever be necessary or desirable.

Considerable amounts of fossil fuels and construction materials, such as cement, aggregate, and bituminous material, are expended in construction of a reservoir. Additionally, large amounts of labor and natural resources are used in the fabrication and preparation of construction materials. These materials are generally not retrievable. However, they are not in short supply and their uses would not have an adverse effect upon continued availability of these resources. Any construction would also require a substantial one-time expenditure of local funds derived from water revenues that are not retrievable.

### 4.1.19 Cumulative Impacts

The project area comprises approximately 9.4% of a largely agricultural watershed. The direct effects of project implementation on the 7,795 acres of the project area would be the conversion of approximately 3,010 acres of forest, cropland, grassland, and free-flowing stream to open water, and the conversion of 2,673 acres of cropland in the remaining 4,785 acres of marginal land to more natural land cover types (forest and grassland). The watershed is expected to remain largely agricultural (83%) after project implementation. If constructed, Hunter Lake would be the third large reservoir located on tributaries to the South Fork Sangamon River, along with Lake Sangchris and Lake Taylorville southeast of the project area.

According to the 1997 Agricultural Census for Sangamon County, Illinois, about 466,956 acres of land (approximately 82%) is in farms. This represents a slight reduction from the farmland acreage reported for the county 23 years ago in 1974 (470,249 or approximately 8% of the county). The conversion of approximately 3,781 acres of farmland to open water, forest, or grassland would reduce the percentage of farmland in the county by approximately 0.8%. Nearly 82% of the land in Sangamon County (about 464,000 acres) is comprised of soils classified as prime or prime if modified. Approximately 1% of this acreage would be affected by the construction of Hunter Lake

Lake (about 0.6% by inundation and about 0.4% by conversion of cropfields to forest or grass cover).

Cumulative impacts of the proposed action on water quality and wetlands are not expected to be significant. Indirect or cumulative effects of the reservoir upon water quality of the Horse-Brush Creek watershed or upon the larger South Fork Sangamon River watershed into which Horse Creek drains are expected to be neutral or slightly beneficial, as the reservoir would be expected to block some sediment inflow from Horse Creek to the South Fork. The extent of indirect or cumulative effects on wetlands, or on prime farmland, would be determined by the potential of the lake to increase the rate of development (to urban or other intensive uses) of farmland or natural areas in the vicinity of the Hunter Lake project area.

A variety of mechanisms exist to limit or control future development on lands adjacent to the project area. Sanitary sewer and public water supply systems do not currently exist in the project area. The City of Springfield is the project applicant and the most likely potential water supplier for the area. In 1973 and 1989, the Council of the City of Springfield enacted Ordinances 335-5-73 and 97-2-89, which preclude development of the project area real estate adjacent to the shoreline. As such, there is no present reason to extend water and sewer to the project area.

The project area has not been annexed to the City. There is no incentive to annex the project area as state law provides:

> "All property which (1) is owned by a municipality, and (2) lies outside the corporate limits of the municipality, and (3) does not lie within the corporate limits of any municipality, shall be subject to the ordinances, control and jurisdiction of the municipality in all respects, the same as the property owned by the municipality which lies within the corporate limits thereof." 65 ILCS § 5/7-4-1."

The unincorporated areas of Sangamon County are subject to the zoning regulations of Sangamon County, as well as incorporated locations that have not adopted any zoning regulations. These rules have specific requirements regarding land use in locations that lack sewer and water service. The County has enforced these regulations in the areas adjacent to the project area, and as recently as October, 1999, refused to allow development on property adjacent to the Hunter Lake project area (Case No. 99-41). The City appeared as an objector in the proceeding. The County Board unanimously denied the petition. The City can continue to be an active participant in any zoning matter before the County which could have an adverse impact on Hunter Lake. The City would have even a greater influence in those unincorporated areas of the County within one and one-half miles from the City's corporate limits. Article I, Division 12 of the Illinois Municipal Code enables municipalities to formulate comprehensive plans for the development of land within the municipal boundaries and contiguous areas within one and one-half miles thereof, 65 ILCS § 5/11-12-5. This state law also provides that such plans may be implemented by ordinances: (a) establishing reasonable standards of designs for subdivisions and for resubdivisions of unimproved land and of areas subject to redevelopment in respect to public improvements; (b) establishing reasonable requirements governing the location, width, course, and surfacing of public streets and highways, alleys, ways for public service facilities, curbs, gutters, sidewalks, street lights, parks, playgrounds, school grounds, size of lots to be used for residential purposes, storm water drainage, water supply and distribution, sanitary sewers, and sewage collection and treatment. Pursuant to this statute, the City has adopted a comprehensive plan applicable to contiguous territory and implemented the plan through the adoption of land subdivision control regulations found in Chapter 153 of the City Code. Pursuant to Section 153.102, these regulations apply to all unincorporated land within 1.5 miles of the corporate limits of the City. These regulations include

a mandatory review process through the Springfield-Sangamon County Regional Planning Commission, and proposed developments have been rejected if there is found to be unacceptable impacts on Lake Springfield or its watershed.

State law also would extend other territorial jurisdiction of the City to property adjacent to the Hunter Lake Project Area. For example, "the jurisdiction of the municipality to prevent or punish any pollution or injury to the stream or source of water for the supply of the waterworks extends 10 miles beyond its corporate limits." 65 ILCS § 5/11-126-3. Another provision similarly provides that "the jurisdiction of the city or village to prevent or punish any pollution or injury to the stream or source of water, or to waterworks, extends 20 miles beyond its corporate limits or so far as the waterworks may extend." 65 ILCS § 11-125-2. This would extend the City's jurisdiction through much of the project watershed.

## 4.2 ILLINOIS RIVER WELL FIELD AND PIPELINE - 15.8 MGD

The Illinois River well field alternative is shown in Figure 2.3.5.5. The well field areas and a 400-foot corridor around the 56.0-mile pipeline route were assessed for environmental impacts. Approximately 719 acres of land would be impacted, primarily in the pipeline corridors, for this alternative. The estimate of 719 acres is based on a projected 100-foot corridor width for direct construction impacts (clearing, equipment movement, etc.).

### 4.2.1 Socio-Economic Impacts

There would be virtually no impact to local taxing bodies since only 3 acres would be impacted by well field and pump station sites.

### 4.2.2 Wetland Resources

The well field area and the 400-foot-wide pipeline route passes through or directly adjacent to about 32 wetland areas as depicted on NWI mapping. No field verification was conducted to determine jurisdictional wetland acreage. No permanent impacts to wetland resources would occur except where a maintained 20-foot corridor would reduce standing timber in forested areas.

### 4.2.3 Cultural Resources

Site records of the Illinois Historic Preservation Agency (IHPA) depict six known archaeological sites within the potential pipeline corridor. Two of these sites, located in the Illinois River floodplain near the toe of the bluff, are complex multi-component sites. IHPA site records show the general bluff/floodplain region to have high occurrences of known archaeological sites within more than 200 documented from the town of Bluffs to east of the area of the potential well field. This indicated that the pipeline corridor has a high probability for occurrence of more archaeological sites within or near the Illinois River bluff/floodplain area. Based on archaeological studies for other central Illinois projects, such as the Hunter Lake alternative, a moderate probability of occurrence of archaeological sites within the pipeline corridor is expected for the portion of the route from the Illinois River bluff area to Lake Springfield. Sites would be avoided where possible and evaluated and mitigated where encountered.

### 4.2.4 Potential Threatened and Endangered Species/Parks and Natural Areas

No federally listed endangered or threatened species would be affected by construction of this alternative. The IDNR Natural Heritage Database documented only one listed species within the pipeline corridor. The State-threatened bunchflower (*Melanthium virginiicum*) was shown within the corridor along a railroad line in Section 26 on the south side of Orleans. The preferred habitats of the bunchflower are meadows, wet thickets, and damp woods. Any of these habitat types within the proposed alignment that may be subject to disturbance would be avoided by the project, if possible, or surveyed for the presence of bunchflower. No parks or natural areas were listed within the pipeline corridor.

### 4.2.5 Agricultural/Non-Agricultural Land Use/Forested Areas

About 54.6 miles or 662 acres (92%) of the potential pipeline route appeared to be in agricultural use as cropland or pasture. About 4.5 miles or 55 acres (8%) of the corridor appeared to be in the non-agricultural use. A majority of the non-agricultural land is forested. Approximately 717 acres of land is affected in the temporary construction corridor. There would be no long-term impacts in the agricultural corridors of the pipeline. Loss of one cropping season is probable during construction. A permanent 20-foot corridor would be maintained through forested areas of the pipeline route.

### 4.2.6 Floodplains

FEMA flood insurance mapping depicts about 10.7 miles or 130 acres (18%) of the potential pipeline to be within an area of the 100-year flooding potential. The stream floodplains with a 100-year flooding potential, through which the pipeline corridor passes, are associated with the Illinois River, Plum Creek, Walnut Creek, Sandy Creek, Lick Creek, and Mauvaise Terre Creek. No impacts on flooding would occur due to this alternative.

### 4.2.7 Stream Crossings

The proposed pipeline route involves about 41 stream crossings from the Illinois River to Lake Springfield. The pipeline corridor crosses the following perennial streams: two unnamed dredged drainage channels to the Illinois River, a permanent slough in the Illinois River floodplain, Plum Creek, Mauvaise Terre Creek, Lick Creek, and two crossings of Walnut Creek. The pipeline corridor crosses the following intermittent streams: four crossings of tributaries to Plum Creek, eight crossings of tributaries to Walnut Creek, three crossings of tributaries to Sandy Creek, two crossings of tributaries to Mauvaise Terre Creek, four crossings of intermittent portions of the North Fork of Mauvaise Terre Creek, four crossings of tributaries to the North Fork at Mauvaise Terre Creek, Spring Creek, three crossings of tributaries to Spring Creek, Archer Creek, and three crossings of tributaries to Lick Creek. The short-term impact of a brief period of increased stream turbidity during construction would be experienced for the small streams that are open cut for pipeline crossing.

### 4.2.8 Groundwater Impacts

Two radial collector (Ranney) wells capable of producing 8.9 mgd each can be developed along the Illinois River. The wells are spaced to minimize drawdown interference between them. Interference of the proposed wells with some nearby existing wells would likely occur with the development of this water supply alternative. The density of existing wells is sparse in the proposed areas. Appropriate mitigative measures such as lowering well pumps would be examined

for specific well sites. Proposed wells are located at least one mile away from larger existing municipal, industrial, and irrigation wells to minimize concerns over interference with them.

### 4.2.9 Construction Impacts

The primary potential impact on air quality from well development and pipeline construction would be fugitive dust (particulates) resulting from soil exposed to wind and traffic. The quantity of fugitive dust from construction activities varies depending on the area of land being worked, the level of activity, soil silt content, soil moisture content, and wind speed. Construction would generate fugitive dust that may be a nuisance in nearby areas.

During construction, blowing dust from areas cleared or excavated for access or construction purposes can be minimized by water application to unpaved road surfaces with a water sprinkler truck. On haul roads carrying heavy construction traffic, crushed gravel can be spread in conjunction with the normal sprinkling of the road with water. The effectiveness of watering for fugitive dust control depends on the frequency of application.

Construction vehicles emit carbon monoxide, hydrocarbons, and oxides of nitrogen. Ambient air construction would not be significantly altered by operating construction vehicles and machinery.

Trucks and heavy machinery used during construction produce noise that may affect some land uses and activities. However, because of the rural character of the project area these impacts would be minimal. In addition, specifications concerning construction noise outlined in the IDOT *Standard Specifications for Road and Bridge Construction* would be utilized.

Access to all properties would be maintained by staged construction, temporary access roads, or other appropriate means. These measures would minimize inconvenience and financial loss resulting from construction activities.

Construction activities would be coordinated with public utilities in order to avoid accidents and minimize planned interruptions and service. When service interruptions are unavoidable, every effort would be made to limit their duration.

Short-term increases in sedimentation and turbidity levels within surface water resources may be expected during pipeline construction in proportion to the proximity of excavated sites to surface water and frequency of storms. However, turbidity and sedimentation are expected to return to baseline levels soon after construction. Temporary erosion and siltation control measures would be employed as needed to minimize silt loading and deposition in streams. Erosion control measures specified in the IDOT *Standard Specifications for Road and Bridge Construction* would be employed. Well development and testing would generate relatively large volumes of wastewater that may cause localized erosion and sedimentation. Temporary stilling basins and sediment traps would minimize these impacts. Areas of high erosion potential would be identified during project design and necessary erosion control measures incorporated in the construction plans.

Utility companies providing electric service to the areas encompassed by this alternative would need to provide additional distribution system capacity to serve the various wells and pump stations. This system would require 2,857 horsepower to operate. Increased revenues would be realized by these companies should this alternative be pursued.

## 4.3 HAVANA LOWLANDS WELL FIELD AND PIPELINE - 16 MGD

The potential Havana Lowlands well fields alternative is shown in Figure 2.3.6.5. The well field areas and a 400-foot-wide corridor around the 49.8-mile pipeline route were assessed for environmental impacts. Approximately 608 acres of land would be impacted, primarily in the pipeline corridors, for this alternative.

### 4.3.1 Socio-Economic Impacts

There would be virtually no impact to local taxing bodies since only 4.9 acres would be impacted by well and pump station sites.

### 4.3.2 Wetland Resources

The well fields and the 400-foot-wide pipeline route passes through or directly adjacent to about 38 NWI wetland areas. No field verification was conducted to determine jurisdictional wetland acreage. No permanent impacts to wetland resources would occur except where a maintained 20-foot corridor would reduce standing timber in forested areas.

### 4.3.3 Cultural Resources

Site records of the IHPA depict no identified archaeological sites within the potential well field or the pipeline corridor north of Sherman. However, relatively few archaeological surveys have been conducted for the areas of the pipeline corridor from the Havana Lowlands well field to the Sherman area. A moderate probability for occurrence of sites is expected along this portion of the proposed route based on central Illinois project studies, such as the cultural resource studies for the Hunter Lake alternative. The remaining portion of the pipeline route from Sherman to Lake Springfield traverses a portion of the Sangamon River Valley that has been extensively surveyed for cultural resources. The area of the Sangamon River Valley encompassed by Sherman, located north of Springfield; Spaulding Dam and Rochester, located southeast of Springfield; and Riverton, located northeast of Springfield contains over 110 known archaeological sites. The portion of the Havana Lowlands potential pipeline south of Sherman has a relatively high probability of encountering archaeological sites. Sites would be avoided where possible, and evaluated and mitigated where encountered.

### 4.3.4 Potential Threatened and Endangered Species/Parks and Natural Areas

No federally listed endangered or threatened species would be affected by construction of this alternative. The IDNR Natural Heritage Database documented two listed species within or near the pipeline corridor. The State-endangered broomrape (*Orobanche ludoviciana*) was identified within about 1,200 feet west of the pipeline route at R. 6 W., T. 19 N., Section 2 within the Salt Creek valley. Suitable habitats for the broomrape are dry sand prairies and sandy alluvium along streams. The State-threatened pied-billed grebe (*Podilymbus podiceps*) has been documented in the ash ponds north of Lake Springfield's Spaulding Dam. The pied-billed grebe inhabits fairly large, well vegetated lakes, ponds, sluggish streams, and marshes. Both documented locations for these State-listed species could be avoided by the pipeline construction. No parks or designated natural areas were identified within the pipeline corridor.

As stated in Section 3.5.5.4, the northern well field area provides a very sandy substrate which could potentially support two threatened or endangered species found in adjacent sections—the Illinois chorus frog (*Pseudachris streckeri*) and Hall's bulrush (*Scirpus hallii*). Both of these

species require shallow ponds for survival. The Hall's bulrush, in particular, tends to be associated with ponds which are hydrologically connected to the local aquifer. Drawdowns of the local aquifer resulting from well field operation as described in Section 4.3.8 could negatively impact these species, if present in the vicinity.

### 4.3.5 Agricultural/Non-Agricultural Land Use/Forested Areas

About 45.9 miles or 556 acres (92%) of the potential pipeline route appears to be in agricultural use as cropland or pasture. About 3.9 miles or 47 acres (8%) of the route appears to be in non-agricultural use. The majority of the non-agricultural land is forested. Approximately 603 acres of land is affected in the temporary construction corridor. There would be no long-term impacts in the agricultural corridors of the pipeline. Loss of one cropping season is probable during construction. A permanent 20-foot corridor would be maintained through forested areas of the pipeline route.

### 4.3.6 Floodplains

FEMA flood insurance mapping depicts about 8.1 miles or 98 acres (16%) of the pipeline to be within an area of the 100-year flooding potential. The stream floodplains with a 100-year flooding potential, through which the pipeline corridor passes, are associated with the Sangamon River, Salt Creek, Cantrall Creek, Fancy Creek, and Sugar Creek. No impacts on flooding would occur due to this alternative.

### 4.3.7 Stream Crossings

The Havana Lowlands pipeline route involves about 37 stream crossings. The pipeline corridor crosses the following perennial streams: two crossings of Salt Creek, Grove Creek, Indian Creek, Fancy Creek, the Sangamon River, and Sugar Creek. The pipeline corridor crosses the following intermittent streams: three crossings of Sleepy Hollow Ditch, a tributary to Sleepy Hollow Ditch, three crossings of tributaries to Salt Creek, three crossings of tributaries to Grove Creek, a tributary to Indian Creek, two crossings to tributaries to Halls Branch, an intermittent portion of Cantrall Creek, three crossings of tributaries to Cantrall Creek, three crossings of tributaries to Fancy Creek, an intermittent portion of Hoover Branch, six crossings of unnamed intermittent drainage channels, and three crossings of tributaries to Sugar Creek. The short-term impact of a brief period of increased stream turbidity would be experienced for the small streams that are open cut for pipeline crossing.

### 4.3.8 Groundwater Impacts

Drawdowns in wells surrounding two 8 mgd well fields are significant. It is very likely that the construction and operation of two 8 mgd well fields would result in water supply interruptions in some existing nearby wells. However, these water supply interruptions likely would not be caused by a catastrophic dewatering of the aquifer, but rather by local groundwater levels being lowered below the screens of shallower wells or below the pumps in wells with relatively shallow pump settings. These potential water supply interruptions could likely be mitigated by deepening the subject well or lowering the well pump or both. The well fields were sited based on the low density of irrigation wells in the surrounding areas.

### 4.3.9 Construction Impacts

The primary potential impact on air quality from well development and pipeline construction would be fugitive dust (particulates) resulting from soil exposed to wind and traffic. The quantity of fugitive dust from construction activities varies depending on the area of land being worked, the level of activity, soil silt content, soil moisture content, and wind speed. Construction would generate fugitive dust that may be a nuisance in nearby areas.

During construction, blowing dust from areas cleared or excavated for access or construction purposes can be minimized by water application to unpaved road surfaces with a water sprinkler truck. On haul roads carrying heavy construction traffic, crushed gravel can be spread in conjunction with the normal sprinkling of the road with water. The effectiveness of watering for fugitive dust control depends on the frequency of application.

Construction vehicles emit carbon monoxide, hydrocarbons, and oxides of nitrogen. Ambient air construction would not be significantly altered by operating construction vehicles and machinery.

Trucks and heavy machinery used during construction produce noise that may affect some land uses and activities. However, these impacts would be minimal because of the rural character of the project area. In addition, specifications concerning construction noise outlined in the IDOT *Standard Specifications for Road and Bridge Construction* would be utilized.

Access to all properties would be maintained by staged construction, temporary access roads, or other appropriate means. These measures would minimize inconvenience and financial loss resulting from construction activities.

Construction activities would be coordinated with public utilities in order to avoid accidents and minimize planned interruptions and service. When service interruptions are unavoidable, every effort would be made to limit their duration.

Short-term increases in sedimentation and turbidity levels within surface water resources may be expected during pipeline construction in proportion to the proximity of excavated sites to surface water and frequency of storms. However, turbidity and sedimentation are expected to return to baseline levels soon after construction. Temporary erosion and siltation control measures would be employed as needed to minimize silt loading and deposition in streams. Erosion control measures specified in the IDOT *Standard Specifications for Road and Bridge Construction* would be employed. Well development and testing would generate relatively large volumes of wastewater that may cause localized erosion and sedimentation. Temporary stilling basins and sediment traps would minimize these impacts. Areas of high erosion potential would be identified during project design and necessary erosion control measures incorporated in the construction plans.

Utility companies providing electric service to the areas encompassed by this alternative would need to provide additional distribution system capacity to serve the various wells and pump stations. This system would require 2,118 horsepower to operate. Increased revenues would be realized by these companies should this alternative be pursued.

## 4.4 LICK CREEK RESERVOIR/SANGAMON RIVER VALLEY WELLS

This alternative combines 8.0 mgd development of the Sangamon River Valley aquifer system with the 8.3 mgd Lick Creek Reservoir (LCR). Development of the aquifer well system to yield

9.33 mgd would require construction of clusters 4 and 5 in the west section (6 wells) and clusters 6 through 9 in the east section (18 wells). The combined length of all pipelines in this alternative is about 57.3 miles. Approximately 6,260 acres of land would be impacted by this combined alternative.

### 4.4.1 Socio-Economic Impacts

Based on the median average 1994-1995 tax rate of 7% and assessed property values for Chatham, Loami, and Curran Townships, the estimated potential annual tax loss for all 1,948 acres of property within the LCR normal pool elevation is $98,359 and $471,166 for all 5,555 acres of property within the project limits. This combined alternative would displace approximately 89 homes and one business, a fee-fishing operation. There would be a negative impact on the local taxing bodies. Lower tax revenues would be realized; less services would need to be provided. The well sites, pump stations, and flush points account for 9.3 acres that would be acquired by the City. Overall, the social impacts of lake construction would be negative for the residents in the project area for whom relocation may cause serious hardships. For most residents living in the rural areas around the potential LCR, social impacts would be slight.

### 4.4.2 Agricultural Lands

Based on the average per acre farm income for Sangamon County of $308, the estimated potential annual loss of farm income from agricultural lands within the total LCR project area would be $1,288,364.

This combined alternative would impact 4,560 acres of agricultural land. Approximately 377 acres of this land is within the Sangamon River well field and pipeline areas, based on a 100-foot-wide pipeline construction corridor. The remaining 4,183 acres is within the LCR project area. A total of 85 farm displacements would occur in the LCR area.

### 4.4.3 Land Use Impacts

Land use changes expected to occur as a result of the construction of the LCR include a reduction in agricultural production given the change of landscape from terrestrial to aquatic in the pool area and less intensive uses of those marginal lands where mitigation would convert agricultural row crop areas to natural landscapes.

The LCR might influence increases in residential development pressure due to the pleasing aesthetics of the potential lake and surrounding buffer of natural area. As with proposed Hunter Lake, if the LCR were constructed, no leases on lake margins would be issued to any private party for any purpose whatsoever. This would help preserve the stability of the wildlife in the area and ensure that the entire lake shore is open and available to the general public.

Recreation opportunities may increase in the LCR area due to the establishment of conservation areas on the marginal lands surrounding the lake. These opportunities would be helpful to ease the 1,500-acre deficit in open space lands in Sangamon County and provide additional fishing opportunities for which demand currently exceeds supply in central Illinois. Recreation development would be mainly outdoor in nature, such as picnicking, hiking, camping, fishing, hunting, and boating. Development of recreation structures would be compatible with wildlife conservation. Two lake access areas would be developed for boaters and fishermen. A fisheries management agreement would be established with the Department of Natural Resources for development of fisheries resources in the reservoir.

An economic impact analysis of Hunter Lake recreational opportunities estimated that recreational use would range from 50,000-150,000 visitor days annually. Local spending by recreational users of Hunter Lake would range from $3.50-$6.50 per person per day. Depending on the number of recreational users and how much they spend in the area, Hunter Lake would generate between $131,000 and $1,215,000 in economic output and create 1 to 15 jobs. The City assumes that the LCR also would fall within this range.

There would be no long-term impacts in the agricultural corridors of the Sangamon River Valley pipeline. Loss of one cropping season is probable during pipeline construction. The majority of the non-agricultural land is forested. There are approximately 1,001 acres of forested/non-agricultural land in this combined alternative. Approximately 683 acres of this land is within the LCR project area, and the remaining 318 acres is located within the Sangamon River well field and pipeline area. A permanent 20-foot corridor would be maintained through the forested areas of the pipeline route.

### 4.4.4 Cultural Resources

The Illinois Archaeological Survey site location files maintained at the IHPA were examined to determine locations of known historic and prehistoric resources within the project area. No archaeological sites have been reported within the LCR project limits. Most of the project area has not been surveyed by a professional archaeologist. However, based on the topography and proximity to Lick Creek, there is a high probability that archaeological sites are located within the project area. The sites found within the project area would most likely be on the bluff edges along the edge of the floodplain due to the small size of the floodplain and the proximity of high ground to the water source.

A minority of the archaeological sites in the LCR project area would be inundated as a direct result of the flooding. A larger threat to the archaeological resources located within the project area would be from erosion along the edges of the normal pool from wave action. Erosion could also affect sites located above the normal pool elevation.

The Sangamon River well field and appurtenant pipelines have a very high probability of encountering archaeological sites. Sites would be avoided where possible and evaluated and mitigated where encountered.

### 4.4.5 Natural Resources

#### 4.4.5.1 Biological Impacts

Given the proximity of the LCR to Lake Springfield and proposed Hunter Lake, the biota of this region is expected to be similar. Inundation would change the land cover from predominantly terrestrial areas to aquatic habitat. Land cover categories indicate that approximately 1,265 acres currently or formerly in agricultural use and 275 acres of forest would be converted to aquatic areas.

Building the lake would displace the terrestrial mammals in the pool area. Impacts would be mostly negative with regard to bird populations due to the removal of forest and grassland habitat. Populations of most bird species would likely decrease; impacts would be neutral for some and positive for others that rely on aquatic habitats and standing dead timber. Some species of amphibians and reptiles within the project area are expected to decrease in abundance as a result of

constructing the lake, while others would likely increase due to the creation of permanent lentic habitats. Most of the species predicted to decline are widespread and relatively common in Illinois.

Using Lake Springfield as a model, it is likely that some species of native stream fishes would survive in LCR and populations of some species would increase. A few species would decrease in numbers of individuals and several species would not survive and reproduce in the lake. Some species are not present in the stream system but are likely to gain access to the lake and successfully reproduce. As is evident with Lake Springfield, a productive sport fisheries program in LCR would be possible with management of the fish fauna.

Impounding a stream leads to major changes in available aquatic habitats, and therefore, quantitative and qualitative changes in the phytoplankton and periphyton flora are expected; phytoplankton densities would increase. The habitat of the project area would change from a small stream, littoral habitat to primarily a limnetic habitat due to the large volume of open water that would be created by the impoundment. This would result in a decline of several littoral zooplankton species and an increase in populations of limnetic species. The relative abundance of littoral versus limnetic species would depend upon shoreline development. Using Lake Springfield as a model, it is likely that all species of freshwater mussels found in the area would survive in LCR.

#### 4.4.5.2 Potential Threatened and Endangered Species/Parks and Natural Areas

No federally listed endangered or threatened species would be affected by construction of this alternative. The IDNR Natural Heritage Database was reviewed for historic occurrence of any State or federally listed threatened or endangered species. The database revealed one confirmed record of an Illinois threatened bird species within the project area. One nesting site of the loggerhead shrike (*Lanius ludovicianus*) from 1994 was documented in the northern portion of the LCR project area. This location is near the edge of the normal pool elevation and may be inundated at least occasionally. However, shrikes do not usually use the same nest from previous years. The preferred habitat of shrikes is relatively open country. The loggerhead shrike usually nests in brushy fencerows. When available, loggerhead shrikes prefer to nest in fencerows or clumps of common thorny trees such as osage orange, hawthorn, or honey locust. This habitat is available elsewhere within the project area. No other threatened or endangered species was documented within the project area. No parks or natural areas were identified within the LCR project area.

The IDNR Natural Heritage Database documented no threatened or endangered species within or near any of the pipeline corridors. Approximately 15 acres of this combined alternative area is within Carpenter Park. This park is an Illinois Natural Area Inventory site located north of Springfield. Approximately 6 acres of this combined alternative area is within Riverside Park located immediately south of Carpenter Park. Approximately 2 acres of the pipeline corridor area also lies within the South Fork Natural Area which is approximately 1,000 feet wide and located along each side of the South Fork of the Sangamon River from the confluence of the South Fork with Sugar Creek to directly east of Rochester towards the middle of the northern half of Section 17 of Rochester Township.

As stated in Section 3.5.5.4 and Section 4.3.4, the northern well field area of the Havana Lowlands Well Field and Pipeline provides a very sandy substrate which could potentially support two threatened or endangered species found in adjacent sections—the Illinois chorus frog (*Pseudachris streckeri*) and Hall's bulrush (*Scirpus hallii*). Both of these species require shallow ponds for

survival. The Hall's bulrush, in particular, tends to be associated with ponds which are hydrologically connected to the local aquifer. Drawdowns of the local aquifer resulting from well field operation as described in Section 4.3.8 could negatively impact these species, if present in the vicinity.

### 4.4.6 Water Quality/Resources

#### 4.4.6.1 Groundwater Impacts

Existing domestic wells and/or basements near the LCR project limits could be affected by a slight increase in the groundwater elevation.

Interference of the potential Sangamon River Valley well system with existing wells is a concern for the development of this water supply alternative. For the preliminary design, only larger existing municipal and industrial water wells were taken into account. Proposed wells in the Sangamon River Valley were located at least one mile away from the existing wells to accommodate for a large enough aquifer area to produce a full 1/3 mgd yield. This spacing is more than sufficient to eliminate concerns over interference from neighboring wells. There are additional private wells in the Sangamon River area, although few are located within the river valley and are drawing from the same aquifer. There would need to be further study on the effect of the well system on the private wells within this aquifer.

#### 4.4.6.2 Surface Water Resources

The HEC-5Q model was used to predict water surface elevations and constituent concentrations in the potential LCR. Water temperature and D.O. concentrations would be highly dependent on meteorological conditions, i.e., time of the year. Concentrations of nitrate-nitrogen and phosphate-phosphorus in lake waters would be highly dependent on upstream contributions. Due to greater water depth, the reservoir would have distinct and prolonged gradients of water temperature and D.O. concentration compared to Lake Springfield. Nitrate-nitrogen levels in the potential reservoir are predicted to be higher than for Lake Springfield but below the drinking water limit. Phosphate-phosphorus levels in the potential reservoir would be similar to Lake Springfield.

### 4.4.7 Floodplains

About 1,421 acres of the 100-year floodplain would be inundated at the normal pool elevation of the potential reservoir. This alternative combination would impact a total of approximately 1,745 acres of 100-year floodplain. Based on a 100-foot-wide pipeline construction corridor, the remaining 324 acres of 100-year floodplain is within the Sangamon Valley well project area. No impacts on flooding would occur due to the Sangamon River Valley Well portion of this combined alternative. Flooding impacts may occur immediately upstream of the LCR and also downstream from the dam to Lake Springfield.

### 4.4.8 Stream Crossings

The Sangamon River well field pipelines involve about 61 stream crossings. These crossings include: 22 tributaries to the Sangamon River, four perennial tributaries to the Sangamon River, 11 over the Sangamon River, one over Fancy Creek, two intermittent drainages, two over Buckhart Creek, one over Hoover Branch, nine intermittent tributaries to Sugar Creek, two over Sugar Creek, three intermittent tributaries to South Fork, one perennial tributary to South Fork, two over South Fork, and one over Black Branch. The short-term impact of a brief period of increased

stream turbidity during construction would be experienced for those small streams that are open cut for pipeline crossing.

### 4.4.9 Wetlands

A total of 335 NWI wetland areas occur in the combined alternative area. No field verification was conducted to determine jurisdictional wetland acreage. The LCR pool area impacts 205 wetland areas, while the Sangamon River wells and corridors pass through or directly adjacent to about 130 of these NWI wetland areas. No permanent impacts to wetland resources would occur due to the pipeline/wells portion of this alternative except where a maintained 20-foot corridor would reduce standing timber in forested areas. No estimate of jurisdictional wetlands was performed for the pipeline area. All wetlands in the pool area of the LCR would be lost.

### 4.4.10 Construction Impacts

The project region is within an attainment area for all the criteria air pollutants meeting the National Air Quality Standards. There would be no local air impacts remaining after construction activity that could affect the local or regional air quality. Requirements for fugitive dust suppression would be included in construction contracts.

Implementation of the project would necessitate the removal and relocation of large volumes of earth and vegetation for construction of the dam and spillways, roadway relocation, bridge construction, utility line relocation, pipeline installation and well development. In addition, construction access roads along with mobilization and storage areas would be needed. All of these would be potential sources of erosion and sedimentation. Short-term increases in sedimentation and turbidity levels within surface water resources may occur during construction in proportion to the proximity of excavated sites to surface waters, the frequency and intensity of storm events, and the effectiveness of erosion controls.

Permanent and temporary erosion and siltation control measures would be employed as needed to minimize silt loading and deposition in streams. Erosion control measures specified in the IDOT *Standard Specifications for Road and Bridge Construction* and the IEPA *Standards and Specifications for Soil Erosion and Sediment Control* would be utilized.

Areas of high erosion potential would be identified during final project design and necessary erosion control measures would be incorporated into the construction plans. Due to the inherent trap efficiency of impoundments, turbidity levels in Lick Creek below the LCR dam and hence entering Lake Springfield would be expected to drop below baseline levels upon project completion.

Movement of equipment along the existing roadways and use of trucks and heavy machinery during construction could cause an increase in noise levels that may impact people living in the vicinity. However, because of the rural character of the project area, these impacts would be minimal. Specifications concerning construction noise outlined in the IDOT *Standard Specifications for Road and Bridge Construction* would be utilized.

### 4.4.11 Public Facilities and Services

#### 4.4.11.1 Area Transportation Network

The roadways and bridges would be built either under road closures/detours or staging, requiring single lane closures or temporary runarounds. Certain secondary roads and private drives would be temporarily closed for open-cut pipeline installation. A detailed traffic control, staging, and closure plan for the various road and bridge improvements would be developed during the design phase.

Access to all occupied properties would be maintained by staged construction, temporary access roads, or other appropriate means. Road closures, detours, and temporary access would be coordinated with the appropriate township and county highway officials. Sangamon County Highways 48, 18, and 40 are affected by the LCR project. Overall negative impacts to the county highway system would be limited to inconvenience and delays occurring during construction of the various elements. Positive impacts include new roadways in realigned sections built to current standards that would result in lower maintenance costs. The County would also benefit from the replacement of existing bridges and culverts, many of which are nearing the end of their useful life. All new structures would also be capable of passing the design flood whereas most of the existing structures are not.

For the township roadway system, a number of existing roads would be closed. Detours during roadway realignments, reconstruction of drainage structures, and open-cut pipeline installation would cause temporary delays and adverse travel requirements.

Construction of this alternative would require truck delivery of materials via township roads. This additional heavy traffic has the potential to damage roadway base structures depending upon existing base strength and subsurface moisture content. Deliveries could be scheduled to avoid weaker road structures and weather conditions. Any damages would be repaired.

Road closures would result in lower Motor Fuel Tax (MFT) revenues for affected townships. Road closures and the resulting dead-ends have historically proven to be a maintenance problem for the townships due to illegal dumping. "T" turnarounds instead of conventional cul-de-sacs would be provided at closed roads near occupied housing. Other roads would be abandoned at major thoroughfares with easements provided for private landowners or farm tenants where needed. These actions would minimize the potential for illegal dumping.

State and Federal highway facilities would not be affected by construction of the project. Pipelines would be bored and jacked beneath these highways. The Union Pacific Railroad passes through the LCR project area. A large deck truss bridge traversing Lick Creek would be impacted by the potential reservoir. The railroad has filed for abandonment of this line. It is unknown if this structure would need to be replaced should this alternative be pursued.

#### 4.4.11.2 Public Utilities

Construction activities would be coordinated with utility relocations in order to minimize planned interruptions of service. If service interruptions were unavoidable, every effort would be made to limit their duration. A number of utility services would be impacted by construction of this alternative. No revenue loss or gain was determined for the impacted utilities.

**Central Illinois Light Company** (CILCO) provides electric service to the lower portion of the LCR project area. Approximately 8 miles of line would be abandoned and 1 mile relocated as a result of the reservoir construction. An estimated 86 metered services would be eliminated at an annual loss of about $67,000.

**Rural Electric Convenience Cooperative** (RECC) provides electric service to the balance of the LCR project area. Ten locations within the LCR area would need reconstruction. No estimate of service disconnections was provided.

**Central Illinois Public Service Company** (CIPS) - As a result of LCR construction, CIPS would have to relocate a major overhead 138 KV transmission line around or through the LCR project area. The rerouting of lines would avoid crossing or overhanging the lake. The actual relocation route and the miles of impacted power lines are not known.

**GTE North Incorporated** (GTE) has two telephone exchanges (Chatham and Loami) that would be impacted by LCR construction. GTE underground cables throughout the project area would need to be relocated or abandoned. GTE would lose all customers within the LCR project area.

Utility companies providing electric service to the area of the Sangamon Valley well system included in this alternative would need to provide additional distribution system capacity to serve the various wells and pump stations. This system would require 804 horsepower to operate. Increased revenues would be realized by these companies should this alternative be pursued.

A water transmission pipeline serving the Village of Loami would need to be relocated through the LCR area.

No gas or sewer services would be impacted by this alternative.

#### 4.4.11.3 Public Safety

The only impact on emergency services would be on the families living in remote areas next to the LCR project site. These residents may experience a minimal increase in emergency response and travel time. However, since all primary and secondary highways would remain and continue to be served by crossroads, no major increase in response times is foreseen.

Public safety concerns exist regarding the increased potential for drownings associated with a large water body. The greatest potential for drownings exists through accidents related to boating incidents. Education programs of the IDNR and CWLP focus upon safe boating, since proper precautions related to boating practices could reduce the number of deaths from drowning.

#### 4.4.11.4 Cemeteries

Two cemeteries located near the lake's planned high water mark may require levee protection.

### 4.4.12 Operational Impacts

Water from the LCR would be used to supplement the storage in Lake Springfield during dry periods. During normal conditions, it is anticipated that outflow from the LCR would occur as simple spillway overflow. As Lake Springfield water levels are drawn down during drought conditions, the outlet structure in the LCR would be used to release water to supplement the

storage in Lake Springfield. The amount and timing of the releases impact the total system yield. This combined alternative would require 804 horsepower to operate.

Potential changes in terrestrial habitats as a result of the drawdown of the LCR should be similar to the findings of the Hunter Lake HEP Study. Terrestrial changes were predicted to be minimal to non-existent. There would be potential problems in maintaining aquatic habitat integrity with severe lake drawdown. The LCR would experience a drawdown of 16 feet, but would help restore 7 feet of water in Lake Springfield during the 20-month drought. Although there were no significant changes in D.O. concentrations in Lake Springfield as a result of supplemental storage from the LCR, total D.O. amounts improved (higher concentration for deeper water) due to the supplemental storage. Supplemental storage from the potential reservoir would favorably affect the water temperature at the power plant intake by creating a greater water depth in Lake Springfield, but it does not have much additional impact on lake temperatures. Temperatures of the LCR surface would be virtually unaffected by severe drawdown, but bottom temperatures may rise. Drawdown does not appear to significantly impact water quality characteristics other than temperature.

### 4.4.13 Special Waste

There are no known Special Waste Sites in this combined alternative project area. Since the project area does contain large tracts of farming operations, there is a potential to uncover waste sites. All junk sites as well as areas which may contain any type of agricultural chemicals or other hazardous waste materials would need to be cleaned up as these sites were found.

### 4.4.14 Point Source Discharges

Whispering Pines Mobile Home Park is the only NPDES Permit holder that may be impacted if the LCR is constructed. This discharge could be relocated approximately 4 miles north to the Spring Creek drainage.

## 4.5 LICK CREEK RESERVOIR/SANGAMON RIVER VALLEY WELLS/GRAVEL PITS A, B, C

This alternative combines 3.33 mgd development of the Sangamon River Valley aquifer system with the full sand and gravel pit system (4.8 mgd) and the LCR (8.3 mgd). Development of the aquifer well system to yield 3.33 mgd would require construction of clusters 6 through 8 (14 wells) in the east section. The combined length of all pipelines in this alternative is about 32.2 miles. Approximately 5,952 acres of land would be impacted by this combined alternative.

### 4.5.1 Socio-Economic Impacts

Impacts to property, homes, businesses and tax revenues are essentially the same as those described in Section 4.4.1. The well sites, pump stations, and flush points account for 4.7 acres of land that would be acquired by the City.

Gravel Pit B-1 would lose nearly all water during operation of this alternative. Virtually all recreational values of this recreation lake would be lost during drought. Pit B-2 would be leased directly from the owner, thereby putting the current operator out of business at this location with the associated loss of four jobs.

### 4.5.2 Agricultural Lands

This combined alternative would impact 4,439 acres of agricultural land. Approximately 256 acres of this land is within the Sangamon River well field (214 acres) and gravel pit (42 acres) pipeline areas, based on a 100-foot-wide pipeline construction corridor. The remaining 4,183 acres is within the LCR normal pool elevation.

### 4.5.3 Land Use Impacts

Potential impacts to residential development and recreational opportunities near the LCR project area and the Sangamon River Valley are described in Section 4.4.3. There would be no long-term impacts in the agricultural corridors of the Sangamon River Valley pipeline. Loss of one cropping season is probable during pipeline construction. The majority of the non-agricultural land is forested. There are approximately 821 acres of forested/non-agricultural land in this combined alternative. Approximately 683 acres of this land is within the LCR pool area, and the remaining 138 acres is located within the well field (111 acres) and gravel pit (27 acres) pipeline construction areas. A permanent 20-foot corridor would be maintained through the forested areas of the pipeline route.

### 4.5.4 Cultural Resources

The Illinois Archaeological Survey site location files maintained at the IHPA were examined to determine locations of known historic and prehistoric resources within the project area. No archaeological sites have been reported within the potential Lick Creek project limits. Most of the project area has not been surveyed by a professional archaeologist. However, based on the topography and proximity to Lick Creek, there is a high probability that archaeological sites are located within the project area. The sites found within the project area would most likely be on the bluff edges along the edge of the floodplain due to the small size of the floodplain and the proximity of high ground to the water source.

A minority of the archaeological sites in the LCR project area would be inundated as a direct result of the flooding. A larger threat to the archaeological resources located within the project area would be from erosion along the edges of the normal pool from wave action. Erosion could also affect sites located above the normal pool elevation.

The well field and appurtenant pipelines have a very high probability of encountering archaeological sites. Sites would be avoided where possible and evaluated and mitigated where encountered.

### 4.5.5 Natural Resources

#### 4.5.5.1 Biological Impacts

Potential impacts to biological resources near the LCR project area and the Sangamon River Valley are described in Section 4.4.5.1. Reduction of water levels in the sand and gravel pits may cause the loss of fish stocks and other aquatic organisms in the various pits depending upon local conditions. Site B-1 would lose virtually all water with the pumping of the B group of pits during the design drought. Fish stocks in this pit would not be able to migrate to deeper waters in the adjoining pit and would be lost.

#### 4.5.5.2 Potential Threatened and Endangered Species/Parks and Natural Areas

No federally listed endangered or threatened species would be affected by construction of this alternative. The IDNR Natural Heritage Database was reviewed for historic occurrence of any State or federally listed threatened or endangered species. The database revealed one confirmed record of an Illinois threatened bird species within the project area. One nesting site of the loggerhead shrike (*Lanius ludovicianus*) from 1994 was documented in the northern portion of the LCR project area. This location is near the edge of the normal pool elevation and may be inundated at least occasionally. However, shrikes do not usually use the same nest from previous years. The preferred habitat of shrikes is relatively open country. The loggerhead shrike usually nests in brushy fencerows. Loggerhead shrikes prefer to nest in fencerows or clumps of common thorny trees such as osage orange, hawthorn, or honey locust when available. This habitat is available elsewhere within the project area. No other threatened or endangered species was documented within the project area. No parks or natural areas were identified within the LCR project area.

The IDNR Natural Heritage Database documented no threatened or endangered species within or near any of the pipeline corridors. Approximately 2 acres of the pipeline corridor lies within the South Fork Natural Area, which is 1,000 feet wide and located along each side of the South Fork of the Sangamon River from the confluence of the South Fork with Sugar Creek to directly east of Rochester towards the middle of the northern half of Section 17 of Rochester Township.

As stated in Section 3.5.5.4 and Section 4.3.4, the northern well field area of the Havana Lowlands Well Field and Pipeline provides a very sandy substrate which could potentially support two threatened or endangered species found in adjacent sections—the Illinois chorus frog (*Pseudachris streckeri*) and Hall's bulrush (*Scirpus hallii*). Both of these species require shallow ponds for survival. The Hall's bulrush, in particular, tends to be associated with ponds which are hydrologically connected to the local aquifer. Drawdowns of the local aquifer resulting from well field operation as described in Section 4.3.8 could negatively impact these species, if present in the vicinity.

### 4.5.6 Water Quality/Resources

#### 4.5.6.1 Groundwater Impacts

Potential impacts to existing wells and basements near the LCR project limits or within the Sangamon River Valley are described in Section 4.4.6.1. The City of Riverton currently operates four wells just north of gravel pit Site A as shown on Figure 2.3.4.4. These wells supply the city with approximately 0.33 mgd. There is a possibility that once the aquifer water levels are dropped as a result of pumping water from gravel pit Site A, the wells would no longer be operable. In this case, an agreement would need to be made with the City of Riverton to mitigate this impact.

#### 4.5.6.2 Surface Water Resources

Potential impacts to surface water resources are described in Section 4.4.6.2.

### 4.5.7 Floodplains

About 1,421 acres of the 100-year floodplain would be inundated at the normal pool elevation of the potential reservoir. This alternative combination would impact a total of approximately

1,585 acres of 100-year floodplain. Based on a 100-foot-wide pipeline construction corridor, the remaining 164 acres is within the 15.0 miles of the well/pipeline project area 100-year floodplain. No impacts on flooding would occur due to the well portion of this combined alternative. Flooding impacts may occur immediately upstream of the LCR, and also downstream from the dam to Lake Springfield.

### 4.5.8 Stream Crossings

The well field and gravel pits pipelines involve about 30 stream crossings. These crossings include: 15 intermittent tributaries to the Sangamon River, two perennial tributaries to the Sangamon River, five over the Sangamon River, two over Buckhart Creek, one intermittent tributary to Sugar Creek, one intermittent tributary to South Fork, one perennial tributary to South Fork, one over South Fork, one over Black Branch and one intermittent tributary to gravel pit. The short-term impact of a brief period of increased stream turbidity during construction would be experienced for those small streams that are open cut for pipeline crossing.

### 4.5.9 Wetlands

A total of 262 NWI wetland areas occur in the combined alternative area. The Sangamon River wells and gravel pits pipeline and corridors pass through or directly adjacent to about 57 of these NWI wetland areas. No field verification was conducted to determine jurisdictional wetland acreage. No permanent impacts to wetland resources would occur due to the pipelines portion of this alternative, except where a maintained 20-foot corridor would reduce standing timber in forested areas. No estimate of jurisdictional wetlands was performed for the pipeline area. All wetlands in the LCR pool area would be lost.

### 4.5.10 Construction Impacts

Potential impacts of construction activity are described in Section 4.4.10.

### 4.5.11 Public Facilities and Services

#### 4.5.11.1 Area Transportation Network

Potential impacts to area transportation networks are described in Section 4.4.11.1.

#### 4.5.11.2 Public Utilities

Potential impacts to public utilities are described in Section 4.4.11.2.

#### 4.5.11.3 Public Safety

Potential impacts to public safety are described in Section 4.4.11.3.

### 4.5.12 Operational Impacts

Potential impacts to project operation are described in Section 4.4.12.

### 4.5.13 Special Waste

Potential impacts to special waste sites are described in Section 4.4.13.

### 4.5.14 Point Source Discharges

Potential impacts to regulated point source discharges are described in Section 4.4.14.

## 4.6 LICK CREEK RESERVOIR/SANGAMON RIVER VALLEY WELLS/GRAVEL PIT A

This alternative combines 6.67 mgd development of the Sangamon River Valley aquifer system with Sand and Gravel Pit A (0.87 mgd) and the LCR (8.3 mgd). Development of the aquifer well system to yield 8.67 mgd would require construction of clusters 5 through 9 (20 wells) in the east section. The combined length of all pipelines in this alternative is about 59.0 miles. Approximately 6,281 acres of land would be impacted by this combined alternative.

### 4.6.1 Socio-Economic Impacts

Potential socio-economic impacts are described in Section 4.4.1.

### 4.6.2 Agricultural Lands

Based on the average per acre farm income for Sangamon County of $308, the estimated potential annual loss of farm income from agricultural lands within the total project area would be $1,288,364 per year.

This combined alternative would impact 4,564 acres of agricultural land. Approximately 320 acres of this land is within the Sangamon River well field (282 acres) and gravel pit (38 acres) pipeline areas, based on a 100-foot-wide pipeline construction corridor. The remaining 4,244 acres is within the LCR project area. A total of 85 farm displacements would occur in the LCR area.

### 4.6.3 Land Use Impacts

Potential impacts to residential development and recreational opportunities near the LCR project area and the Sangamon River Valley are described in Section 4.4.3. There would be no long-term impacts to the agricultural land within the corridors of the Sangamon River Valley pipeline. Loss of one cropping season is probable during pipeline construction. The majority of the non-agricultural land is forested. Approximately 1,021 acres of forested/non-agricultural land is in this combined alternative. Approximately 683 acres of this land is within the LCR pool area, and the remaining 338 acres is located within the well field (315 acres) and gravel pit (23 acres) pipeline area. A permanent 20-foot corridor would be maintained through the forested areas of the pipeline route.

### 4.6.4 Cultural Resources

The Illinois Archaeological Survey site location files maintained at the IHPA were examined to determine locations of known historic and prehistoric resources within the project area. No archaeological sites have been reported within the LCR project limits. Most of the project area has not been surveyed by a professional archaeologist. However, based on the topography and proximity to Lick Creek, there is a high probability that archaeological sites are located within the project area. The sites found within the project area would most likely be on the bluff edges along the edge of the floodplain due to the small size of the floodplain and the proximity of high ground to the water source.

A minority of the archaeological sites in the LCR project area would be inundated as a direct result of the flooding. A larger threat to the archaeological resources located within the project area would be from erosion along the edges of the normal pool from wave action. Erosion could also affect sites located above the normal pool elevation.

The potential well field and appurtenant pipelines have a very high probability of encountering archaeological sites. Sites would be avoided where possible and evaluated and mitigated where encountered.

### 4.6.5 Natural Resources

#### 4.6.5.1 Biological Impacts

Potential impacts to biological resources are described in Section 4.5.5.1.

#### 4.6.5.2 Potential Threatened and Endangered Species/Parks and Natural Areas

No federally listed endangered or threatened species would be affected by construction of this alternative. The IDNR Natural Heritage Database was reviewed for historic occurrence of any State or federally listed threatened or endangered species. The database revealed one confirmed record of an Illinois threatened bird species within the project area. One nesting site of the loggerhead shrike (*Lanius ludovicianus*) from 1994 was documented in the northern portion of the LCR project area. This location is near the edge of the normal pool elevation and may be inundated at least occasionally. However, shrikes do not usually use the same nest from previous years. The preferred habitat of shrikes is relatively open country. The loggerhead shrike usually nests in brushy fencerows. Loggerhead shrikes prefer to nest in fencerows or clumps of common thorny trees such as osage orange, hawthorn, or honey locust when available. This habitat is available elsewhere within the project area. No other threatened or endangered species was documented within the project area. No parks or natural areas were identified within the LCR project area.

As stated in Section 3.5.5.4 and Section 4.3.4, the northern well field area of the Havana Lowlands Well Field and Pipeline provides a very sandy substrate which could potentially support two threatened or endangered species found in adjacent sections—the Illinois chorus frog (*Pseudachris streckeri*) and Hall's bulrush (*Scirpus hallii*). Both of these species require shallow ponds for survival. The Hall's bulrush, in particular, tends to be associated with ponds which are hydrologically connected to the local aquifer. Drawdowns of the local aquifer resulting from well field operation as described in Section 4.3.8 could negatively impact these species, if present in the vicinity.

### 4.6.6 Water Quality/Resources

#### 4.6.6.1 Groundwater Impacts

Potential impacts to existing wells and basements are described in Section 4.5.6.1.

#### 4.6.6.2 Surface Water Resources

Potential impacts to surface water resources are described in Section 4.4.6.2.

### 4.6.7 Floodplains

About 1,421 acres of the 100-year floodplain would be inundated at the normal pool elevation of the potential reservoir. This alternative combination would impact a total of approximately 1,781 acres of 100-year floodplain. Based on a 100-foot-wide pipeline construction corridor, the remaining 360 acres of 100-year floodplain is within the well/gravel pit pipeline project area. No impacts on flooding would occur due to the well portion of this combined alternative. Flooding impacts may occur immediately upstream of the LCR and also downstream from the dam to Lake Springfield.

### 4.6.8 Stream Crossings

The well field and gravel pit pipelines involve about 51 stream crossings. These crossings include: 21 intermittent tributaries to the Sangamon River, three perennial tributaries to the Sangamon River, 10 over the Sangamon River, one over Fancy Creek, two intermittent drainages, two over Buckhart Creek, one over Hoover Branch, five intermittent tributaries to Sugar Creek, one over Sugar Creek, one intermittent tributary to South Fork, one perennial tributary to South Fork, one over South Fork, one over Black Branch and one intermittent tributary to gravel pit. The short-term impact of a brief period of increased stream turbidity during construction would be experienced for those streams that are open cut for pipeline crossing.

### 4.6.9 Wetlands

A total of 358 NWI wetland areas occur in the combined alternative area. The Sangamon River wells and corridors and gravel pit A pipeline corridor pass through or directly adjacent to about 153 of these NWI wetland areas. No field verification was conducted to determine jurisdictional wetland acreage. No permanent impacts to wetland resources would occur due to the pipeline/wells portion of this alternative except where a maintained 20-foot corridor would reduce standing timber in forested areas. No estimate of jurisdictional wetlands was performed for the pipeline area. All wetlands in the LCR pool area would be lost.

### 4.6.10 Construction Impacts

Potential impacts of construction activity are described in Section 4.4.10.

### 4.6.11 Public Facilities and Services

#### 4.6.11.1 Area Transportation Network

Potential impacts to area transportation networks are described in Section 4.4.11.1.

#### 4.6.11.2 Public Utilities

Potential impacts to public utilities are described in Section 4.4.11.2.

#### 4.6.11.3 Public Safety

Potential impacts to public safety are described in Section 4.4.11.3.

### 4.6.12 Operational Impacts

Potential impacts to project operation are described in Section 4.4.12.

### 4.6.13 Special Waste

Potential impacts to special waste sites are described in Section 4.4.13.

### 4.6.14 Point Source Discharges

Potential impacts to regulated point source discharges are described in Section 4.4.14.

## 4.7 ILLINOIS RIVER WELL FIELD (12 MGD)/SANGAMON RIVER VALLEY WELLS (3.33 MGD)

The potential Illinois River well field system is shown in Figure 2.3.5.5. The 12 mgd version of this system utilizes a single Ranney collector at the northern well site. The Sangamon River Valley well system is shown in Figure 2.3.3.1. This combination alternative requires construction of 10 wells in well clusters 6 and 7 and the associated transmission main of the Sangamon River Valley system. A 400-foot-wide corridor around the 56.3-mile Illinois River Valley and 34.9-mile Sangamon River Valley pipeline segments was evaluated for potential environmental impacts. Approximately 939 acres of land would be impacted by this combined alternative.

### 4.7.1 Socio-Economic Impacts

There would be virtually no negative impact to local taxing bodies since only about 6 acres would be impacted by wells and pump station sites.

### 4.7.2 Wetland Resources

The wells, well field area, and the 400-foot-wide pipeline route passes through or directly adjacent to about 89 wetland areas as depicted on NWI mapping. No field verification was conducted to determine jurisdictional wetland acreage. No permanent impacts to wetland resources would occur except where a maintained 20-foot corridor would reduce standing timber in forested areas.

### 4.7.3 Cultural Resources

Site records of the IHPA depict six known archaeological sites within the potential pipeline corridor of the Illinois River well portion of this combined alternative. Two of these sites, located in the Illinois River floodplain near the toe of the bluff, are complex multi-component sites. The IHPA site records show the general bluff/floodplain region to have high occurrences of known archaeological sites within more than 200 documented from the town of Bluffs to east of the area of the potential well field. This indicated the pipeline corridor has a high probability for occurrence of more archaeological sites within or near the Illinois River bluff/floodplain area. Based on archaeological studies for other central Illinois projects, such as the Hunter Lake alternative, a moderate probability of occurrence of archaeological sites within the pipeline corridor is expected for the portion of the proposed route from the Illinois River bluff area to Lake Springfield. The IHPA site records for the entire Sangamon River Valley well system revealed more than 210 archaeological sites documented. The development of this portion of the entire

system would have a very high probability of encountering archaeological sites. Sites would be avoided where possible, and evaluated and mitigated where encountered.

### 4.7.4 Potential Threatened and Endangered Species/Parks and Natural Areas

No federally listed endangered or threatened species would be affected by construction of this alternative. The IDNR Natural Heritage Database documented only one listed species within the pipe corridor. The State-threatened bunchflower (*Melanthium virginiicum*) was shown within the corridor along a railroad line in Section 26 on the south side of Orleans. The preferred habitats of the bunchflower are meadows, wet thickets, and damp woods. Any of these habitat types within the proposed alignment that may be subject to disturbance would be avoided by the project, if possible, or surveyed for the presence of bunchflower. The South Fork Natural Area is located along both sides of the South Fork of the Sangamon River from the confluence of the South Fork with Sugar Creek to directly east of Rochester towards the middle of the northern half of Section 17 of Rochester Township. The connecting pipeline from Sangamon River Valley well numbers 17 and 18 to the main transmission pipeline extending along I-55 passes through the South Fork Natural Area located in Section 28 of Clear Lake Township. The southern main transmission pipeline route connecting wells 19 through 36 to Lake Springfield passes through 2 acres of the South Fork Natural Area in Section 9 of Rochester Township.

As stated in Section 3.5.5.4 and Section 4.3.4, the northern well field area of the Havana Lowlands Well Field and Pipeline provides a very sandy substrate which could potentially support two threatened or endangered species found in adjacent sections—the Illinois chorus frog (*Pseudachris streckeri*) and Hall's bulrush (*Scirpus hallii*). Both of these species require shallow ponds for survival. The Hall's bulrush, in particular, tends to be associated with ponds which are hydrologically connected to the local aquifer. Drawdowns of the local aquifer resulting from well field operation as described in Section 4.3.8 could negatively impact these species, if present in the vicinity.

### 4.7.5 Agricultural/Non-Agricultural Land Use/Forested Areas

About 75.8 miles or 901 acres (83%) of the potential pipeline route appeared to be in agricultural use as cropland or pasture (Illinois River Valley, 628 acres and Sangamon Valley, 11 acres). About 15.4 miles or 187 acres (17%) of the corridor appeared to be in the non-agricultural use (Illinois River Valley, 55 acres and Sangamon Valley, 132 acres). A majority of the non-agricultural land is forested. There would be no long-term impacts in the agricultural corridors of the pipeline. Loss of one cropping season is probable during pipeline construction. A 20-foot corridor would be maintained through forested areas of the pipeline route, resulting in the permanent loss of 37 forest acres.

### 4.7.6 Floodplains

FEMA flood insurance mapping depicts about 25.8 miles (28%) of the potential pipeline to be within an area of the 100-year flooding potential. The stream floodplains with a 100-year flooding potential, through which the pipeline corridor passes, are associated with the Illinois River, Plum Creek, Walnut Creek, Sandy Creek, Lick Creek, Mauvaise Terre Creek, Sangamon River, South Fork of the Sangamon River, Buckhart Creek and Sugar Creek. No flooding impacts would occur due to this alternative.

### 4.7.7 Stream Crossings

The proposed pipeline route involves about 39 stream crossings from the Illinois River to Lake Springfield. The pipeline corridor crosses the following perennial streams: a permanent slough in the Illinois River floodplain, Plum Creek, Mauvaise Terre Creek, Lick Creek, and two crossings of Walnut Creek. The pipeline corridor crosses the following intermittent streams: four crossings of tributaries to Plum Creek, eight crossings of tributaries to Walnut Creek, three crossings of tributaries to Sandy Creek, two crossings of tributaries to Mauvaise Terre Creek, four crossings of intermittent portions of the North Fork of Mauvaise Terre Creek, four crossings of tributaries to the North Fork at Mauvaise Terre Creek, Spring Creek, three crossings of tributaries to Spring Creek, Archer Creek, and three crossings of tributaries to Lick Creek. The Sangamon River Valley wells and pipelines involve about 18 stream crossings. The main and individual well pipelines cross the following perennial streams: two crossings of the Sangamon River and three crossings of unnamed tributaries, one crossing each of Black Branch, South Fork of the Sangamon River and an unnamed tributary, and two crossings of Buckhart Creek. Intermittent streams crossed are: 19 unnamed tributaries to the Sangamon River and one crossing each of tributaries to the South Fork of the Sangamon River and Sugar Creek. The short-term impact of a brief period of increased stream turbidity during construction would be experienced for the small streams that are open cut for pipeline crossing.

### 4.7.8 Groundwater Impacts

One radial collector (Ranney) well capable of producing 12 mgd would be developed along the Illinois River. Ten wells producing 3.33 mgd would be developed along the Sangamon River. Proposed wells are located away from larger existing municipal, industrial and irrigation wells to minimize interference. Interference of the proposed wells with some nearby existing domestic wells would likely occur with the development of this water supply alternative. Appropriate lowering of affected wells would be examined for specific well locations.

### 4.7.9 Construction Impacts

The primary potential impact on air quality from well development and pipeline construction would be fugitive dust (particulates) resulting from soil exposed to wind and traffic. The quantity of fugitive dust from construction activities varies depending on the area of land being worked, the level of activity, soil silt content, soil moisture content, and wind speed. Construction would generate fugitive dust that may be a nuisance in nearby areas.

During construction, blowing dust from areas cleared or excavated for access or construction purposes can be minimized by water application to unpaved road surfaces with a water sprinkler truck. On haul roads carrying heavy construction traffic, crushed gravel can be spread in conjunction with the normal sprinkling of the road with water. The effectiveness of watering for fugitive dust control depends on the frequency of application.

Construction vehicles emit carbon monoxide, hydrocarbons, and oxides of nitrogen. Ambient air construction would not be significantly altered by operating construction vehicles and machinery.

Trucks and heavy machinery used during construction produce noise that may affect some land uses and activities. However, because of the rural character of the project area these impacts would be minimal. In addition, specifications concerning construction noise outlined in the IDOT *Standard Specifications for Road and Bridge Construction* would be utilized.

Access to all properties would be maintained by staged construction, temporary access roads, or other appropriate means. These measures would minimize inconvenience and financial loss resulting from construction activities.

Construction activities would be coordinated with public utilities in order to avoid accidents and minimize planned interruptions and service. When service interruptions are unavoidable, every effort would be made to limit their duration.

Short-term increases in sedimentation and turbidity levels within surface water resources may be expected during pipeline construction in proportion to the proximity of excavated sites to surface water and frequency of storms. However, turbidity and sedimentation are expected to return to baseline levels soon after construction. Temporary erosion and siltation control measures would be employed as needed to minimize silt loading and deposition in streams. Erosion control measures specified in the IDOT *Standard Specifications for Road and Bridge Construction* would be employed. Well development and testing would generate relatively large volumes of wastewater that may cause localized erosion and sedimentation. Temporary stilling basins and sediment traps would minimize these impacts. Areas of high erosion potential would be identified during project design and necessary erosion control measures incorporated in the construction plans.

Utility companies providing electric service to the areas encompassed by this alternative would need to provide additional distribution system capacity to serve the various wells and pump stations. This combined alternative would require 2,718 horsepower to operate. These companies would realize increased revenues should this alternative be pursued.

## 4.8 HAVANA LOWLANDS WELL FIELD (12 MGD)/SANGAMON RIVER VALLEY WELLS (3.33 MGD)

The potential Havana Lowlands well fields and pipeline are shown in Figure 2.3.6.5. The 12 mgd version of this system utilizes, the southwest well field locations with six individual wells. The Sangamon River Valley well system is shown in Figure 2.3.3.1. This combination alternative requires construction of 10 wells in clusters 6 and 7 and the associated transmission main. A 400-foot-wide corridor around the 40-mile Havana Lowlands and 34.9-mile Sangamon River Valley pipeline segments were evaluated for potential environmental impacts. Approximately 780 acres of land would be impacted by this alternative.

### 4.8.1 Socio-Economic Impacts

There would be virtually no negative impact to local taxing bodies since only 11 acres would be impacted by well and pump station sites.

### 4.8.2 Wetland Resources

The well fields and the 400-foot-wide pipeline route pass through or directly adjacent to about 95 NWI wetland areas. No field verification was conducted to determine jurisdictional wetland acreage. No permanent impacts to wetland resources would occur except where a permanent 20-foot corridor is maintained through standing timber in forested areas.

### 4.8.3 Cultural Resources

Site records of the IHPA depict no identified archaeological sites within the potential well field or the pipeline corridor north of Sherman. However, relatively few archaeological surveys have been conducted for the areas of the pipeline corridor from the Havana Lowlands well field to the Sherman area. A moderate probability for occurrence of sites is expected along this portion of the proposed route based on central Illinois project studies, such as the cultural resource studies for the Hunter Lake alternative. The partial Sangamon River Valley system and the remaining portion of the pipeline route from Sherman to Lake Springfield lies within the Sangamon River Valley which has been extensively surveyed for cultural resources. IHPA site records for these areas documented more than 210 archaeological sites. The development of this portion of the alternative would have a very high probability of encountering archaeological sites. Sites would be avoided where possible, and evaluated and mitigated where encountered.

### 4.8.4 Potential Threatened and Endangered Species/Parks and Natural Areas

No federally listed endangered or threatened species would be affected by construction of this alternative. The IDNR Natural Heritage Database documented two listed species within or near the pipeline corridor. The State-endangered broomrape (*Orobanche ludoviciana*) was identified within about 1,200 feet west of the pipeline route at R. 6 W., T. 19 N., Section 2 within the Salt Creek valley. Suitable habitats for the broomrape are dry sand prairies and sandy alluvium along streams. The State-threatened pied-billed grebe (*Podilymbus podiceps*) has been documented in the ash ponds north of Lake Springfield's Spaulding Dam. The pied-billed grebe inhabits fairly large, well vegetated lakes, ponds, sluggish streams, and marshes. Both documented locations for these State-listed species could be avoided by the pipeline construction. The South Fork Natural Area is located along both sides of the South Fork of the Sangamon River from the confluence of the South Fork with Sugar Creek to directly east of Rochester towards the middle of the northern half of Section 17 of Rochester Township. The connecting pipeline from Sangamon River Valley well numbers 17 and 18 to the main transmission pipeline extending along I-55 passes through the South Fork Natural Area located in Section 28 of Clear Lake Township. The southern main transmission pipeline route connecting wells 19 through 28 to Lake Springfield passes through 2 acres of the South Fork Natural Area in Section 9 of Rochester Township.

As stated in Section 3.5.5.4 and Section 4.3.4, the northern well field area of the Havana Lowlands Well Field and Pipeline provides a very sandy substrate which could potentially support two threatened or endangered species found in adjacent sections—the Illinois chorus frog (*Pseudachris streckeri*) and Hall's bulrush (*Scirpus hallii*). Both of these species require shallow ponds for survival. The Hall's bulrush, in particular, tends to be associated with ponds which are hydrologically connected to the local aquifer. Drawdowns of the local aquifer resulting from well field operation as described in Section 4.3.8 could negatively impact these species, if present in the vicinity.

### 4.8.5 Agricultural/Non-Agricultural Land Use/Forested Areas

About 60.8 miles or 737 acres (81%) of the potential pipeline route appears to be in agricultural use as cropland or pasture (Havana, 446 acres; Sangamon Valley, 291 acres). About 14.1 miles or 171 acres (19%) of the route appears to be in non-agricultural use (Havana, 39 acres; Sangamon Valley, 132 acres). The majority of the non-agricultural land is forested. There would be no long-term impacts in the agricultural corridors of the pipeline. Loss of one cropping season is probable during pipeline construction. A 20-foot corridor would be maintained through forested areas of the pipeline route, resulting in the permanent loss of 34 acres of forest.

### 4.8.6 Floodplains

FEMA flood insurance mapping depicts about 25.2 miles (34%) of the pipelines to be within an area of the 100-year flooding potential. The stream floodplains with a 100-year flooding potential, through which the pipeline corridor passes, are associated with: the Sangamon River, South Fork of the Sangamon River, Buckhart Creek, Salt Creek, Cantrall Creek, Fancy Creek, and Sugar Creek. No flooding impacts would occur due to this alternative.

### 4.8.7 Stream Crossings

The proposed Havana Lowlands pipeline route involves about 29 stream crossings. The pipeline corridor crosses the following perennial streams: two crossings of Salt Creek, Grove Creek, Indian Creek, Fancy Creek, the Sangamon River, and Sugar Creek. The pipeline corridor crosses the following intermittent streams: three crossings of Sleepy Hollow Ditch, a tributary to Sleepy Hollow Ditch, a tributary to Salt Creek, three crossings of tributaries to Grove Creek, a tributary to Indian Creek, two crossings to tributaries to Halls Branch, an intermittent portion of Cantrall Creek, three crossings of tributaries to Cantrall Creek, three crossings of tributaries to Fancy Creek, an intermittent portion of Hoover Branch, and three crossings of tributaries to Sugar Creek. The Sangamon River Valley wells and pipelines involve about 18 stream crossings. The main and individual well pipelines cross the following perennial streams: two crossings of the Sangamon River and three crossings of unnamed tributaries, one crossing each of Black Branch, South Fork of the Sangamon River and an unnamed tributary, and two crossings of Buckhart Creek. Intermittent streams crossed are: 19 unnamed tributaries to the Sangamon River and 1 crossing each of tributaries to the South Fork of the Sangamon River and Sugar Creek. The short-term impact of a brief period of increased stream turbidity would be experienced for the small streams that are open cut for pipeline crossing.

### 4.8.8 Groundwater Impacts

Drawdowns in wells surrounding a (hypothetical) 12 mgd well field are significant. For example, at a distance of 1 mile, drawdowns range between approximately 7 to 12 feet, corresponding to relatively high and low transmissivities, respectively. However, these drawdowns decrease quite rapidly with increasing distances from the well field. At a distance of 2 miles, these drawdowns decrease to about 4 to 7 feet, respectively. The well field was sited based on the low density of irrigation wells in the surrounding area.

It is very likely that the construction and operation of one 12 mgd and the 10 smaller (0.33 mgd) Sangamon River Valley wells would result in water supply interruptions in some existing nearby domestic wells. However, these water supply interruptions likely would not be caused by a catastrophic dewatering of the aquifer, but rather by local groundwater levels being lowered below the screens of shallower wells or below the pumps in wells with relatively shallow pump settings. Appropriate measures such as well lowering would be examined for specific well sites.

### 4.8.9 Construction Impacts

The primary potential impact on air quality from well development and pipeline construction would be fugitive dust (particulates) resulting from soil exposed to wind and traffic. The quantity of fugitive dust from construction activities varies depending on the area of land being worked, the level of activity, soil silt content, soil moisture content, and wind speed. Construction would generate fugitive dust that may be a nuisance in nearby areas.

During construction, blowing dust from areas cleared or excavated for access or construction purposes can be minimized by water application to unpaved road surfaces with a water sprinkler truck. On haul roads carrying heavy construction traffic, crushed gravel can be spread in conjunction with the normal sprinkling of the road with water. The effectiveness of watering for fugitive dust control depends on the frequency of application.

Construction vehicles emit carbon monoxide, hydrocarbons, and oxides of nitrogen. Ambient air construction would not be significantly altered by operating construction vehicles and machinery.

Trucks and heavy machinery used during construction produce noise that may affect some land uses and activities. However, because of the rural character of the project area these impacts would be minimal. In addition, specifications concerning construction noise outlined in the IDOT *Standard Specifications for Road and Bridge Construction* would be utilized.

Access to all properties would be maintained by staged construction, temporary access roads, or other appropriate means. These measures would minimize inconvenience and financial loss resulting from construction activities.

Construction activities would be coordinated with public utilities in order to avoid accidents and minimize planned interruptions and service. When service interruptions are unavoidable, every effort would be made to limit their duration.

Short-term increases in sedimentation and turbidity levels within surface water resources may be expected during pipeline construction in proportion to the proximity of excavated sites to surface water and frequency of storms. However, turbidity and sedimentation are expected to return to baseline levels soon after construction. Temporary erosion and siltation control measures would be employed as needed to minimize silt loading and deposition in streams. Erosion control measures specified in the IDOT *Standard Specifications for Road and Bridge Construction* would be employed. Well development and testing would generate relatively large volumes of wastewater that may cause localized erosion and sedimentation. Temporary stilling basins and sediment traps would minimize these impacts. Areas of high erosion potential would be identified during project design and necessary erosion control measures incorporated in the construction plans.

Utility companies providing electric service to the areas encompassed by this alternative would need to provide additional distribution system capacity to serve the various wells and pump stations. This combined alternative would require 1,941 horsepower to operate. These companies would realize increased revenues should this alternative be pursued.

# SECTION 5.0
# COORDINATION WITH APPROPRIATE AGENCIES AND PUBLIC INVOLVEMENT

## 5.1 SCOPING

A public scoping meeting was advertised in the Joint Public Notice for the proposed permit and held at the Illinois Department of Transportation Auditorium in Springfield, Illinois, on December 5, 1989. The purpose of the meeting was to provide an opportunity for public input on issues that should be addressed in this EIS. The scoping meeting included an open house where the public or interested agency personnel could view exhibits and discuss on an individual basis specific concerns or questions with Corps of Engineers and City Water, Light and Power personnel. The scoping meeting included opportunity for formal presentation of concerns and issues by interested individuals.

## 5.2 PUBLIC INVOLVEMENT

Comments both oral and written received during the public scoping meeting were compiled and summarized. The summary is included as Appendix A of this document. Each comment is cross-referenced with a section of this EIS where comments are addressed. Letters of comment received from Federal and State agencies during the scoping process are also included in Appendix A.

Many local landowners or residents were contacted and surveyed by representatives of the University of Illinois at Springfield (UIS) during investigations of social impacts for this project. These findings were reported in the Economic and Social Impact Assessment report presented by SSU and summarized in this EIS.

Numerous presentations of information of a general project nature have been made by the applicant before civic organizations in the Springfield area. Local fishing clubs were solicited for their input on lake access parameters. Also CWLP representatives have attended several public meetings such as the board meetings of Cottonhill Township and the Brunk Cemetery Association to discuss project details.

A DEIS was prepared for the permit action and released for public review on April 23, 1999 (Federal Register notification date). The 45-day minimum review period for the DEIS was extended upon request of the U.S. Department of Interior. The extended review period ended on June 18, 1999. Seventy-two letters of comment on the DEIS were received from Federal, State, and local agencies, non-governmental organizations, and individuals. These letters, and Corps responses to comments raised in the letters, are reproduced in Appendix A of this FEIS.

## 5.3 AGENCY COORDINATION

On August 22, 1989, a Preliminary Scoping Document was forwarded to the U.S. Environmental Protection Agency, the Illinois Department of Conservation (now the Illinois Department of Natural Resources), the Illinois Department of Transportation, and the Illinois Environmental Protection Agency requesting EIS input. The Corps also assumed the role of lead agency in the development of the EIS at this time. Letters had previously been sent out by City Water, Light and Power soliciting comments for issues appropriate to be addressed in the EIS to several other

agencies and businesses. Responses were received form the Illinois Department of Agriculture, Illinois Department of Conservation, Illinois Environmental Protection Agency, Illinois Department of Mines and Minerals, Illinois Historic Preservation Agency, Illinois Farm Bureau, Sangamon County Board, Sangamon County Highway Department, Sangamon County Soil and Water Conservation District, Central Illinois Public Service, Central Illinois Light Company, Illinois Power Company, Dimension Cable Services and Soyland Power Cooperative. Comments were incorporated into requests for proposals for consultant studies to provide information for inclusion in this EIS.

During the data gathering stages of this project coordination between City Water, Light and Power, its consultants and various agencies has occurred. For example, a close exchange of information and review of modeling efforts of hydrologic parameters has occurred between the City, Hanson Engineers, and the Dam Safety Office of the IDOT's Division of Water Resources. Similar exchanges and meetings between the Sangamon County Highway Department, local township road commissioners, Crawford, Murphy, and Tilly Engineers and the City have occurred to work out the details of proposed roadway relocations. The Phase I archaeological studies were closely coordinated between investigators and subconsultants of the Illinois State Museum, and the Illinois Historic Preservation Agency and Corps archaeologists to facilitate the implementation of appropriate levels and focus of effort on this large project. Similar efforts to coordinate study design and implementation were conducted for many other phases of this project.

Other meetings were held with a variety of agencies for information exchanges. Two of these agencies are the Illinois Department of Agriculture/Farmland Preservation office and the Sangamon County Soil and Water Conservation District.

# SECTION 6

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# APPENDIX A

# CORRESPONDENCE

**Comment Letters on Hunter Lake DEIS**

74 total (5 Federal, 4 State, 5 Local, 10 NGO, 50 Private)

* Indicates responses where additional input was provided by the City of Springfield.

F1

# United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

ER 99/370

APR 29 1999

Colonel James V. Mudd
District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Environmental Analysis Branch (Charlene Carmack)
Clock Tower Building - P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Mudd:

This is in regard to the request for the Department of the Interior's comments on the Proposed New Supplemental Water Supply Reservoir, Sangamon County, Illinois, (City of Springfield, Illinois, Permit Application No. 187020).

A-2

This is to inform you that the Department will have comments, but will be unable to reply within the allotted time. Please consider this letter as a request for an extension of time in which to comment. 1

Our comments should be available by June 18, 1999.

Sincerely,

Terence N. Martin

Terence N. Martin
Team Leader, Natural Resources
Management
Office of Environmental Policy
and Compliance

**Federal Agencies**

F1.
U.S. Department of the Interior
Office of the Secretary
Washington, DC 20240
4/29/99

1. The comment period for the DEIS was extended to 6/18/99 in response to this request.

F2

# Federal Emergency Management Agency

Region V
175 West Jackson Blvd., 4th Floor
Chicago, IL 60604-2698

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Environmental Analysis Branch (Charlene Carmack)
Clock Tower Building – P.O. Box 2004
Rock Island, Illinois 61204-2004

MAY 0 3 1999

RE: Draft Environmental Impact Statement, Proposed Water Supply Reservoir, (Hunter Lake), Springfield, Illinois

Dear Colonel:

We have reviewed the Draft Environmental Impact Statement (DEIS) for the proposed project, and have the following comments for your consideration:

1) In accordance with Executive Order 11988, and USACE regulations at 33 CFR Parts 239 and 240, there needs to be a Finding of No Practicable Alternative (to taking an action in a floodplain) made by the Responsible Federal Official. The DEIS contains no such Finding. 1

2) The regulations cited above are designed to reduce development of floodplains. It is not clear in the DEIS how the proposed action, including its increased water supply system to residents, will not contribute to floodplain development. 2

3) We suggest there be a summary table listing how the proposed project, and its alternatives, complies with appropriate Executive Orders, statutes, and regulations. 3

4) Local and state floodplain development permits will be necessary for this project. Also, this agency will have to be supplied with the engineering and mapping support data by the project sponsor so we may revise the official Flood Insurance Rate Map. 4

Thank you for the opportunity to comment. If you have any questions, please contact David Schein, Senior Program Specialist, on 312-408-5539.

Sincerely,

Terry Reuss Fell

Terry Reuss Fell (Ms.), Chief
Hazard Identification and Risk
Assessment Branch

A-3

F2.
Federal Emergency Management Agency
Region V
175 West Jackson Blvd. 4th Floor
Chicago, IL 60604-2698
5/3/99

1. The referenced 33 CFR Part 239 (dated October 15, 1978) regulates Federal participation in covered flood control channels, not floodplains or floodplain development. 33 CFR Part 240 (dated May 15, 1979) was rescinded on May 11, 1984 (49 FR 24022) and is no longer applicable to Corps actions. The EIS complies with internal Corps guidance at ER 1165-2-26, concerning implementation of E.O. 11988 on floodplain management.

*2. Construction of Hunter Lake or any of the feasible alternatives identified in the DEIS would require some structural development in floodplain areas, whether from dam and reservoir construction or from construction of well fields and transmission pipelines. Aside from the direct conversion of floodplain areas due to dam construction and inundation, no indirect impacts contributing to floodplain development are expected to result from the applicant's preferred alternative. This statement has been added to Section 4.1.7 of the FEIS.

*3. Compliance with applicable environmental laws and regulations is frequently presented in a tabular summary in Corps planning or engineering reports which contain a recommendation for action. Because of the nature of the proposed action (regulatory), and because the Corps is neither a proponent nor an opponent of the applicant's proposal, the tabular summary of compliance is not included in the DEIS or the FEIS.

*4. Noted. The applicant will have to supply the relevant engineering/mapping support data to FEMA as requested.

1

F3

USDA NRCS
Natural Resources Conservation Service

United States
Department of
Agriculture

1902 Fox Drive
Champaign, IL
61820

May 25, 1999

U.S. Army Engineer District Rock Island
District Engineer
Attn: Environmental Analysis Branch (Charlene Carmack)
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004

Dear Ms. Carmack,

Thank you for the opportunity to review the "Draft Environmental Impact Statement" on the proposed 3,010 acre water supply reservoir Hunter Lake, for the City of Springfield, Illinois. The purpose of the reservoir is to provide additional water supply for the City of Springfield. We are providing the following comments to aid in the development of the Final Environmental Impact Statement (FEIS) and preparation of the Record of Decision.

The draft EIS discusses seven feasible alternatives for additional water supply for the City of Springfield, Illinois. However, the report does not provide information on the rationale for the selection of the applicants preferred alternative, the building of Hunter Lake reservoir. We recommend this rationale should be provided in the final EIS. 1

A-4

The report does not provide a discussion on soil erosion and sediment coming from the 130 square mile (83,200 acre) watershed. This watershed is primarily in Sangamon, Macoupin, and Montgomery Counties with a small portion in Christian County. This information is needed in the EIS in order to determine the life of the proposed water supply reservoir. In section 8 of the report there is a reference to a report by Crawford, Murphy & Tilly, Inc. 1994, titled "Hunter Lake Water, Sediment, and Nutrient Budget". We recommend the results of this report be a part of the Final EIS in order to determine the impacts of sedimentation for the proposed reservoir. 2

A discussion of provisions for watershed protection (upland treatment), in the watershed should also be addressed. This is needed in order to reduce soil erosion, and address potential water quality issues in the watershed and preserve the life of the proposed structure. Also, the report does not provide how prime farmland is being impacted. 3 4

The cost of protecting the watershed should be part of the Final EIS. Options such as conservation easements, the purchase of highly erodible land, along with the development of resource management systems that could include commonly used conservation practices such as terraces, grassed waterways, grade stabilization structures, conservation tillage and filter strips. In addition, dry dams or ponds in the watershed will help reduce sediment above the direct tributaries coming into the proposed reservoir. 5



F3.
U.S. Department of Agriculture
Natural Resources Conservation Service
1902 Fox Drive
Champaign, IL 61820
5/25/99

1. Reference page 2-1, cost subsection of Sec. 2.1.1 of the DEIS, stating the applicant's preference for the lowest cost alternative. Hunter Lake is presented in the DEIS as the "Applicant's Preferred Alternative." The Corps is neither a proponent nor an opponent of the applicant's proposal, and will decide whether to issue or deny a permit for the proposal following completion of the EIS process.

*2. Summary information from the referenced report has been added to the text of the FEIS at Section 4.1.6.2.

*3. Measures proposed by the applicant for mitigation of wetland and other natural resources to be implemented within the Hunter Lake property boundary are described in Section 4.1.9 of the FEIS. These measures also would contribute to reducing soil erosion, protecting water quality, and preserving storage capacity within the reservoir. A discussion of anticipated and proposed resource protection planning needs within the larger watershed in included in Section 4.1.6.2 of the FEIS.

*4. A more detailed discussion of impacts to prime farmland has been added to Section 4.1.3 of the FEIS.

*5. See response to comment #3 above.

The report does not discuss how the City of Springfield plans to manage shoreline erosion resulting from high water and draw down periods. The lake will have the potential of fluctuating several feet and this will provide a zone of exposure where wind and wave action can do significant damage to the reservoir. An assessment of impacts during water fluctuation should be discussed to protect the reservoir. 6

Section 4.1.9 of the report discusses the mitigation features for environmental impacts. We feel the mitigation features are not detailed enough. The final EIS mitigation features should be more detailed. This section should include a discussion on avoidance, minimization and compensatory mitigation. 7

The USDA Natural Resources Conservation Service works through local soil and water conservation districts, such as the Sangamon County Soil and Water Conservation District in assisting landowners in the proper management of natural resources. We recommend that the applicant, City of Springfield, IL, work with the local Soil and Water Conservation District in the development of a locally led Resource Plan for the proposed Hunter Lake reservoir watershed. This will provide a mechanism to address the issues provided above. 8

Thank you for the opportunity to comment on this project.

Sincerely,

William J. Gradle

WILLIAM J. GRADLE
State Conservationist

cc:
Tony Kramer, ASTC, Champaign
Steve Mozley, ASTC-FOD, Springfield
Bill Lewis, PTL, Champaign
Paul Krone, ES, Champaign
Gary Haughn, DC, Springfield
Marvin Brown, RPS, Springfield

pk:carmack.doc



The Natural Resources Conservation Service works hand-in-hand with the American people to conserve natural resources on private lands.

AN EQUAL OPPORTUNITY EMPLOYER

*6. The need for shoreline erosion control is anticipated for most areas of Hunter Lake at the full pool elevation. Except for the sites with the steepest slopes, many lake areas tend to draw away from erodible areas of the shoreline during drought periods, and therefore erosion is less of a concern during drawdowns at many sites. The City has identified the areas of severe slopes in the proposed reservoir and has estimated erosion control needs to be above average in those locations. Shoreline stabilization costs are included as a line item in Table 2.3.1.1. of the DEIS and FEIS.

As a further hedge against erosion, the City has also identified approximately 750 acres of in-lake areas where standing or submerged timber can be allowed to remain in the reservoir as appropriate, particularly along shorelines. This practice would have multiple benefits including wildlife habitat in addition to acting as a wave break against shoreline erosion, particularly in locations where the fetch is long. This is discussed in Section 4.1.9.5 of the FEIS.

*7. The applicant has developed a revised mitigation plan for wetland and other natural resource impacts. This plan is described in Section 4.1.9 of the FEIS. Because of the nature of the applicant's proposed action (construction of a large reservoir), some impacts to natural resources cannot be avoided by relocation or other measures that may be practicable for projects of a different type or size. Secondary actions such as roadway relocations would need to be sensitive to avoidance of wetlands or significant historic properties, but none of the pool area resources could be avoided or minimized.

8. See response to comment #3 above.

F4

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Custom House, Room 244
200 Chestnut Street
Philadelphia, Pennsylvania 19106-2904

June 11, 1999

ER 99/370

Colonel James V. Mudd
U.S. Army Corps of Engineers
Rock Island District
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Mudd:

As requested, the U.S. Department of the Interior (Department) has reviewed the Draft Environmental Impact Statement (DEIS) prepared by the U.S. Army Corps of Engineers (Corps), Rock Island District, for the *Proposed Water Supply Reservoir, Hunter Lake*, in Sangamon County, Illinois. The City of Springfield has applied for a permit under Section 404 of the Clean Water Act (application number 187020) to construct a new municipal water supply reservoir to be called Hunter Lake. We offer the following comments and recommendations for your consideration.

A-6

## GENERAL COMMENTS

We appreciate the fact that the DEIS carries a number of alternatives and combinations of alternatives into detailed analysis. However, the DEIS inadequately identifies primary and secondary impacts to natural resources from the Hunter Lake Reservoir alternative and measures to avoid, minimize and offset those impacts.

We recommend that the final EIS not be released until the following elements have been incorporated into the Hunter Lake alternative: 1) water conservation measures are incorporated into the supply augmentation plan, 2) a comprehensive watershed management plan is developed, 3) wetland delineation discrepancies are resolved, 4) a detailed projection of future land use/land cover is provided, and 5) a more specific mitigation plan is produced. Our concerns are discussed in detail below.

1

## SPECIFIC COMMENTS

The City of Springfield states that their water supply is in need of augmentation due to the fact that conservation measures alone would not be enough to maintain adequate water supplies

2

during future drought conditions. While the DEIS presents both conservation and augmentation alternatives, the two approaches are not considered in conjunction with one another. We believe that prudent water conservation measures should be incorporated into the supply augmentation alternative as a condition of permit issuance. 1

We are also concerned that the DEIS fails to present a comprehensive management plan for the Hunter Lake watershed. Erosion, sedimentation, and chemical contamination are threats which could impact Hunter Lake, and these problems have not been adequately addressed. The DEIS suggests that measures addressing these issues would be implemented but does not provide a detailed discussion of such measures. We recommend that the applicant be required to develop a total watershed management plan which addresses these concerns and promotes stewardship throughout the watershed. This effort should be instituted as a preventive measure and implemented prior to construction as a condition of permit issuance. 2

Page 3-7, Section 3.1.8, Wetland Resources The DEIS states that approximately 102.0 acres of jurisdictional wetlands would be inundated by the proposed reservoir. We believe this figure is erroneous and seriously underestimates the actual area of wetland habitat in the project area. The Illinois Natural History Survey's 1993 *Wetland Determination and Assessment in the Hunter Lake Project Area* estimated that between 171.41 and 205.01 acres of jurisdictional wetlands occur within the shoreline of the proposed lake. Given the fact that these wetlands would be permanently and irreversibly impacted by the project, this is a substantial discrepancy which must be resolved prior to permit issuance. 3

Application of Habitat Evaluation Procedures (HEP) analysis to the Hunter Lake project area indicates that there is potential to improve habitat conditions for many fish and wildlife species with the project. Because the DEIS lacks important details regarding future land cover/land use and mitigation measures, it is not possible to evaluate whether this potential will be realized. 4

Page 4-4, Section 4.1.3, Land Use Impacts: A detailed description of the expected future land cover/land use conditions with the project (at several different points in time) should be presented. This should be similar to the breakdown provided for existing conditions (page 3-4, Section 3.1.5.3) for the entire 7,795-acre Hunter Lake project area. Although the DEIS establishes that the reservoir would occupy 3,010 acres, the remaining 4,785 acres of land adjacent to the lake must also be described in detail. Expected future habitat conditions for the entire project area are critical components of project impact evaluation. 5

Also, the DEIS states that the current lack of sanitary sewer and water lines on lands adjacent to the Hunter Lake project area should limit residential and commercial development. The EIS should discuss what other mechanisms are in place to control future development on these lands. If none, then future development potential should be further explained in the final EIS. 6

Page 4-9, Section 4.1.9, Mitigation Measures for Environmental Impacts: We are concerned that the Hunter Lake mitigation plan is not presented in detail. The DEIS states that two areas (100

A-7

F4.
U.S. Department of the Interior
Office of Environmental Policy and Compliance
Custom House, Room 244
200 Chestnut Street
Philadelphia, PA 19106-2904
6/11/99

1. As stated in Section 2.2.7 of the DEIS, the applicant has already implemented the two conservation measures (A and H) that were projected to be most effective in reducing current and future water use in the service area. Implementation of these measures was included in future water demand projections described in Section 1.2.3 and displayed in Table 1.2.3.1 of the DEIS and the FEIS. Implementation of all remaining conservation measures (B, C, D, E, F, G, I, K, and L) evaluated by the City was estimated to reduce demand by approximately 0.65 mgd (about 3% of projected year 2025 demand). In making the decision whether to issue or deny a permit for construction of Hunter Lake, the Corps will consider what reasonable and prudent conditions may be appropriate to attach to a permit (if issued) to reduce adverse impacts of reservoir construction and operation and to ensure continued compliance with Section 404 of the Clean Water Act.

*2. Measures proposed by the applicant for mitigation of wetland and other natural resources to be implemented within the Hunter Lake property boundary are described in Section 4.1.9 of the FEIS. These measures also would contribute to reducing soil erosion, protecting water quality, and preserving storage capacity within the reservoir. A discussion of anticipated and proposed resource protection planning needs within the larger watershed are included in Section 4.1.6.2 of the FEIS. Watershed management is always a work in progress. Any implication that a watershed plan could be fully implemented prior to construction would be misleading. Should the Corps issue a permit for construction of Hunter Lake, watershed committee could be established by the applicant early in the planning stages prior to construction. Resource priorities are realized upon receiving input from the participants, and plans are made to accomplish identified goals. Ultimately, the management takes place on the private watershed lands as the grass roots committee's ideas are accepted and implemented by the landowners and farm operators in the watershed. Implementation of such a plan is an ongoing effort.

*3. A more detailed description of wetland delineations and estimates of affected jurisdictional wetlands in provided in Section 3.1.8 of the FEIS.

*4, 5. A revised mitigation plan for wetland and other natural resource impacts has been developed by the applicant. The plan detailed proposed land cover changes in the 4,785 acres of marginal land surrounding the reservoir. This plan is described in Section 4.1.9 of the FEIS.

*6. There are a variety of mechanisms that exist to limit or control future development on lands adjacent to the project area. As stated in Section 4.1.3 of the DEIS, sanitary sewer and public water supply systems do not currently exist in the project area. The City is the project applicant and the most likely potential water supplier for the area. In 1973 and 1989, the Council of the City of Springfield enacted Ordinances 335-5-73 and 97-2-89, which precludes development of the project area real estate adjacent to the shoreline. As such, there is no present reason to extend water and sewer to the project area. The project area has not been annexed to the City. Annexation of the project area by the City is not necessary for project operation and maintenance, as state law provides:

> "All property which (1) is owned by a municipality, and (2) lies outside the corporate limits of the municipality, and (3) does not lie within the corporate limits of any municipality, shall be subject to the ordinances, control and jurisdiction of the municipality in all respects, the

acres each) would be dedicated for creation and enhancement of forested habitat, and two areas (76 and 125 acres) would be established with native prairie vegetation. Additional information regarding these mitigation sites must be presented in the final EIS, including the methodologies to be used, locations of the sites, a list of species to be planted, and the expected time of implementation. 7

The DEIS states that "additional areas would be left to natural succession." We request that the final EIS describe the areas and acreages that will be left to natural succession. This information is critical to properly evaluate the Hunter Lake project's impacts over time. This is particularly important with respect to the loss of 1,526 acres of forested habitat which would be inundated by the reservoir. The region is dominated by an agricultural landscape where forested habitat is relatively rare. Therefore, the mitigation plan must clearly provide measures to offset the loss of this important resource. 8

The wetland mitigation plan presented in the DEIS requires further development. If the incidentally created lacustrine wetlands are to be accepted as mitigation, then they must replace the functions and values of the palustrine wetlands being lost. If it cannot be demonstrated that this functional replacement will be accomplished, then those wetlands cannot be considered mitigation. We are satisfied with the proposed wetland mitigation ratio of 1.5 to 1. 9

The proposed Hunter Lake Reservoir would inundate several miles of Horse and Brush Creeks. The applicant should be required to mitigate for the loss of this stream habitat in-kind. A combination of stream restoration, enhancement, and protection measures should be implemented within the South Fork, Sangamon River, watershed to accomplish this task. 10

Adequate compensatory mitigation for habitat loss is an extremely important aspect of this project. We believe that the mitigation concept plans should be more fully developed and explained and incorporated into the final EIS to provide an adequate document upon which to make a decision regarding issuance of the requested permit. Coordinating agencies should be given the opportunity to review and comment on all proposed mitigation plans prior to release of the final EIS. 11

FISH AND WILDLIFE COORDINATION ACT

As the DEIS indicates, the City of Springfield has applied for a Section 404 permit to place fill material in Horse Creek as part of the construction of a new water supply reservoir. As part of the Corps public review process, the DEIS has been prepared. Under the authority of the Fish and Wildlife Coordination Act, the U.S. Fish and Wildlife Service (Service) is responsible for advising Federal action agencies concerning potential impacts of proposed water development projects and recommending actions that can be taken to avoid, minimize or offset adverse impacts to fish and wildlife resources. The Service recommendations are to receive "equal consideration" with other project features.



same as the property owned by the municipality which lies within the corporate limits thereof." 65 ILCS § 5/7-4-1."

The unincorporated areas of Sangamon County are subject to the zoning regulations of Sangamon County, as well as incorporated locations that have not adopted any zoning regulations. These rules have specific requirements regarding land use in locations that lack sewer and water service. The County has enforced these regulations in the areas adjacent to the project area, and as recently as October, 1999, refused to allow development on property adjacent to the Hunter Lake project area (Case No. 99-41). The City appeared as an objector in the proceeding. The County Board unanimously denied the petition. The City can continue to actively participate in any zoning matter before the County which could have an adverse impact on Hunter Lake. The City would have even a greater influence in those unincorporated areas of the County within one and one-half miles from the City's corporate limits. Article I, Division 12 of the Illinois Municipal Code enables municipalities to formulate comprehensive plans for the development of land within the municipal boundaries and contiguous areas within one and one-half miles thereof, 65 ILCS § 5/11-12-5. This state law also provides that such plans may be implemented by ordinances: (a) establishing reasonable standards of designs for subdivisions and for resubdivisions of unimproved land and of areas subject to redevelopment in respect to public improvements; (b) establishing reasonable requirements governing the location, width, course, and surfacing of public streets and highways, alleys, ways for public service facilities, curbs, gutters, sidewalks, street lights, parks, playgrounds, school grounds, size of lots to be used for residential purposes, storm water drainage, water supply and distribution, sanitary sewers, and sewage collection and treatment. Pursuant to this statute, the City has adopted a comprehensive plan applicable to contiguous territory and implemented the plan through the adoption of land subdivision control regulations found in Chapter 153 of the City Code. Pursuant to Section 153.102, these regulations apply to all unincorporated land within 1.5 miles of the corporate limits of the City. These regulations include a mandatory review process through the Springfield-Sangamon County Regional Planning Commission, and proposed developments have been rejected if there is found to be unacceptable impacts on Lake Springfield or its watershed.

State law also would extend other territorial jurisdiction of the City to property adjacent to the Hunter Lake Project Area. For example, "the jurisdiction of the municipality to prevent or punish any pollution or injury to the stream or source of water for the supply of the waterworks extends 10 miles beyond its corporate limits." 65 ILCS § 5/11-126-3. Another provision similarly provides that "the jurisdiction of the city or village to prevent or punish any pollution or injury to the stream or source of water, or to waterworks, extends 20 miles beyond its corporate limits or so far as the waterworks may extend." 65 ILCS § 11-125-2. This would extend the City's jurisdiction through much of the project watershed. The above information has been included in Section 4.1.19 of the FEIS.

*7, 8. See response to comments #4 and #5 above.

*9. Because lacustrine areas created by inundation would be subject to intentional drawdown during drought conditions as part of the operation of Hunter Lake, they are not expected to replace the functions and values of lost palustrine wetlands. Aside from the three sites designated for mitigation of nonforested wetland by development of detention structures, the incidentally created lacustrine areas are not proposed for inclusion in the mitigation plan.

*10. The revised mitigation plan described in Section 4.1.9 of the FEIS includes the applicant's proposed stream corridor restoration and enhancement measures.

*11. The revised mitigation plan is described in Section 4.1.9 of the FEIS. Comments from DOI and other Federal and State agencies concerning mitigation of wetland and natural resources impacts were considered in the development of the mitigation plan.

The Department incorporated the Service's comments and recommendations on the City of Springfield permit application into this letter. The Service may provide additional comments on the application directly to the Corps.

The Department has a continuing interest in working with the Corps and the City of Springfield to ensure that impacts to fish and wildlife resources are adequately addressed. For continued coordination, please contact the Field Supervisor, U.S. Fish and Wildlife Service, 4469 48th Avenue Court, Rock Island, IL 61201, telephone: 309/793-5800.

We appreciate the opportunity to review the document.

Sincerely,

Michael T. Chezik

Michael T. Chezik
Regional Environmental Officer

F5

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF

JUN 24 1999

B-19J

Colonel James V. Mudd
United States Army Corps of Engineers
Rock Island District
Clock Tower Building
Post Office Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Mudd:

A-10

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the United States Environmental Protection Agency Region 5 (U.S. EPA), has reviewed the Draft Environmental Impact Statement (DEIS) for the Proposed Water Supply Reservoir Hunter Lake located near Springfield, Illinois. The stated need for a new water supply is to supplement Lake Springfield during drought conditions. The proposed action by the City of Springfield is the construction of a new 3,010 acre water supply reservoir to be know as Hunter Lake. The DEIS evaluated several alternatives.

Based on our review of the information, we have rated the DEIS for the proposed project EO-2. In view of this rating, U.S. EPA would likely object to the issuance of a Section 404 permit which is necessary to implement the proposed alternative. The "EO" indicates that the U.S. EPA's review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. The "2" means the DEIS does not contain sufficient information or other alternatives are available within the spectrum of alternatives analyzed in the DEIS, which could reduce the environmental impacts of the action. Our rating is based on several issues. These issues are purpose and need, alternatives analysis, water quality, social-economics, wetlands, mitigation, and cumulative impact analysis. Detailed comments on each of these issues are enclosed. We are willing and interested to meet with your staff to discuss the reasons for our objections.

1

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Thank you for the opportunity to review and comment on the DEIS for Hunter Lake. We look forward to discussing our comments with your. If you have any questions or comments, please contact Al Fenedick at 312 886-6872 or you may E-mail at fenedick.al@epa.gov.

Sincerely yours,

Shirley Mitchell,
Deputy Director
Office of Strategic Environmental Analysis



1

**United States Environmental Protection Agency, Region 5**
**Comments on the**
**Draft Environmental Impact Statement for**
**Proposed Water Supply Reservoir, Hunter Lake**
**June, 1999**

**Purpose and Need**

The DEIS indicates that the purpose and need for the new water supply is to provide drought protection for the City of Springfield and surrounding communities until the year 2025. However, this purpose and need statement for a new water supply for the City of Springfield is not clearly articulated. We find it unique that the need for a new water supply is based on a drought scenario rather than on projected future needs. The way the statement is written leads one to believe that the new source would be used only under a prescribed drought condition. However, the proposed alternative includes future water needs up to the year 2025 which includes a projection for additional 1.5 million gallons a day (mgd) for future industries that could have a high water demand. If the need for additional water is to provide for future growth, then providing a water supply for future growth should be included in the statement. As it is presented in the DEIS, the stated purpose creates a conflict in the alternatives analysis because the objectives of the project are not clear. This lack of clarity makes it difficult for a set of evaluation objectives to be made. The establishment of a clear set of objectives is required to determine all alternatives that are feasible. Therefore, the purpose and need statement for this DEIS needs to be clearly stated so that these feasible alternatives are identified and evaluated. 1

In terms of the objectives, it was not explained how the 40.4 mgd for the year 2025 became the benchmark plan to address the need for additional water, since the project life for the proposed reservoir is 50 years. The DEIS states that under the present conditions the current water system would be short 6.9 mgd for an 18 month drought (100 year event). We are left to assume that the 34.8 mgd consumption under drought conditions is the same as under normal seasonal conditions. Therefore, it appears from the information provided that the genuine reason for the need for a new water supply is to meet future water demands to the year 2025 rather than protection from a drought period. 2

**Alternatives Analysis**

The evaluation in the DEIS focuses on the use of the alternative under a drought scenario rather than daily normal use. The feasible alternatives to address the drought scenario may be different from those that would apply to normal water needs. Therefore, it will be difficult for a selection to be made based on an unclear purpose and need statement. A possible scenario could occur where an increase in water demand will become greater than the capacity of Lake Springfield causing the need to use Hunter lake even though there is no drought situation present. This is not acceptable given the current purpose and need statement. Because the analysis and evaluation provided in the DEIS are for meeting drought conditions, one is left to assume that the City of Springfield will be pursuing another new water supply to meet project future water demands. 3



F5.
U.S. Environmental Protection Agency
Region 5
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6/24/99

1. As stated in the first paragraph of Section 1.3 in the DEIS, the existing water supply source is incapable of meeting existing demands during severe drought conditions such as those experienced during 1953-55. The purpose of the applicant's proposed action is to supplement the existing water supply system to meet present and future water supply needs under extreme drought conditions (100-year recurrence probability, 18-month duration). As illustrated by Tables 1.2.4.1 and 1.2.4.2 of the DEIS, the existing water supply system (Lake Springfield with South Fork pumping) is adequate to meet present demand described in Table 1.2.5.1 under normal to moderately dry weather conditions (up to a 25-year recurrence drought at year 2025 demand). Section 2.2.9 of the DEIS also states that the existing system provides adequate water during times of normal precipitation and minor droughts. Under normal weather conditions, the existing system is expected to be capable of meeting projected future demand through 2050. Under extreme drought conditions, the existing system is expected to be inadequate to meet projected 100-year, 18-month drought demand for year 2000 or for future years.

*2. Water demand projections were developed in 1990 and were calculated through the year 2025. As stated in Section 2.3.1.1 of the DEIS, the applicant's preferred alternative would provide sufficient water to meet Springfield's needs beyond the year 2025. As displayed in Table 1.2.3.2 of the DEIS, 1990 consumption under normal conditions was 31.5 mgd; 1990 consumption under drought conditions was estimated to be 34.8 mgd.

3. See response to comments #1 and #2 above. The DEIS focuses on use of the proposed reservoir under a drought scenario because the purpose and need of the applicant's proposed action is to supplement the existing water supply system to meet present and future needs under extreme drought conditions. Estimates of future water supply needs under normal and extreme drought conditions were calculated through the year 2025. Yield estimates for both the existing system and Hunter Lake have been calculated up to the year 2050, as displayed in Table 1.2.4.2 of the DEIS. Under normal conditions the existing system would be adequate to supply projected future demand beyond 2050. Whether the current system, augmented by Hunter Lake or an alternative source, could withstand extreme drought conditions beyond the year 2050 would depend on a number of factors including the magnitude of growth in the service area, and the actual rate of implementation of water-conserving practices and new conservation technologies.

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Water conservation was eliminated as a feasible alternative to meet the stated need for the proposed project. Although, we agree that this alternative could not stand alone as an alternative, water conservation should be apart of all the feasible alternatives that are under consideration. It is not clear if the documented use in the DEIS for future water demands accounts for the cultural change in water use. This cultural change would be due to new construction, remodeling and replacement of such items as dishwashers, washing machines, and toilets. The industry standard does not currently allow building owners an option when it comes to such items. The DEIS did not indicate what types of water conservation measures would be used in the case of a drought. Even though, additional water may be available a water conservation plan should be developed and implemented in the case of a drought situation. This would provide addition safeguards to ensure that adequate water supply will be continuous throughout a drought event. 4

**Water Quality**

The location of the proposed reservoir is located in a highly active agricultural area. The DEIS paid only cursory attention to the potential adverse impacts that could occur due to non-point source pollution. The potential impact for non-point pollution in this area was further discounted by referring to voluntary use of best management practices (BMP). These BMPs were not described in any detail in this DEIS. The impact to water quality due to erosion, turbidity, and sedimentation was not assessed. This must be corrected in the next document. In addition to these water quality parameters, the document does not address the potential adverse impact of the various agricultural practices that are conducted in the watershed that could affect the water quality. For example, as we understand it, this watershed has several Confine Animal Feed Operations (CAFO) besides the other agricultural activities that are in operation. These operations are considered potential contributors of contaminants that lead to degradation of water quality. The DEIS needs to identify and discuss the potential impact that these types of agricultural practices would have on water quality. In addition, the DEIS needs to discuss the types of recreational activities that would occur, the potential impact, and possible mitigation measures. Overall this analysis would be best presented in a watershed management plan. 5 6

**Social-Economics**

There is no assessment of the number of people who would be moved, only the number of dwellings which is 89. If an average family size of 5 was used, this could mean nearly 450 people are being displaced. The predominant concern for social impacts would be the loss of community social ties among the 89 families themselves, and between the 89 families and their surrounding neighbors who would remain in place around the project. It appears that there has not been any consideration given to planning residential developments or housing placements where the proximity of these families could be maintained. Nor have any occupational continuity and retraining been identified. Presumably some of those displaced are farmers dependent for their livelihoods on land that is being consumed. The DEIS was not clear if provisions will be made for helping these people buy nearby farms, or to retrain them in other occupations. The same issues for the campground and fertilizer businesses also apply. The DEIS also needs to indicate whether Executive Order 12898, addressing environmental justice, was included in the impact analysis. 7 8



*4. As stated in Section 2.2.7 of the DEIS, the applicant has already implemented the two conservation measures (A and H) that were projected to be most effective in reducing current and future water use in the service area. Within the above two conservation strategies cultural changes in water use are assumed for the calculations of coverages for these measures. Implementation of these two measures was included in future water demand projections described in Section 1.2.3 and displayed in Table 1.2.3.1 of the DEIS and the FEIS.

Springfield previously instituted mandatory water conservation measures as imposed by ordinance during the 1988 and 2000 drought events. Also, the city's Emergency Water Supply Plan was formulated with various conservation measures incorporated and triggered based on declining lake levels. These conservation measures focused on reductions in both outdoor water use such as regulations on irrigation and vehicle washing, and operational provisions such as system pressure reductions, prohibition on street sweeping, curtailing flow testing of fire hydrants, and limitations on public golf course waterings, among others. Some of these emergency conservation measures may still be appropriate to include as part of a Hunter Lake operating plan, if the Corps decides to issue a permit for the lake.

*5. In addition to the above referenced response on watershed management, regarding water quality impacts, the Illinois State Water Survey (ISWS) provided an evaluation of water quality in its modeling of the proposed Hunter Lake. The ISWS's Contract Report 621 (referenced on p. 4-8 of the DEIS as Bora *et al.* 1997) also utilized data derived in the DEIS referenced CMT (1994) investigation on the water, sediment, nutrient budget analyses of the proposed Hunter Lake. These analyses acknowledge that the 128-square-mile Hunter Lake watershed is approximately 88% agriculturally oriented. Nitrogen and phosphorus transported with sediment during runoff events were among those parameters modeled by the ISWS. The analyses concluded that the proposed reservoir would be similar to Lake Springfield and that drawdown would not impact water quality characteristics other than temperature, which would be expected.

Land use in this primarily agricultural watershed is dominated by row cropping of corn and soybeans. Livestock operations are few and there are no large livestock operations known to be located in the watershed. The only operation of any size is a 900 animal-unit hog operation without any associated water lagoons. None of these operations are expected to have a noticeable influence on the water quality of the lake and nothing uncharacteristic of central Illinois was noted in the water quality monitoring associated with the support data for the proposed lake.

6. Potential recreational use impacts of Hunter Lake are discussed in Section 4.1.3 of the DEIS. Boating and fishing are the only two recreational activities currently planned by the applicant for the lake, and only two lake access areas are currently proposed for development. Other potential low-density recreational activities are also discussed in Section 4.1.3. No potential impacts that would require mitigation are expected to occur as a result of these activities.

*7. The number of inhabitable residences has been corrected in the FEIS to 69 inhabitable residences. Of this, the City owns and leases 66. Of the three residences in the project area not owned by the City, all are occupied. Based upon tenant information, the City estimates that the average population of these homes is 3.5 persons, or approximately 240 persons. This revised information and information on expected impacts to residents and businesses has been added to Sections 3.1.1 and 4.1.1 of the FEIS.

*8. No minority or low-income communities are likely to be disproportionately affected by the proposed action. The population of the proposed lake area and surrounding area was identified in the 1992 SSU report as virtually all white, working or middle class (72% of households had incomes between $20,000

The DEIS does not evaluate the level of competing recreational opportunities in the area, so that the reader can determine if their estimates of recreational demand are realistic. The potential secondary economic impacts on the community of missed tourism have not been addressed. They will no longer be getting KOA campers spending their money in and around the community. 9

It is not clear if the planned discount period of the project has been accounted in the cost analysis. If the discount period is 30 years, this means that the farm production lost would be more than $33 million in present dollars for the life of the project. Lower bound estimates of production of local jobs by the reservoir is close to 1/10th of that, assuming that recreational development of the land takes place. If recreational development does not take place, then it would be even lower. In addition, the loss of the farmland would be permanent, continuing beyond any discount period. The benefit cost analysis for each alternative should include the loss of income, and taxes at a minimum for the life of the project. 10

The DEIS mentions potential urban sprawl impacts of the reservoir as being bounded by lack of sewer and water. However the DEIS does not identify or discuss if any restrictions are in place against construction of housing with septic and private wells. Unless such restrictions do indeed exist there is no real control on urban sprawl. In terms of sprawl, the DEIS did not identify or discuss if any restrictions are in place to control or direct development. A mitigation plan should be designed to restrict and/or offer incentives to control growth. The plan should include but not be limited to such concepts as growth boundaries, zoning to maintain planned growth, and incentive to direct development in desirable areas. 11

The DEIS also did not identify or discuss the economic impacts of limits on potential future land use restrictions that are based on source water protection requirements. The DEIS did not indicate if there are any additional restrictions on use or development in the water supply watershed, such as, density restrictions, exclusion of the types of uses all of which may result in land owners having to forgo the right to develop their property to its fullest extent. If such restriction would be involved, this is another potential cost that should be included in the benefit cost analysis. 12

**Wetlands**

The DEIS indicated that there are 318 wetland areas that are located in the pool area of the proposed alternative. The document also indicates that the delineation of those wetland areas resulted in approximately 102 acres of wetlands, 16 miles of stream bank, and a 4 acre pond would be destroyed. The document failed to identify the type, size, and number of wetland sites that would be lost. This information needs to be made available to fully assess the adverse wetland impact. 13



and $60,000), living in family households that in most cases (86%) had at least one economically active person. This information has been added to Section 3.1.1 and 4.1.1 of the FEIS.

*9. The report by PB Booker Associates Inc. titled "Regional Recreation Potential of the Proposed Hunter Lake" notes that recreational facilities currently proposed for Hunter Lake, if built, would be limited in comparison with those available at Lake Springfield or Sangchris Lake. Both of these reservoirs feature intensive recreational development and provide numerous facilities for a variety of activities. Recent annual visitation to Sangchris Lake State Park has ranged from 450,000 to 500,000 (annualized at 1,235 – 1,370 people per day). This information has been added to Section 4.1.3 of the FEIS.

10. Due to the nature of the proposed Federal action (regulatory) and because the Corps is neither a proponent nor an opponent of the applicant's proposal, development of the EIS did not include a benefit-cost analysis of alternatives, in accordance with Corps regulations and the Council of Environmental Quality's regulations for implementing NEPA. Both the DEIS and the FEIS include information on both monetary and non-monetary impacts of Hunter Lake and feasible alternatives that is considered to be relevant and important to the Corps' permit decision.

11. See response to U.S. Department of Interior Letter dated 6/11/99, comment #6.

*12. The overwhelming majority of the watershed is in agricultural use or unimproved natural areas and there is very limited infrastructure that currently exists to support development of property to more intensive urban uses. As such, it would be highly speculative to assess the economic impacts of potential future land use restrictions. To the extent that development could presently occur that would comply with existing land use regulations separate and apart from the existence of the project, such development could similarly occur with the project in existence.

*13. A more detailed description of wetland delineations and estimates of jurisdictional wetlands affected by the proposed action is provided in Section 3.1.8 of the FEIS.

**Mitigation**

Depending on the type of wetland that would be lost we could require greater mitigation than 1.5 to 1.0 acres of equal or greater value. For example if forested wetlands would be destroyed, we would require a higher ratio as acceptable mitigation. The mitigation replacement ratio for permanent forested wetland lost should be in the range of 2:1 to 3:1 because of the time required to reach functional maturity and due to the uncertainty that function and values will be replaced equally. Forested wetlands should be compensated in-kind, and in the watershed impacted if possible. 14

Mitigation requirements under 40 Code Federal Regulations (CFR) Section 230 address the replacement of the wetland functions and values that are unavoidably lost. Wetland mitigation design should be based on the replacement of wetland functions and values that would be lost. We also recommend that a minium a 100-foot vegetated buffer be provided around each wetland mitigation site. The buffer will enhance wildlife habitat and protect the site from sediment buildup that could result from land use practices immediately outside the buffer area. Wetland restoration is preferred to wetland creation or enhancement because it has a higher rate of success. Enhancement is generally not considered as an acceptable form of wetland mitigation. 15

The DEIS did not indicate the type of mitigation that would be provided for the 16 miles stream banks that would be lost. This type of habitat is also regulated under the 40 CFR Section 230 as Waters of the United States. Appropriate mitigation needs to be provided to aid in offsetting this permanent loss. We recommend that a mitigation plan be developed that would consist of improvements to vegetation, and buffer zones along Horse and Brush Creek above and below the proposed reservoir. The mitigation plan should also consider a flow regime that would mimic the natural flows in both creeks below the proposed dam. 16

A-15

The DEIS did not provide detailed information on the mitigation plan that would be provided for the prime farmland, and other natural areas that would be lost. A detailed description of the proposed mitigation plan needs to be included in future documentation. This plan should address land cover types, land use plans, and management plans that will be used to establish these areas that will be lost. 17

**Cumulative Impact Analysis**

The DEIS did not provide a cumulative impact analysis for the project. The Council on Environmental Quality defines cumulative impacts as, "*The impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions*"(*40 CFR § 1508.7*). U.S. EPA is particularly concerned with the cumulative impacts that this project would have on water quality, wetlands, and prime agricultural land. The assessment should include acreage for resources, land use changes, and land cover lost due to past actions in the watershed that the project is proposed. In addition, acreage figures for the proposed action and similar proposed actions should also be included. This information should be presented and discussed in the FEIS. While many impacts may be 18

*14, 15, 16. A revised mitigation plan for wetland and other natural resource impacts has been developed by the applicant and is described in Section 4.1.9 of the FEIS. This mitigation plan stipulates a 2:1 ratio for replacement of forested wetlands, a 1.5:1 ratio for emergent/scrub-shrub wetland, and a 1:1 ratio for stream corridor restoration/enhancement.

*15. A revised mitigation plan for wetland and other natural resource impacts has been developed by the applicant. This plan is described in Section 4.1.9 of the FEIS.

17. The Corps has not identified any practicable means to mitigate for the loss of prime farmland to permanent water storage. The applicant's proposed mitigation plan includes the conversion of all existing agricultural tracts in the marginal lands to forest or grassland cover as mitigation for the loss of non-wetland natural resources in the pool area. Active or passive conversion of farmland in the marginal areas from row crops to other cover types (e.g. forest or grassland) is not expected to diminish the natural resource value of those lands identified as prime farmland. In some cases the natural resource values of these lands would be enhanced by reducing or reversing some of the negative effects of row crop cultivation, such as topsoil loss or nutrient depletion.

*18. A discussion of cumulative impacts has been included as Section 4.1.19 of the FEIS.

considered minor. the cumulative effect would potentially result in significant impacts. Appropriate mitigation plans should be developed to compensate for the loss of these resources and made part of the documentation.

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ILLINOIS
DEPARTMENT OF
NATURAL RESOURCES
524 South Second Street, Springfield 62701-1787 George H. Ryan, Governor ● Brent Manning, Director

May 13, 1999

Ms. Charlene Carmack
CEMVR-PM-R
Rock Island District, Corps of Engineers
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Charlene:

As you requested, I visited the proposed site of Hunter Lake this morning with Glen Kruse of the IDNR Division of Natural Heritage to verify Ms. Jean Brickey's report of a heron colony on Horse Creek within the project area.

The information provided by Ms. Brickey proved accurate – we found a rookery consisting of twenty nests occupying three large sycamores adjacent to the creek northwest of Zion Cemetery. The trees are located in a bottomland approximately 20-30 yards from the creek, and will definitely lie within the wetted area of Hunter Lake if it is built. All of the birds we observed were great blue herons; there are apparently no egrets, night herons, or other species nesting there. The rookery is located approximately 0.35 miles west and 0.25 miles north of Zion Cemetery in the west half of the northwest quarter of Section 20, Township 14 North, Range 4 West, Sangamon County.

A-17

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As I mentioned during our telephone conversation yesterday, Vern Kleen of the Division of Natural Heritage recently observed another heron rookery which we initially thought might lie within the Hunter Lake basin. However, we subsequently learned that it is located on the South Fork Sangamon River northeast of the Hunter Lake site, and will not be affected by the project.

Please give me a call at 217-785-4863 if you need additional information or if we can be of any other assistance.

Sincerely,

Robert W. Schanzle
Permit Program Manager
Office of Realty and Environmental Planning

RWS:rs

cc: USFWS (Fisher)

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**State Agencies**

S1.
Illinois Department of Natural Resources
524 South Second Street
Springfield, IL 62701-1787
5/13/99

1. Noted. The Corps appreciates the assistance of the DNR in verifying this new natural resource information for the project area.

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S2

ILLINOIS
DEPARTMENT OF
NATURAL RESOURCES
524 South Second Street, Springfield 62701-1787 George H. Ryan, Governor ● Brent Manning, Director

May 28, 1999

Lt. Col. Kenneth A. Harshbarger
Deputy District Engineer
U.S. Army Corps of Engineers, Rock Island District
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204-2004

Re: CEMVR-RD-187020

Dear Lt. Col. Harshbarger:

Reference is made to your agency's May 7, 1999 Public Notice concerning the application by the City of Springfield, acting through its municipal utility, City Water, Light and Power, for a Department of the Army permit authorizing the construction of an additional municipal water supply reservoir (Hunter Lake) located southeast of Lake Springfield and north of the Village of Pawnee in Sangamon County, Illinois. The Department previously received the Draft Environmental Impact Statement, Proposed Water Supply Reservoir, Hunter Lake, U.S. Army Corps of Engineers, Rock Island District dated April, 1999 (hereinafter referred to as the DEIS), which provides a detailed analysis of the proposed action and potential alternatives.

A-18

Based on the natural resources summary contained in the DEIS, the proposed new reservoir will inundate 1,108 acres of existing cropland, 1,526 acres of forest, 310 acres of grass/CRP lands, 102 acres of jurisdictional wetlands, 88.3 acres of stream channel, and 4.0 acres of ponds. As mitigation for these impacts, two areas of 100+ acres would be dedicated to the creation and enhancement of large forest tracts, areas of 76 and 125 acres would be planted to native prairie vegetation, standing timber remaining after inundation would be left in many areas for bird (e.g. wood duck) and fish habitat, and jurisdictional wetlands would be replaced at a ratio of 1.5:1.0.

A significant concern with the DEIS is the lack of detail provided in its treatment of critical environmental issues. In many instances the reader is referred to supporting material from outside sources rather than having it presented directly within the document. For example, the existing fish community of Horse and Brush Creeks is described as consisting of fishes "common in central Illinois streams and ....(which) tend to be those most tolerant of the stream degradation associated with present farm practices" (page 3-5). However, for an actual listing of fish species (or other fauna), the reviewer is referred to a 1993 Illinois Natural History Survey report. It would be preferable if this information were appended in tabular form to the DEIS rather than being "summarized" in such subjective fashion. 1

Similarly, the existing wetland resources are identified in terms of acreage but not location or type. No map is provided to show the locations of the existing wetlands or, more importantly, the locations of the proposed wetland mitigation sites. Areas where forested wetlands will be mitigated are vaguely referred to as "lands currently owned by the City, to the north of Lake Springfield", while non-forested wetlands are to be "mitigated within the Hunter Lake project area by construction of retention dams at two locations...", which 2

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S2.
Illinois Department of Natural Resources
524 South Second Street
Springfield, IL 62701-1787
5/28/99

*1. The quoted summary statement was taken verbatim from the 1993 INHS report and represents a general characterization of the surveyed fishery. The number of species collected in the INHS survey has been added to Section 3.1.5.4 of the FEIS. Anticipated impacts to fish species found in Hunter Lake has been more clearly spelled out in Section 4.1.5.1 of the FEIS. Tabular listings of all species of fauna and flora found during surveys of the Hunter Lake project area or known to occur in the watershed or the county are not included in the FEIS, but are available to interested parties on request to the Corps, INHS or Springfield CWLP. Incorporation of supporting documents and informational material by reference is in accordance with the Council on Environmental Quality's regulations for implementing the procedural provisions of the National Environmental Policy Act.

*2. A more detailed description of wetland delineations and estimates of jurisdictional wetlands affected by the proposed action is provided in Section 3.1.8 of the FEIS. A revised mitigation plan for wetland and other natural resource impacts has been developed by the applicant. This plan is described in Section 4.1.9 of the FEIS.

are unspecified (page 4-9). It is impossible for the reviewer to assess the suitability of the proposed mitigation without basic information on its location, not to mention design, species planting mix, and hydrologic regime.

In reference to the existing stream fish community, the Department collected 26 species of fish from Horse and Brush Creeks during its 1981 and 1996 basin surveys. The Illinois Natural History Survey collected most of these species, plus six additional species, in their 1990 sampling for the City of Springfield. While none of the species collected are uncommon or particularly intolerant of environmental stress, several (e.g. hornyhead chub, central stoneroller) are obligate stream dwellers adapted to clear, flowing water. This does not support the DEIS's statement quoted previously concerning the quality of existing fish populations. Similarly, the increase in Index of Biotic Integrity (IBI) values noted for Horse and Brush Creeks (+9 and +6 points, respectively) in the 15-year interval between the Department's two surveys does not support such a conclusion. The IBI change reflects a basin-wide trend in the Sangamon watershed and may be partly attributable to changing agricultural practices (e.g. the Conservation Reserve Program, reduced tillage, etc.) over the past several years. 3

The impoundment of any free-flowing stream represents an irretrievable loss of lotic habitat with a corresponding decline in aquatic biodiversity as flow-adapted species give way to a simpler assemblage of lentic-adapted fishes most, if not all of which, were present in pools of the affected stream beforehand. While a free-flowing stream, once dammed, cannot be "re-created" elsewhere, some measures can be taken to minimize the net loss of stream resources on the local (watershed) level. Unfortunately, the DEIS makes little mention of such measures.



While it is encouraging to see provisions for downstream releases of flow below the dam, these releases are predicated solely on public water supply needs; i.e., maintaining adequate levels in Lake Springfield via the South Fork pumping pool. The U.S. Geological Survey has considerable gauging data from the Sangamon River watershed including both Horse and Brush Creeks. The Illinois State Water Survey has used these data to develop a basin-wide model for instream flow and aquatic habitat assessment (Singh et al. 1986) which is available upon request. We recommend the applicant employ the model and other appropriate information to develop a flow release regime which protects the habitat of downstream aquatic life during the filling of the reservoir and thereafter. Such analysis would involve at a minimum the evaluation of seasonal flow duration curves to assure downstream releases necessary for stream fishes to carry out their various life history functions. By basing releases on the stream's natural hydrograph, the tailwater stream could emulate flows needed for spawning (Mar-June), low flow "maintenance" (July-Oct) and overwintering (Nov-Feb). In addition to adequate quantity, the releases should assure sufficient water quality (temperature, dissolved oxygen, etc.) through appropriate release zones (epilimnion vs mixed), aeration structures, etc. 4

While "replacement" of the impounded stream reach is an impossible task, efforts could be made to mitigate this resource *in kind* within the South Fork Sangamon River watershed. Since the proposed reservoir will inundate approximately 13.7 miles of Horse Creek and 7.7 miles of Brush Creek (Healy 1979), we recommend the applicant protect 21.4 miles of free flowing stream elsewhere in the watershed. This could be done through outright acquisition (CWLP already has substantial holdings in the immediate area) or the purchase of perpetual conservation easements from willing riparian landowners. In addition, the applicant should establish permanently vegetated riparian zones along all 21.4 miles of channel. First priority should be given to the four miles of Horse Creek below the reservoir. The width of the riparian zone could vary with stream size but should be no less than 100 feet along each bank below the lake and 50 feet along smaller channel segments above the lake. This would serve the dual purpose of protecting instream habitat in the mitigated stream reaches and reducing sedimentation and pesticide/fertilizer inputs into the water supply. 5

*3. The Corps considers that the information provided in the 1993 INHS report does support the quoted statement in the DEIS. The INHS used information collected during the 1990 sampling to calculate IBI values at all sample sites. Most of the IBI ratings were in the fair to poor categories reflecting the loss of intolerant species and domination of the fish community by tolerant forms and habitat generalists. Hornyhead chub and stoneroller were among the species collected during the 1990 INHS sampling. Additional information concerning which species currently present in the project area will likely not survive and reproduce there if the lake is built has been added to Section 4.1.5.1. of the FEIS.

*4. In previous correspondence early in this project between the applicant and ILDNR regarding instream flow issues, the applicant suggested, and the ILDNR and the USFWS concurred, that instream flow modeling was not warranted for the Hunter Lake project. Rather, the selection of a percent duration of flow would be an adequate method for determining appropriate release rates for the protection of instream resources in this instance.

The ILDNR suggested that the monthly Q75 flow, as presented in the applicant's 12/17/90 correspondence, be incorporated as the minimum release rate from Hunter Lake. The applicant proposes to follow this operating mode with the exception that since this stream system is a Q7,10 = 0 system, during the filling of the reservoir and during any drought condition the applicant proposes that the instream flow releases revert to a monthly Q90 condition. The drought condition could be indicated as any time Lake Springfield would fall below the average pool level in any given month. This information has been added to Section 2.3.1.3 of the FEIS.

Regarding the appropriate release zones in relation to water quality concerns, the proposed dewatering structure has gate configurations incorporated such that the release of water would range from a surface discharge to a maximum depth of 11 feet below the surface. Water quality of the receiving stream would not be compromised by this dewatering strategy. This information has been added to Section 4.1.12 of the FEIS.

*5, 6. A revised mitigation plan for wetland and other natural resource impacts has been developed by the applicant. This plan is described in Section 4.1.9 of the FEIS.

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Woody vegetation consisting of desirable tree and shrub species native to the area is preferred for riparian plantings and may offset part of the applicant's forested wetland mitigation needs (depending on site and soil conditions). The applicant is encouraged to partner with resource agencies where possible. For instance, the Natural Resources Conservation Service could assist with conservation easements through the Wetland Reserve Program if the applicant bears the cost of restoration. This Department could help procure stock for riparian plantings, subject to availability, and offer technical assistance regarding wetland restoration, fisheries management, and related topics. Ideally, mitigation should be developed as part of an overall Hunter Lake watershed plan. 6

The DEIS mentions conservation ordinances which would limit lakeside development on "marginal lands under City control surrounding the proposed Hunter Lake" (page 4-4). However, no information is provided concerning the extent of this "control". Does the City own the entire lake shoreline? If not, what provisions will exist for controlling development (including septic systems, lawn fertilizers, boat docks, etc) on shoreline areas not under direct City control? Certainly, some zoning or deed restrictions should be adopted prior to the private ownership of such properties in order to safeguard the lake's environmental and aesthetic values. 7

In order to protect the City's investment in the new lake and prolong its life, the applicant should lead the way in stewardship of the watershed. By promoting and cost-sharing filter strips, terraces, grassed waterways and similar best management practices (BMPs) on privately-owned lands within the drainage, the applicant could achieve the most cost effective solution to the problems of deteriorating water quality and declining storage capacity which have plagued so many water supply reservoirs in this region. It is further recommended that there be no farming on City-owned land surrounding the lake, since even the best farming techniques cause erosion and siltation. To the extent possible, we recommend that the Corps of Engineers make the applicant's leadership in a watershed plan a mandatory condition of this permit along with instream flow releases and wetland (including stream channel) mitigation. The irreplaceable loss of stream habitat would be at least partly compensated by strict adherence to these conditions. 8

In addition to the general comments above, we wish to offer the following specific observations regarding fisheries and wildlife, endangered/threatened species, natural areas, and wetlands:

Fish and Wildlife

- Drawdowns during the operation of Hunter Lake may range from 6.6 to 20 feet (Page S-7). These drawdowns should be regulated such that the lake's fishery is not jeopardized. In addition, water releases from the lake should be regulated to prevent downstream erosion problems. 9
- Recreational facilities should be planned, including at least three boat launches. With the metro-areas of Springfield, Alton, Peoria, and Decatur so close, the proposed lake with the proper facilities could provide significant opportunities for the public. 10
- Water conservation by all water users was only touched on in the DEIS, and should be more thoroughly evaluated for its significant benefits. Ash sluice water uses 8.6 mgd (39.6% of the average daily use needed). Unless water conservation measures are instituted, a third lake (or one of the other alternatives discussed in the DEIS) will be necessary by the year 2025. 11
- The dam structure should be designed in such a way as to add more capacity in the future, when needed. Thus, any development should have appropriate set back to account for this consideration. 12



*7. The City of Springfield will own the entire lake shoreline. The City Council passed an ordinance to protect marginal lands owned by the City from development (see Section 4.1.3, third paragraph).

*8. A revised mitigation plan for wetland and other natural resource impacts has been developed by the applicant. This plan is described in Section 4.1.9 of the FEIS. Watershed management actions undertaken by the applicant for the Lake Springfield watershed, that could similarly be implemented by the applicant if a permit is issued for Hunter Lake, are described in Section 4.1.6.2 of the FEIS.

*9. Operational impacts of Hunter Lake are discussed in Section 4.1.12 of the DEIS. The purpose of constructing Hunter Lake is to supplement the storage in Lake Springfield during drought conditions. As such, depending on the level of drawdown in Hunter Lake, some impacts to the fishery and other aquatic resources are, on occasion unavoidable. The aquatic ecosystem issues have been incorporated into the operating scenario evaluations of the proposed reservoir system. In evaluating numerous operating alternatives, the ISWS examined scenarios based both on maximizing the yield of the system, and looking at drawdown levels based on the aquatic habitat considerations as given in the Hunter Lake Habitat Evaluation Procedures report. Each of these parameters will remain important considerations in the operating plan of the reservoir system.

Part of the operations modeling also included an evaluation of the rate of release from Hunter Lake when transferring water to Lake Springfield. It is actually beneficial in most scenarios to release water at a slower rate. The gradual transfer of water translates to a gain in yield, generally related to the concept that yields are typically higher when more water is retained in the second lake. This slower transfer would also help reduce potential erosion concerns downstream of Hunter Lake. This information has been added to Section 4.1.12 of the FEIS.

10. Recreational facilities currently proposed for Hunter Lake by the applicant, and anticipated recreational opportunities, are discussed in Section 4.1.3 of the DEIS.

11. The feasibility of recycling treated wastewater for ash sluicing was evaluated as described in Section 2.2.6 of the DEIS. The potential benefits of several other water conservation measures were evaluated in detail as described in Section 2.2.7 of the DEIS. Neither of these alternatives would provide sufficient yield to meet projected demand during a 100-year, 18-month drought event and are therefore not considered to be feasible alternatives to Hunter Lake.

12. The need for the project with respect to capability to meet projected demand during a 100-year, 18-month drought event is described as a yield of 16.9 million gallons per day (mgd) in Section 1.3 and Section 2.1.1 of the DEIS. The projected yield of Hunter Lake was estimated to be 21.5 mgd as shown in Table 2.1.3 of the DEIS. No additional future capacity requirements have been identified by the applicant.

- The project holds great potential for the enhancement and development of quality upland and forest wildlife habitat around the proposed lake. However, the DEIS suggests that only about 200 acres of forested land and 100 acres of prairie will be established to mitigate non-wetland losses. We recommend that larger acreages of forested and grassed land be incorporated in the final project mitigation. 13

- At your agency's request, Department biologists visited the Hunter Lake site on May 13, 1999 to confirm a reported heron rookery within the future lake basin. As was subsequently reported to Charlene Carmack of the Environmental Branch, our staff found a rookery consisting of twenty nests occupying three large sycamores adjacent to Horse Creek in the west half of the northwest quarter of Section 20, Township 14 North, Range 4 West, northwest of Zion Cemetery. The trees are located in a bottomland approximately 20-30 yards from the creek, and will definitely lie within the wetted area of Hunter Lake if it is built. All of the nesting birds were great blue herons – no egrets, night herons, or other species were observed. The rookery should be described in the final EIS. 14

Endangered/Threatened Species and Natural Areas

- The assessment of potential impacts to heritage resources should not rely solely on the Natural Heritage Database. The lack of an occurrence record at a given location does not mean that no heritage resources occur there. What is needed is an assessment of the actual impact site with consideration for what could potentially be present. For example, the north field in the Havana Lowlands well system provides a very sandy substrate which could support a number of threatened or endangered species not always found in pristine habitat. This site could support the western hognosed snake, umbrella sedge, Patterson's bindweed, Illinois chorus frog and Hall's bulrush, just to name a few. 15

- The DEIS states (Section 3.1.5.5) that the pondhorn mussel (*Uniomerus tetralasmus*) is the only state-listed endangered/threatened species reported from the project area. For the sake of accuracy, it should be noted that the pondhorn was removed from the Illinois Endangered Species List in 1994 because the species was found to be more common in Illinois than previously thought. This change in status is mentioned in Section 4.1.5.2, also. 16

- In a 15 February, 1994 letter to Tom Skelly of City Water, Light and Power, Richard Lutz, former Chief of the IDNR Division of Impact Analysis, stated that the Kirtland's water snake, (*Clonophis kirtlandii*), had been placed on the state threatened/endangered list and should be mentioned as occurring in Sangamon County. This omission has not been rectified in the DEIS. Although the species was not found in the project area, it does occur around Lake Springfield and suitable habitat is present in the study area. 17

- Section 3.3.5.4 states that Carpenter Park is an Illinois Natural Area Inventory (INAI) site. This statement is technically correct but incomplete: Carpenter Park is also and foremost a dedicated Illinois Nature Preserve. The referenced paragraph also indicates that transmission lines may pass through Carpenter Park in section 35 of Fancy Creek Township. However, Carpenter Park is not located in Section 35, but rather in Section 2 of Springfield Township. This causes some confusion since the reviewer is not able to determine whether Carpenter Park will actually be impacted or if the transmission line will instead pass through a different area. Any proposal to cross Carpenter Park with a pipeline would be subject to intense scrutiny since nature preserves are protected by law in perpetuity. 18

- Section 3.5.5.1: The north field for this project is actually located in the Illinois River Section of the Illinois River and Mississippi River Sand Areas Natural Division. Although this may seem a minor error,



*13. A revised mitigation plan for wetland and other natural resource impacts has been developed by the applicant. This plan is described in Section 4.1.9 of the FEIS.

14. Reference ILDNR letter dated May 13, 1999, concerning verification of the presence of a heron rookery in the project area. The Final EIS has been revised to include discussion of potential impacts to this rookery.

15. This information has been added to Section 3.5.5.4 of the FEIS.

16. This change has been noted in the FEIS.

17. The omission has been rectified in the FEIS.

18. This information has been added to Section 3.3.5.4 of the FEIS.

it is important when considering the possible presence of listed species. With reference to section 3.5.5.4, for example, while we have no records of the threatened Illinois chorus frog (*Pseudachris streckeri*) or the endangered Hall's bulrush (*Scirpus hallii*) in the section where the wells are to be constructed, these species do occur in adjacent sections and should be identified since the path of the pipeline may affect them. This well field may also affect the local aquifer and, consequently, habitat for these species. This concern is discussed in greater detail below. 19

- Section 4.1.5.2: The project's potential effects on the Kirtland's water snake should be addressed here. 20

- Section 4.3.4: Potential impacts to the Illinois chorus frog and the Hall's bulrush need to be addressed here. In section 4.8.8 it is stated that a 12 mgd well will lower the local aquifer approximately 4 to 7 feet at two miles. No figures are given for what the two 9 mgd well fields (section 4.3.8) will do at corresponding distances. The north field is located near small ponds with associated listed species, both of which require shallow ponds for their survival. The Hall's bulrush, in particular, tends to be associated with ponds which have their hydrology connected to the aquifer, instead of clay lenses. Any drawdown of a local nature would negatively affect the hydrology of these ponds and consequently impact the species. These ephemeral sand ponds in Mason County are very important biologically and should not be overlooked. The possible impact of the 9 mgd well on the local groundwater and shallow ephemeral ponds around the north well field in particular needs to be discussed. 21

- Section 4.4.5.2, paragraph 2: The impacts to 15 acres of Carpenter Park need to be more clearly defined since this is a dedicated Nature Preserve as well as an INAI site. It is also stated in this section that 6 acres of Riverside park will be impacted. A portion of Riverside Park is soon to be registered as a Land and Water Reserve. Since Reserves are protected by law in perpetuity, any potential impact areas should be clearly identified to ensure they are not in registered areas. 22

- Section 4.5.5.2, paragraph 2, and section 4.6.5.2, paragraph 2: Same as above. 23

- Section 4.8.4: The close proximity of the Illinois Chorus frog and the Hall's bulrush need to be acknowledged in light of the extended effect that the wells may have on the local aquifer as reported in section 4.8.8 and discussed above. A 12 mgd withdrawal would significantly draw down the water level for several miles, and both the chorus frog and the Hall's bulrush have been recorded in numerous locations within 2-3 miles. 24

Wetlands

- There is little or no information provided regarding how the wetland delineations were carried out, what methodology was used, or what the detailed results of those determinations were. We believe this information is pertinent and should be included in the final EIS. 25

- In comparing Hunter Lake with other alternatives, we are concerned about the accuracy of the wetlands narrative. The DEIS states that the wetland acreage for Hunter Lake was determined in the field, while wetland acreages for the other alternatives were estimated using the National Wetland Inventory Maps which do not depict jurisdictional wetlands. Such a comparison between field-verified wetland acreage on one hand, and estimated wetland acreage on the other, seems questionable. 26

- The DEIS implies that the large acreage of lakeshore wetlands created by the impoundment will serve to mitigate the palustrine forested and palustrine emergent wetlands that are destroyed. In fact, the 27



19. This information has been added to Section 3.5.5.1 and 3.5.5.4 of the FEIS.

20. This information has been added to Section 4.1.5.2 of the FEIS.

21. This information has been added to Section 4.3.4 and 4.8.4 of the FEIS.

*22, 23. This information has been added to Sections 4.4.5.2, 4.5.5.2, 4.6.5.2, 4.7.4, and 4.8.4 of the FEIS.

*24. See response to comment #21 above.

*25. A more detailed discussion of wetland delineations and estimates of jurisdictional wetlands impacted by the proposed action is provided in Section 3.1.8 of the Final EIS.

26. For purposes of comparison with other feasible alternatives, NWI wetland areas were identified for Hunter Lake and listed in Tables S-4 and 4-1. If the Corps denies the City a permit for Hunter Lake, this denial would not constitute approval or disapproval of any of the identified alternatives. Should the City subsequently choose to pursue implementation of one of the alternatives to augment water supply, a new Section 404 permit action would have to be initiated and the applicant would have to provide additional information to the Corps for evaluation, including impacts on jurisdictional wetlands.

27. See DEIS Section 4.1.9, last paragraph. The DEIS states that it is uncertain whether created lacustrine wetlands could offset losses caused by lake construction. The applicant's current proposed mitigation plan is described in Section 4.1.9 of the FEIS.

lacustrine wetlands that may develop in the lake will in no way replace the functional values and biological attributes of the wetlands lost. A letter from the U.S. Environmental Protection Agency included in the DEIS (Page B-48) makes this same point.

- Wetland delineations conducted for the project indicate that the normal pool elevation of Hunter Lake would destroy 102 acres of wetlands. Using methodology described in the 1987 Wetland Delineation Manual and subsequent regulatory guidance letters, Department staff conducted on-site wetland delineations for all large (>20 acres) National Wetlands Inventory sites and a randomly selected 8.5% of the smaller NWI sites below the lake's normal pool elevation. Based on these surveys, 18.3% of the acreage of larger sites and 45.1% of the acreage of the smaller sites was determined to be jurisdictional wetland. Our calculations suggest that among the 318 NWI sites below normal pool elevation (encompassing 597 acres), approximately 218 acres of jurisdictional wetland exist. This is a considerably higher total than the 102 acres suggested in the DEIS, and the discrepancy needs to be resolved and fully addressed in the final wetland mitigation plan.

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We appreciate the opportunity to review and comment on the Draft Environmental Impact Statement for the proposed new reservoir. The Department is available to meet as may be necessary with City Water, Light and Power, the Rock Island District, and the various reviewing agencies to work toward a mutually satisfactory resolution of this proposed action. Please contact Dr. Deanna Glosser of my staff at 217-785-5500 if we can be of further assistance.

Sincerely,

Tom Flattery, Director
Office of Realty and Environmental Planning

TF:rs

cc: City Water, Light and Power (Tom Skelly)
IDNR/OWR (Marty Stralow)
IEPA (Bruce Yurdin)
USFWS (Rick Nelson)
USEPA (Kevin Pierard)



*28. See response to comment #25 above. The Corps' determination of 102 acres of jurisdictional wetlands impacted by the reservoir is the determination used in the development of the applicant's proposed mitigation plan presented in Section 4.1.9 of the Final EIS.

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S3

Illinois Department of Agriculture

Bureau of Land and Water Resources • State Fairgrounds • P.O. Box 19281 • Springfield, IL 62794-9281
217/782-6297 • TDD 217/524-6858 • Fax 217/524-4882

June 4, 1999

Colonel James V. Mudd, District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Environmental Analysis Branch (Charlene Carmack)
Clock Tower Building - P.O. Box 2004
Rock Island, Illinois 61204-2004

Re: Draft Environmental Impact Statement
Proposed Water Supply Reservoir - Hunter Lake
City of Springfield, Illinois
Permit Application No. 187020
April 1999

Dear Colonel Mudd:

The Illinois Department of Agriculture (IDOA) has reviewed the Draft Environmental Impact Statement (DEIS) which the Army Corps of Engineers prepared on the proposed Water Supply Reservoir (Hunter Lake) for the city of Springfield, Illinois as it considers the City's application for a permit under Section 404 of the Clean Water Act. We submit the following comments on the DEIS.

A-24

Based on the information contained in the DEIS, it is apparent the project will incur significant agricultural impacts.

- The total project area includes the acquisition of 7,795 acres. (pages S-2, S-5, 3-1)
- The lake will inundate 3,010 acres. (pages S-2, 3-1)
- 1,108 acres of cropland will be inundated. (page S-5, 4-5)
- 310 acres of grassland will be inundated. (page 4-5)
- 3,781 acres of cropland will be removed from production in the buffer areas adjacent to the lake. (pages S-5, 4-2, 4-4)
- 59.3% of the project area (4,622 acres) is comprised of soils that are classified as Prime soils, 29.4% of the area (2,292 acres) is comprised of Important soils, and 11.3% of the area (881 acres) is comprised of soils that are neither Prime nor Important due to steep slopes, severe erosion, or the land is comprised of sand pits or is inundated. (page 3-2) (*NOTE: If the percentages are correct for Important and other land, the acreages are wrong as listed on page 3-2. The acreages listed above have been calculated by the IDOA assuming the percentages are correct.*)

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S3.
Illinois Department of Agriculture
Bureau of Land and Water Resources
State Fairgrounds
P.O. Box 19281
Springfield, IL 62794-9281
6/4/99

*1. The acreage of Important farmland has been corrected to 2,292 acres in the FEIS.

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- Flood easements will be needed on 142 acres upstream of the dam above the acquisition areas. (page S-5)
- 60 farms will be displaced as will one fertilizer sales operation. (pages S-2, 3-1, 4-1, 4-4)
- 53 structures downstream of the reservoir which are already within the 100-year floodplain, would see increased flood heights over existing conditions. (page S-5)
- The total annual tax loss to the 24 taxing bodies within the 7,795 acre project area is estimated to be $150,000, or approximately 0.65% of their total property tax receipts. (pages S-5, 4-1)
- An estimated $1,164,000 would be lost annually from farm income. (page 4-4)
- The vast majority of the land in the project area is zoned for agricultural uses by Sangamon County; however, construction of the lake conforms to the County's zoning ordinance. It also conforms to the County's comprehensive plan.
- Mitigation for other natural resource impacts will convert cropland adjacent to the lake to nonagricultural uses. (page 4-4) Other farmland adjacent to the lake will also be taken out of production as new conservation areas are developed. (pages 2-28, 4-15)
- The presence of Hunter Lake is likely to cause the conversion of additional agricultural land in the vicinity near the lake due to new residential development. (page 4-4)



The DEIS did not do an adequate job of addressing the project's agricultural impacts. The IDOA has the following comments and questions concerning the Hunter Lake Alternative.

1. Page S-5 states that 53 structures downstream of the reservoir, already within the 100-year floodplain, would see increased flood heights over existing conditions.

   The IDOA would like to know how much downstream farmland will be subject to additional flooding? Will flood easements be purchased from landowners downstream as they will on the 142 acres upstream of the dam (reference page S-5)? 2

   During the scoping portion of this project, the Illinois Farm Bureau and the Sangamon County Farm Bureau wrote letters to the Corps (reference pages B-31 to B-34) expressing concern regarding potential downstream flooding of agricultural land. No attempt was made in the DEIS to address their concerns. We thought that was the purpose of the scoping process - to identify potential environmental impacts that should be addressed in the DEIS. The IDOA would ask that downstream flooding impacts be addressed more thoroughly in the Final EIS. 3

2. Page 3-7 states that there are 102.0 acres of jurisdictional wetlands the Corps of Engineers has field verified which are located within the pool area of the proposed lake. Page 4-9 states (i) the City previously proposed to use lands currently owned by the City, located to the north of Lake Springfield, to mitigate forested wetlands impacted by Hunter Lake, and (ii) non-forested wetlands are proposed to be mitigated within the 4

2, 3. The downstream and upstream flood modeling conducted for the project and summarized in Section 4.1.7 of the DEIS, identified no increase in the existing 100-year floodplain that would result from construction or operation of Hunter Lake. Lands and structures that currently receive damage from existing condition flood events would experience increased flood heights ranging from 0.07 foot to 0.48 foot during the 100-year flood condition; however, the duration of flooding would be increased by only one day. No additional downstream lands would be subjected to flooding. These statements have been added to Section 4.1.7 of the FEIS.

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Hunter Lake project area by construction of retention dams at two locations totaling approximately 26 acres.

Several questions arise regarding mitigation of the Lake's **forested wetland impacts.**

(A) Why must the City go off-site to mitigate these impacts? 5

(B) Will going off-site increase the 1½ to 1 mitigation ratio? 6

(C) Where is this land located? 7

(D) What is its current use? 8

(E) How many acres will be converted to forested wetlands? 9

(F) If the land is farmed, what its Prime/Important status? 10

(G) If the land is Prime farmland, please explain why non-Prime farmland cannot be utilized for this purpose. 11

Several questions arise regarding mitigation of the **non-forested wetland impacts.**

(H) We presume that the non-forested wetland impacts will be mitigated on 26 acres that are within the 7,795 acre project area and that no additional land will be acquired for this purpose. Is this correct? If not, please explain. 12

(I) Where are the 26 acres located? 13

(J) What is the land's current use? 14

(K) If the 26 acres are farmed, what is the land's Prime/Important status? 15

(L) If the 26 acres are Prime farmland, please explain why non-Prime farmland cannot be utilized for this purpose. 16

3. Page 4-9 states that 815.3 acres of littoral shore lacustrine wetlands will be created by the reservoir, but they will be subjected to prolonged drawdown during severe drought which would limit their function and value. Page 4-9 also states that none of these shoreline wetlands will be used to offset wetland losses caused by lake construction.

We presume the reason the littoral shore lacustrine wetlands will not be used to offset existing wetland losses is due to the limited function of the shoreline wetlands in times of drought? If prolonged drought adversely affects any created or existing wetlands, is it good policy for the COE to accept a plan that reflects the use high quality Prime farmland for mitigating the project's wetland impacts? It destroys one natural resource to create another. Such an action will only compound the project's natural resource impacts. 17



*4, 5, 6, 7, 8, 9. A revised mitigation plan for wetland and other natural resource impacts has been developed by the applicant. This plan is described in Section 4.1.9 of the FEIS.

*10, 11. Mitigation of impacts to jurisdictional wetlands by creation or restoration of other wetlands generally attempts to ensure that the created or restored wetlands meet the hydrologic, vegetation, and soils criteria that determine jurisdictional wetland status. While wetland hydrology and vegetation can frequently be restored or created by physical modifications (e.g., severing drain tiles or active plantings), wetland soil characteristics are usually impracticable or impossible to create if they are not already present. All soil types within the Hunter Lake project area and the proposed off-site mitigation areas that are classified as hydric or with hydric inclusions, are also classified as prime or prime if modified. For this reason, little opportunity exists to develop an adequate wetland mitigation plan without impacting prime or important farmland.

*12, 13, 14. A revised mitigation plan for wetland and other natural resource impacts has been developed by the applicant. This plan is described in Section 4.1.9 of the FEIS.

*15, 16. See response to comments #10 and #11 above.

17. See response to comments #10 and #11 above. Active or passive conversion of cropfields to other land cover types is not expected to destroy or diminish the natural resource value of soils classified as prime or important farmland. In some cases the natural resource values of these soils would be enhanced by reducing or reversing current rates of topsoil loss or nutrient depletion.

4. Page 4-9 states that two large areas would be dedicated for creation and enhancement of large forest tracts (approximately 100 acres minimum) to enhance the nesting potential and overall habitat for area-sensitive bird species. Page 4-9 also states that two large areas (76 and 125 acres) would be established with native prairie vegetation to enhance habitat for grassland birds.

   (A) Are these areas contained within the 7,795 acre project area? 18

   (B) Where are they located? 19

   (C) What are their existing land uses? 20

   (D) If the land is farmed, what is its Prime/Important status? 21

   (E) If the land is Prime farmland, can other land which is less than Prime be utilized for these purposes? 22

5. Page 4-5 states, *"While all land cover types except open water will experience some reduction in acreage as a result of inundation, the loss of forested areas represents the greatest negative effect to natural terrestrial habitats in the study area. The 1,526 acres of existing forest that would be converted to aquatic habitat represents a substantial percentage of the existing forested acreage not only in the project area, but also in the entire Horse and Brush Creek watershed."*

   The loss of 1,526 acres of forest is indeed a substantial loss of natural terrestrial habitat in the study area, but to say it is the greatest loss of natural terrestrial habitat may be an overstatement. Page 3-4 states that all forested land within the project area shows considerable evidence of past disturbance by livestock grazing and is dominated by plant species adapted to this type of disturbance. This would indicate that the quality of habitat may be questionable. In addition, as stated in #3 above, new forested areas will be established to compensate for this loss. Its loss, while regrettable, is not permanent. 23

   In comparison to the loss of the forested land and wetlands, the DEIS does not even recognize the significance of the farmland loss, other than to point out the acres that will be converted and the income and taxes it generates. The project area contains 3,781 acres of cropland and 1,075 acres of grassland (mostly pasture or CRP land?). Of this, 1,108 acres of cropland and 310 acres of grassland will be inundated by the new lake. Much of the rest of the crop and pasture land will undoubtedly be converted to wetlands, woodlands, and prairie areas. The DEIS must recognize that farmland and pasture are also habitat to many species of vertebrates and invertebrates. It possesses many other attributes, beyond those which the DEIS acknowledges (income and tax producer). The Final EIS should recognize that farmland, including that which will be impacted by the Hunter Lake project... 24

   - Is the foundation for the U.S. food supply, as well as the food supply of many foreign nations.



*18, 19, 20. See response to comments #4-9 above.

*21, 22. See response to comments #10 and #11 above.

23. The assessment of the Corps that the conversion of forest to deepwater aquatic areas represents the greatest loss of natural terrestrial habitat is based on both qualitative and quantitative considerations. Quantitative considerations include both the total affected acreage and the relative scarcity of this cover type within the Horse Creek watershed and the county as a whole. Qualitative considerations include the habitat value of this cover type for a variety of wildlife species, and the expected length of time required to reestablish forested areas of comparable habitat value on the marginal lands.

24. As noted in Sections 3.1.2, 4.1.2, and 4.1.3, and as illustrated in Tables S-4 and 4.1, the DEIS does in fact recognize farmland as a significant resource that would be impacted by the applicant's proposed action.

- Provides the raw materials for a broad variety of manufactured goods.
- Creates jobs for farm families and for those in agricultural-related industries.
- Provides water filtration and recharge to underground aquifers.
- Reduces flooding by storing and absorbing storm water runoff.
- Provides a source of biomass for renewable energy sources such as ethanol and methyl soyate.
- Provides wildlife cover and high quality food source for many species of wildlife.
- Provides a medium for the biodegradation of waste products, including, but not limited to: effluent from sewage treatment plants, livestock wastes, soil that is contaminated with petroleum products, canning wastes, etc.
- Provides open space which contributes to the quality of life in developing areas.
- Contributes to the quality and biological integrity of sensitive natural and riparian habitat by acting as a buffer between development and the sensitive areas.
- Provides a spacial buffer between incompatible land uses, also helping to dissipate noise and air pollution.
- Provides lifestyle opportunities for those who seek the values often associated with rural life and its social infrastructure.
- Provides many recreational opportunities for landowners and their friends.

While wetland, woodland, and prairie impacts can and will be mitigated, it is impossible to mitigate for the loss of farmland since it cannot be recreated. The Final EIS that is prepared on this project should reflect the value that the farmland in the project area possesses as well as strategies to avoid and minimize such impacts. 25

6. Page 4-4 states that the estimated potential loss of farm income from agricultural lands within the total project area would be $1,164,000 per year and that 60 farm units would be displaced by this project.

The DEIS does not adequately assess the impacts and consequences of those impacts to the 60 farm units. Beyond the loss of $1,164,000 in farm income, what other effect will the displacement of the 60 farming units have on the ag-related businesses and the rural communities in the immediate vicinity of Hunter Lake? For example: 26

- What effect will the loss of these 60 farming operations have on truck, machinery, fuel, seed, fertilizer, chemical, etc. sales? 27



*25. The Corps has not identified any practicable means to mitigate prime farmland that is converted to permanent water storage. The applicant's proposed mitigation plan would involve phased revegetation efforts which would allow for the gradual expiration of the City's agricultural leases. This phased conversion would help to reduce the short-term adverse effects of removal of these lands from agricultural production.

26, 27, 28, 29. The term "farm units" as used in the DEIS and FEIS denotes parcels of farmland, not farmsteads or entire farming operations. The 3,781 acres of existing cropland in the Hunter Lake project area represents less than 1% of farmland within Sangamon County and approximately 5% farmlands within the Horse Creek-Brush Creek watershed. According to U.S. Bureau of the Census statistics, the $1,164,000 represents approximately 0.03% of estimated 1993 total income for Sangamon County. Agriculture-related business within Sangamon County are not expected to be significantly affected by the conversion of croplands within the Hunter Lake project area. Impacts of property tax losses on townships and other taxing authorities are addressed in Section 4.1.1 of the FEIS.

1

- What effect will the loss of these 60 farming operations have on area grain elevators, repair shops, custom applicators, lenders, insurers, and other businesses catering to the agricultural community? 28

- What effect will the loss of ag related sales taxes and farmland taxes have on the townships in which the lake is located? (NOTE: The IDOA would prefer that the loss of taxes and income not be compared to all ag related taxes and income collected in Sangamon County. Such comparisons only serve to diminish the significance of the loss.) 29

- If the new lake generates more traffic than the rural roads and bridges are designed to safely accommodate, will the city of Springfield reimburse the townships and county for upgrading the roads and bridges? 30

- What effect will the presence of the lake have on real estate taxes located in the rural areas near the lake? 31

7. The DEIS does not address the impact the new lake may have on farm drainage near any wetlands that may be created. Will the hydrology of adjacent lands be affected? Will farmers still be able to tile privately owned land immediately next to the created wetlands? 32

8. If the new lake or any of the created wetlands, woodlands, or prairie areas attract threatened or endangered species, or if such species were ever introduced to those areas, what impact would there be under current law if those species migrated onto adjacent privately-owned agricultural land adjacent to the Hunter Lake property? 33

9. If the lake or any of the buffer areas attracted wildlife which caused crop damages on privately-owned land adjacent to the Hunter Lake property, how would these impacts be addressed? 34

10. In order to protect the lake and any wetlands, woodlands, and prairies that may be established on the buffer areas around the lake, what restrictions might the City or environmental agencies place on farming operations adjacent to the lake property, including, but not limited to, restrictions on the spraying of agricultural chemicals, restrictions on the establishment of livestock facilities, and restrictions on other land uses that are deemed non-compatible with the lake property. 35

11. In an effort to reduce the project's farmland conversion impacts, could the city of Springfield place conservation easements on the Prime farmland that is included in the 2.673 acres of buffer land around the lake, then sell this land to private interests who could continue farming it? The easements would preclude any development of the farmland and could also require the landowner to comply with all soil erosion standards. 36

The DEIS fails to document that the Hunter Lake Alternative is the preferable alternative from an environmental perspective. Any of the well system alternatives would be preferable from an environmental perspective. Most of the environmental impacts associated with these alternatives pale in comparison to the City's preferred alternative, Hunter Lake. 37



30. The impacts to roads and roadway networks are identified in Section 4.1.11.1 of the DEIS. New or upgraded roadways and bridges would be appropriately designed according to the Illinois Department of Transportation's (IDOT) Administrative Policy Manual of the Bureau of Local Roads and Streets serving as the basic design policy guide with any revisions as necessary to meet the Standards of the Sangamon County Highway Department. Upon completion of the reconstructed or upgraded roads and bridges, as funded by the City and County, the maintenance and future upgrades would be the responsibility of the appropriate entity, be that County or Township.

The final roadway network was developed by the applicant with the input of the County and Township Road Commissioners. The highway designs incorporated traffic projections and these projections were reviewed and approved by the Sangamon County Highway Department, the Springfield-Sangamon County Regional Planning Commission, and the IDOT. The design minimizes adverse travel and emergency response time, and in fact one additional bridge over the lake was added to the preliminary design as a result of these meetings. The current primary thoroughfares are Sangamon County Highways 28 and 40, and these highways will remain the primary routes of north/south, east/west travel through the project area.

31. The presence of Hunter Lake would not be anticipated to have a direct effect on property tax rates on privately-owned lands in the vicinity of the project area.

32. The 100-year flood elevation with the lake in place is evaluated to be approximately 575.2 feet above sea level. This level is about 4 feet above the 571 foot full pool elevation of the lake. Tile drain outlets with invert elevations at or above 575.2 above sea level should not be affected by the lake.

33. No designated critical habitat for any Federally listed threatened or endangered species currently exists in the project area or within Sangamon County as a whole. Neither the unavoidable land use changes that would occur if Hunter Lake were built, nor any passive or active conversion of land cover that may result from reservoir operation and maintenance or from an adopted mitigation plan, are considered likely to create critical habitat for any Federally listed species that could potentially occur in or near the project area.

34. No measurable increase in wildlife crop damage on adjacent private properties attributable to the Hunter Lake project area would be expected to occur beyond existing levels.

*35. See response to U.S. Department of Interior Letter dated 6/11/99, comment #6.

36. Conversion of croplands in the City-owned marginal lands to forest and grassland cover would be expected to result in reductions of sediment and contaminant input to the pool area of the lake, as well as increasing the quality and quantity of wildlife habitat. Privatization of project area lands currently owned by the City for the purpose of continuing ongoing agricultural activities would make protection of water quality and storage capacity of the lake more difficult, and would limit the ability of the applicant to mitigate the loss of wetland, forest and grassland habitats without acquiring additional lands not currently owned by the City or proposed for purchase for the reservoir.

37. Comment is noted.

The IDOA has worked with pipeline companies for years in addressing agricultural impacts associated with new pipeline construction. Pipelines possess the following environmental advantages over construction of a new lake.

- Significant archeological sites, wetlands, wooded areas, prairies, natural areas, parks, etc. can be avoided in routing a pipeline. Any natural resource impacts which cannot be avoided can be minimized or mitigated.

- Little, if any, farmland is permanently converted by a pipeline. If any farmland is affected by construction, it can be restored to its previous use and productivity if proper construction standards and policies are applied. The IDOA has developed such construction standards and policies which have been applied to hundreds of miles of pipelines in Illinois. They are widely accepted in the agricultural community.

- Right-of-way negotiations with landowners can help avoid routing that will impact homes, farm buildings, irrigation wells, and wells that are used for human and livestock consumption.

Table 4.1 on page 4-2 of the DEIS indicates that the Havana Lowland Wells/Sangamon River Wells Alternative, the Illinois River Wells/Sangamon River Wells Alternative, the Havana Lowlands Wells Alternative, and the Illinois River Wells Alternative will impact large acreages of agricultural land and to a lesser extent floodplains, forested land, wetlands, and a natural area. The DEIS should clearly indicate that the impact to these resources will be temporary and/or will be mitigated. 38

Because the DEIS is so deficient in assessing agricultural impacts, the IDOA would recommend that the Corps revise the Final EIS accordingly. Issuance of a Section 404 permit for Hunter Lake will result in the permanent conversion of thousands of acres of this finite natural resource which cannot be replaced. Because issuance of the permit will have such a profound impact on agricultural land, care should be taken in properly assessing the project's agricultural impacts. 39

In addition, because of the environmental superiority of the well/pipeline alternatives, they should be given highest priority for construction if they are feasible from a cost and water quality/yield basis.

Sincerely,

James R. Hartwig

James R. Hartwig, Supervisor
Office of Farmland Protection and Mined Land Reclamation

JRH

cc: Director Joe Hampton, Illinois Department of Agriculture
Tom Skelly, City Water Light & Power
Nancy Erickson, Illinois Farm Bureau
Jack Oakley, Sangamon County Farm Bureau
Sangamon County Soil and Water Conservation District



38, 39. Sections 4.2.5, 4.3.5, 4.7.5, and 4.8.5 of the DEIS all state that there would be no long-term impacts in the agricultural corridors of the pipeline.

S4

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276

THOMAS V. SKINNER, DIRECTOR

217/782-0610

June 8, 1999

Rock Island District
Corps of Engineers
ATTN: Environmental Analysis Branch (Charlene Carmack)
Clock Tower Building
Rock Island, IL 61204

Re: City of Springfield (Sangamon County)
Hunter Lake
Log # C-1866-98 [CoE appl.# 187020]

Gentlemen:

A-31

We received and reviewed the Draft Environmental Impact Statement (DEIS) for the "Proposed Water Supply Reservoir, Hunter Lake, City of Springfield" date April 1999. Based on that review, the following items are offered for your consideration.

The preferred alternative, Hunter Lake, would provide a 3,010 acre reservoir on Horse and Brush Creeks that would use an existing diversion dam to supply water to Lake Springfield. Both the estimated need as a result of community growth projected to 2025 and the current requirement for the 100 year drought indicate the need to augment the water supply. For purposes of this review, we have confined our comments to the preferred alternative and to the potential water quality impacts that may arise.

1. Based on the description of the operation of Hunter Lake as a sacrificial supply to Lake Springfield (Section 2.3.1.1), it is reasonable to assume that Lake Springfield could act as a model for Hunter Lake under normal (non-drawdown) conditions. The new lake may be subjected to substantial withdrawal and will operate outside the normal range expected for Lake Springfield. The comparison of one lake to the other under these circumstances may not hold. In this latter case, biological and water quality impacts (as discussed on pages 4-5 and 4-8) may not be adequately represented by current conditions in Lake Springfield. Additional discussion of the water quality implications of the drawdown in Hunter Lake should be provided, with an evaluation of similar sacrificial water storage systems. 1

2. Hunter Lake will be subject to a drawdown of 19.8 feet (Section 2.3.1.1). Has an evaluation of bank stability been conducted that would indicate potential areas where bank sloughing or channel bed scouring may occur during these periods of drawdown? What effect will this have on the biotic integrity and on water quality of the reservoir during drawdown? Will sediment capture within the lake increase following drawdown as the lake re-establishes normal pool elevation and will this impact water quality? 2

3. The DEIS states that Hunter Lake will have "distinct and prolonged gradients of water temperature and D.O. concentrations compared to Lake Springfield. Nitrate-nitrogen levels in the proposed lake were predicted to be higher than Lake Springfield but below the drinking water limit. Phosphate-phosphorus levels in the proposed lake were 3

PRINTED ON RECYCLED PAPER

S4.
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276
6/18/99

1. Water quality impacts of the proposed Hunter Lake and comparisons with Lake Springfield and the Lick Creek Reservoir alternative are summarized in the DEIS and FEIS. These summaries were based on analyses and information detailed in three reports: "Water Quality Evaluations for Lake Springfield and Proposed Hunter Lake and Proposed Lick Creek Reservoir." (ISWS Contract Report #621, December, 1997); "Water, Sediment, and Nutrient Budgets of the Proposed Hunter Lake." (Crawford, Murphy, and Tilly, April 1994); and "Report on Point Source Discharges in the Watershed of Proposed Hunter Lake." (Crawford, Murphy, and Tilly, April 1998). These documents have been provided to the ILEPA in support of their review of the FEIS with respect to their jurisdictional responsibilities under Section 401 of the Clean Water Act.

*2. Similar to the City's experience at Lake Springfield, the City anticipates the need for shoreline erosion control in most areas of the Hunter Lake reservoir at the full pool elevation. Except for the sites with the steepest slopes, many lake areas tend to draw away from the erodible areas of the shoreline during drought periods, and therefore erosion is less of a concern during drawdowns at many sites. The City has identified the areas of severe slopes in the proposed reservoir and has estimated erosion control needs to be above average in those locations. This information has been added to Section 4.1.6.2 of the FEIS.

3. See response to comment #1 above. More detailed information on analyses of temperature, DO, and nutrients are included in the December 1997 ISWS report and the April 1994 CMT study.

similar to Lake Springfield" (Section 4.1.6.2). These conclusions were provided through the use of the HEC-5Q model. No data were tabulated or otherwise provided. Gradient structure and anticipated concentrations for temperature and dissolved oxygen (DO)are important factors in determining the level of project compliance with the applicable water quality standards. Model results, the manner in which the model was calibrated, the range of error for the model parameters, whether these values were derived from wet weather or dry weather flows, anticipated biological activity and population sizes or ranges will be necessary to fully understand the conclusions provided in this Section. In addition, it is not clear if the conclusions in Section 4.1.6.2 are consistent with the statements made in Section 4.1.12 regarding temperature and DO.

As a separate matter, please note that Lake Springfield is on the Illinois EPA's April 1998 Section 303(d) list of impaired waters, with nutrients and organic enrichment/DO identified as causes of impairment. The comparisons made in Section 4.1.6.2 indicate that the water quality in Hunter Lake will exceed or match the nutrient (in this case, measured as nitrate-nitrogen and phosphate-phosphorus) concentrations in Lake Springfield, which as noted above have been identified as excessive. Further evaluation of the causes of the nutrient enrichment in the Hunter Lake basin will be required. Identification of the sources and possible approaches to control nutrient loading in the lake will be required for our review under Section 401. This evaluation should provide sufficient detail to indicate the measures necessary to reduce the nutrient levels to concentrations that will not result in impaired water quality and biological conditions. 4

4. Section 4.1.14 identifies the existing municipal wastewater dischargers within the Hunter Lake basin and states that these discharges will be relocated to two other streams in the area--Virden-East Plant and Divernon to Sugar Creek and Pawnee to the South Fork. Sugar Creek is on the 303(d) list, as is Lake Springfield into which it flows. Depending on the exact location of the effluent discharge, segments of the South Fork are also on the 303(d) list. Relocation of these discharges to these currently impaired waters may result in an increase in the pollutant (i.e., nutrient) load, and therefore may be problematic. This situation cannot be clearly demonstrated from the data in the DEIS. Discharges of treated wastewater to these streams may not necessarily result in further impairment since the impaired status is based on the concentration of the pollutant in the stream. Additional evaluation of the total loadings on each of these streams should be conducted to determine the practicality and limitations of relocating these discharges. This may be particularly important in the case of discharges to Sugar Creek/Lake Springfield since additional nutrients may have detrimental effects on the eutrophic condition of the lake. 5

Should you have any questions or comments regarding the content of this letter, please contact me at the above telephone number and address.

Sincerely,

Bruce J. Yurdin
Manager, Watershed Management Section
Bureau of Water

cc: Records Unit
IEPA, BOW, DPWS
IDNR, OWR, DWRM, Springfield
City of Springfield

A-32

4. The CMT report of April 1994 referenced in comment #1 above identifies ground cover restoration, sediment trap construction, and shoreline protection as potential measures to control erosion and inflow of sediment, nutrients, and other contaminants to Hunter Lake. Section 4.1.9 of the FEIS provides details of the applicant's proposed mitigation plan.

5. See response to comment #1 above.

1

L1

*STOBBS & SINCLAIR*
*Attorneys and Counselors at Law*

*500 Bond Street*
*P.O. Box 336*
*Alton, IL 62002-0336*

*618-465-6978*
*618-465-7022 (Facsimile)*

May 18, 1999

District Engineer
Department of the Army
Rock Island District, Corps of Engineers
Clock Tower Building--P.O. Box 2004
Rock Island, Illinois 61204-2004

ATT: Environmental Analysis Branch (Charlene Carmack)

Re: City of Springfield, Illinois
Hunter Lake Water Supply Reservoir

Dear Ms. Carmack:

This letter is written on behalf of the Pawnee Fire Protection District pursuant to the correspondence dated April 9, 1999 of Colonel James V. Mudd regarding the above project.

Several issues arise in connection with this proposed project by the City of Springfield as it relates to the Pawnee Fire Protection District.

The Pawnee Fire Protection District is a unit of local government organized under the provisions of the Illinois Fire Protection District. Currently, the area which is proposed to be converted to a reservoir is part of the real estate tax base of the District. Its conversion to a reservoir will reduce that tax base, thereby directly impacting the financial resources of the District and its ability to render fire protection services to the remainder of the District. 1

The development of the reservoir also has the potential to physically separate parts of the District, making service to these areas more difficult and time consuming. To the extent that roads in the area are affected, access will also be 2



A-33

**Local Agencies**

L1.
Stobbs and Sinclair
Attorneys and Counselors at Law
(for Pawnee Fire Protection District)
500 Bond Street
P.O. Box 336
Alton, IL 62002-0336
5/18/99

1. As stated in Section 4.1.1 of the DEIS and FEIS, the Pawnee Fire Protection District was projected to lose approximately 5.82% of its property tax receipts as a result of construction of Hunter Lake and conversion of marginal lands. The displacement of residential properties from the project area may also reduce the District's service responsibilities.

2. As stated in Section 4.1.1.13 of the DEIS and FEIS, a minimal increase in emergency response and travel time may be experienced by residents of remote areas adjacent to the project site. Because all primary and secondary roads will remain and continue to be served by crossroads, no major increase in response time is foreseen. As stated in Section 2.3.1.2 of the DEIS and FEIS, the relocated roadway network was designed with input from the County Highway Department and Township Road Commissioners to minimize adverse travel and emergency response times through the project area.

affected. Response time is, of course, a critical factor in emergency services. Any development which impacts response time will have an adverse effect on the district and its residents.

Finally, any annexation to the City of Springfield of the reservoir development and surrounding property will, additionally, have the potential to render the District noncontiguous in contravention of Section 20 of the Illinois Fire Protection District Act. 3

Should you have need of any further information regarding the Pawnee Fire Protection District or the foregoing points, please contact the undersigned.

Sincerely,

James S. Sinclair

cc: Pawnee Fire Protection District





*3. The referenced statutory provision (Section 20 of the Illinois Fire Protection District Act) describes disconnection by operation of law when territory within the district is annexed to a municipality that provides fire protection. While the applicant has indicated no intention to annex this area or allow development thereon, this statute provides a mechanism for the Fire Protection District to petition the courts to prevent a disconnection that would render portions of the district noncontiguous as a result of any annexation of the project area by the City.

L2

CHATHAM AREA PUBLIC LIBRARY DISTRICT
600 East Spruce Street
Chatham, Illinois 62629
Telephone: (217) 483-2713
Fax: (217) 483-2361

May 24, 1999

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Charlene Carmack
Environmental Analysis Branch
Clock Tower Building - P.O. Box 2004
Rock Island, Illinois 61204-2004

A-35

**Re: Written Comments on Draft Environmental Impact Statement for City of Springfield, Illinois, to Construct a Municipal Water Supply Reservoir in Sangamon County, Illinois (Hunter Lake)**

Dear Ms. Carmack:

Enclosed please find the written response of the Board of Library Trustees of the Chatham Area Public Library District concerning the Draft Environmental Impact Statement (DEIS) for the proposed Hunter Lake project.

Please do not hesitate to contact me at (217) 483-2713 if you should have any questions or need additional information.

Sincerely,

Linda Meyer

Linda Meyer
Library Administrator

Enclosure
cc: Board of Library Trustees

1

WRITTEN COMMENTS OF THE BOARD OF LIBRARY TRUSTEES OF THE CHATHAM AREA PUBLIC LIBRARY DISTRICT ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE CITY OF SPRINGFIELD, ILLINOIS, TO CONSTRUCT A MUNICIPAL WATER SUPPLY RESERVOIR IN SANGAMON COUNTY, ILLINOIS (HUNTER LAKE)

The Board of Library Trustees of the Chatham Area Public Library District, Sangamon County, Illinois, appreciates the opportunity to submit the following public comments concerning the Draft Environmental Impact Statement (DEIS) for the proposed Hunter Lake project.

The library district has two major concerns regarding this proposed project: (i) the property tax loss to the library district, and (ii) the severance of contiguity of the library district.



## I. PROPERTY TAX LOSS

***The property tax loss projected in the DEIS for the library district is incorrect. The library district may experience a tax loss greater than the projections in the DEIS in the following areas: (a) total property tax receipts; (b) general obligation bonds; and (c) disconnection of territory from the library district.***

A. Section 4.1.1 (Socio-Economic Impacts) of the DEIS states that the library district is projected to suffer an annual tax loss of 3.04% of total property tax receipts. "An Assessment of the Economic and Social Impact of the Construction of Hunter Lake" prepared for the City of Springfield, Illinois by the Institute for Public Affairs, Sangamon State University, Springfield, Illinois, November, 1992 (hereinafter "1992 Hunter Lake Study"), states on page 3-7 that

> The Chatham Area Library District is projected to lose 5,826 acres of tax base, with an assessed valuation of about $2.0 million. The district's total assessed valuation is $65.4 million. * * * The district is projected to lose an estimated $3,000 in property taxes, representing about three percent of its property taxes and two percent of its total budget. The district's total budget is estimated at $123,000, of which property taxes represent 80 percent of the total.

For the fiscal year ending June 30, 1998, the library district's assessed valuation as calculated by the Sangamon County Clerk's Office has increased to $169.1 million (not the $65.4 million contained in the 1992 study). For that same fiscal year ending June 30, 1998, the library district extended property taxes in the amount of $402,282.23, and the library district's total budget was $450,881.00. Utilizing the 1992 Hunter Lake Study's projected tax loss of 3.04% (which, incidentally, the library district believes is a very conservative number), the annual loss to the library district would total $12,229.37 (not $3,000 as contained in the 1992 Hunter Lake Study).

| | 1992 Hunter Lake Study | Fiscal Year 1998 |
|---|---|---|
| District EAV | $ 65.4 Million | $ 169.1 Million |
| Property Taxes | $ 98,600.00 | $ 402,282.23 |
| Total Budget | $ 122,900.00 | $ 450,881.00 |
| 3.04% Loss | $ 3,000.00 | $ 12,229.37 |

A-37

However, a current analysis of four (4) randomly-selected parcels of real property (two improved residential parcels and two vacant farmland parcels ) within the project area reflects an average increase in the tax amount of 36.3% for the period of the 1992 Hunter Lake Study through December 31, 1997. When multiplying the projected $12,229.37 tax loss times 1.363, the projected tax loss to the library district is increased even more to $16,668.63.

| | |
|---|---|
| Farmland | 27.8% |
| Farmland | 41.0% |
| Residential | 40.2% |
| Residential | 36.2% |
| | 36.3% Average increase (1992 - 1997) |

The 1992 Hunter Lake Study further states on page 3-1 that

> A property tax revenue loss analysis was performed on the property within each taxing authority to determine the economic impact of the proposed lake project. Tax records were analyzed by tax codes and tax identification numbers to determine the assessed valuation and the taxes paid to each taxing authority. The assessed valuation and taxes paid were developed through records provided by CWLP [Springfield's public utility].

Other than the above blanket assertion, the library district is unclear that the removal of 5.826 acres from the tax rolls will only amount to a $3,000.00 loss in property tax revenue to the library district (i.e., the study's projected tax loss of 3.04% or $.51 per acre), and the library district would like to receive verification of that figure, as well as additional time to respond to the information once it is provided. Incidentally, since all of the property is still on the tax rolls, the library district believes that a current tax analysis should be performed to determine the exact amount of tax loss prior to the issuance of any permit for the construction of the lake.

Incidentally, Section 15-60 of the Illinois Property Tax Code (35 ILCS 200/15-60) provides that property owned by the City of Springfield is exempt from taxation if it falls within at least one of the following classifications:

(i) the property is being held for future expansion or development, except if leased for use for other than public purposes;

(ii) the property is located within the city's corporate limits, except leased land where a lessee has agreed under the terms of the lease to pay taxes;

(iii) the property is located outside of the city's corporate limits and used exclusively for municipal or public purposes.



**B.** A collateral issue of property tax loss involves the loss of revenue to retire $1.6 million of General Obligation Bonds that were authorized to be issued by the library district during 1994. The bonds are being retired over 20 years. The 1992 Hunter Lake Study states on page 3-2 that "[i]f the lake is constructed, only the property identified in Table 1 [7,717 total acres] will be removed from the tax rolls and will no longer generate property tax receipts for the various taxing authorities. Since the property acquired by the City of Springfield for Hunter Lake is or will be removed from the tax rolls as tax exempt property, the proportionate share of the debt service on the G.O. Bonds currently being levied against those property owners will be shifted to the remaining property owners of the library district to pay.

C. However, what is of even greater concern to the library district is a provision of Illinois law that provides that whenever real property is annexed to the City of Springfield (which provides its own municipal library), then the annexed territory is disconnected from the Chatham Area Public Library District by operation of law. Section 15-85 of the Illinois Public Library District Act of 1991 (75 ILCS 16/15-85) provides in pertinent part that "[a]ny territory within a public library district that is or has been annexed to a municipality (where that municipality maintains a public library) is, by operation of law, disconnected from the public library district as of the January first next after the territory is annexed." Even though the 1992 Hunter Lake Study states on page 3-2 that "[a]ccording to CWLP officials, the City of Springfield has no plans to annex PLA property at this time ... the severed properties will remain within the current, respective taxing districts", the library district believes, and there appears to be nothing in the DEIS to the contrary, that many of the areas adjacent to the proposed Hunter Lake project area will in fact eventually be developed and subsequently annexed to the City of Springfield, resulting in even greater tax loss to the library district. (Emphasis added.)

A-39

The 1992 Hunter Lake Study states on page 3-2 that "[s]hould the lake be built, some taxing authorities may choose to increase the assessed valuation and/or property tax rates in their districts." However, the library district has no authority to increase its overall assessed valuation without frontdoor referendum approval, and the imposition of "tax caps" has actually decreased the library district's overall tax rates each year.

Section 4.1.1 (Socio-Economic Impacts) of the DEIS further states that although the library district will see a loss in property taxes, "[l]ess services would need to be provided to the project area". The library district contends that this claim would be true only if the project area is not annexed to the City of Springfield and adjacent areas are not developed. Under the doctrine of reciprocity among library systems, residents of the City of Springfield may use their municipal library privileges to utilize services provided by the Chatham Area Public Library District. As a matter of fact, more Springfield residents use the services of the Chatham library district today than library district residents use the Springfield municipal library.

In addition, the property adjacent to the existing Lake Springfield is currently developed with residential properties and the library district assumes that public pressure will eventually force the development of the areas adjacent to the proposed Hunter Lake. Residents of this development will then be residents of the City of Springfield, will pay property taxes to the City of Springfield, and yet will be able to access the services of the Chatham library district under the doctrine of reciprocity without making any financial contribution to the library district. Therefore, the statement in the DEIS that "less services would need to be provided to the project area" is questionable, and the library district would suffer additional losses that have not been adequately examined in the DEIS.

In LaSalle National Trust, N.A. v. Village of Mettawa, 616 N.E.2d 1297 (2nd Dist. 1993), the court found that a municipality would likely suffer some loss of tax revenue in the future as the result of a disconnection of property because it would no longer receive taxes generated by the disconnected property and that tax loss, by itself, was not necessarily sufficient to bar the disconnection; rather, the determination of whether the loss of tax revenue in the future due to the disconnection would "unduly harm" the municipality may take into account the availability of another source of revenue to replace the lost revenue, and may also consider the current and prospective overall financial condition of the municipality.

A-40

## II. SEVERANCE OF CONTIGUITY

***The issue of contiguity of the Chatham Area Public Library District has not been adequately addressed in the DEIS.***

The "Socio-Economic Impact Evaluation of Hunter Lake" dated June, 1992 prepared by the Springfield-Sangamon County Regional Planning Commission states on page 22 that

> While no physical relocation of library facilities will be required, the severance of the Chatham [library] district is a concern. The [Springfield] City Corporation Counsel's legal opinion on the severance of the Pawnee Fire Protection District by the lake was that the severed portion would remain as part of that district. If this situation has the same legal finding, the Chatham Library District will incur negligible effects from lake construction.



1

On April 29. 1999. the library district asked the corporation counsel for the City of Springfield to provide a copy of its 1992 legal opinion concerning the issue of severance of contiguity of the library district. That legal opinion apparently concludes that the construction of Hunter Lake will not cause a severance of contiguity of the library district. To date. the City of Springfield has never provided a copy of that legal opinion to the library district. The library district would like to receive a copy of that legal opinion, as well as additional time to respond to the document once it is provided. Until the library district is provided with the requested legal opinion from the City of Springfield and is given an opportunity to review the contiguity issue further. the DEIS is inadequate as to this issue.

Two branches of Hunter Lake. as proposed, will separate the library district into three areas. The only connection between the severed areas will be County Road 40 in Ball and Cotton Hill Townships of Sangamon County. At one point. County Highway 40 (East-West) will intersect County Highway 28 (North-South).

A-41

In People ex. rel Freeport Fire Protection District , Stephenson County v. City of Freeport, 374 N.E.D. 479 (2nd Dist. 1978), the court found that required contiguity for annexation was absent where there was no physical touching of the lands involved. only contact was through a public highway and such was not by a parallel highway but by extension of two intersecting highways. one of which adjoined present city lands only on its South boundary and other of which adjoined the property only on its east boundary, common boundary in either direction was less than 100 feet and such contact was brought about only by extension of the width of the two intersecting highways.

The library district recognizes the need to differentiate municipal "ownership" of property and municipal "annexation" of property. For instance, the City of Springfield will own the Hunter Lake property. However. mere "ownership" of the property will not destroy the library district's contiguity as it currently exists. It is unknown at this time whether the City of Springfield will annex this property to the City of Springfield. The 1992 Hunter Lake Study states on page 3-2 that "**[a]ccording to CWLP officials, the City of Springfield has no plans to annex PLA**

**property at this time ... the severed properties will remain within the current, respective taxing districts**". (Emphasis added). But if the City of Springfield does subsequently annex the property, then that property will become a part of the City of Springfield, effectively severing the library district's contiguity. See specifically Section 15-85 of the Illinois Public Library District Act of 1991 (75 ILCS 16/15-85) which provides in pertinent part that "[a]ny territory within a public library district that is or has been annexed to a municipality (where that municipality maintains a public library) is, by operation of law, disconnected from the public library district as of the January first next after the territory is annexed."

## III. REQUESTED RELIEF

1. The library district is unclear how the projected tax loss of 3.04% was determined, and the library district would like to receive verification of that figure, as well as additional time to respond to the information once it is provided. 1

2. The library district would like to receive a copy of the City of Springfield's legal opinion concerning the severance of contiguity, as well as additional time to respond to the document once it is provided. 2

3. As a condition for the issuance of a permit to construct Hunter Lake, the City of Springfield should be required to continue to pay its proportionate share of the debt service on the library district's outstanding general obligation bonds until paid. 3

4. As a condition for the issuance of a permit to construct Hunter Lake, the City of Springfield should not be allowed to annex any of the project territory or, in the alternative, the City of Springfield should be required to pay an annual amount based upon the then existing assessed value and applicable library district tax rate to the library district for any property owned by the City of Springfield within the project area that is annexed by the City of Springfield or removed from the tax rolls as tax-exempt property. 4





L2.
Chatham Area Public Library District
600 East Spruce Street
Chatham, IL 62629
5/24/99

*1. The property tax impact the District derived for 1998 ($12,229.37) was estimated by applying 3.04% (the DEIS figure) against the total Fiscal Year 1998 taxes collected by the District. However, the DEIS percentage was arrived at by applying estimated taxes for the District in FY 1991 and property taxes billed for the project area. The City owns 7078 acres in the project area thus far and total property taxes for 1998 payable in 1999 for the District was less then $5,000 versus $3,000 in 1991. While this is an increase, the actual impact is now less than 1.25% (versus 3.04%) of the District's property tax receipts. So while gross taxes lost would be higher now, the impact is only a slight portion of the $450,000+ in property tax receipts collected by the District. Additionally, according to the District's comments, there has been dramatic growth in the District's EAV in seven years which should help it to overcome this tax revenue loss.

*2. The applicant has indicated that the legal opinion on the issue of severance was given orally by the City's Office of Corporation Counsel to the Springfield-Sangamon County Planning Commission and does not exist in written form. Mere construction of the project would not cause a disconnection. It would result in the project area being exempt from property taxes. A disconnection would only occur if the property was annexed by the City. This could create a severance of the District where eastern portions of the District would no longer be contiguous. However, state law provides a remedy by which the District could petition the circuit court to prevent disconnection by operation of law 75 ILCS 16/15-85. The issues of noncontiguity and adequacy of service are matters that can be heard by the court, and the statute provides a variety of remedies the court can impose including denial of disconnection.

*3. The District appears to tax separately for G.O. Bonds. The applicant estimates that the project area contributes approximately $2000 per year to these taxes. The overall growth in value in the District's tax base, as noted in the first part of their letter, should help to offset this revenue loss.

*4, 5. The project area within the District is entirely rural. At the present time there is no water or sewer infrastructure to support any urbanization. The applicant has indicated no plans for such services to be extended in the foreseeable future. The City has committed to no development of the project marginal land and has declared that this land be a conservation area. Without such infrastructure, opportunities for development of any significance in the adjacent properties to the project area are limited, and the applicant has indicated they would oppose such development.

The Corps of Engineers has no jurisdiction to direct annexation issues regarding any municipal growth or to direct the City to pay property taxes to the District as a permit term. The issue of tax liability is a matter of state law and legislative policy. The remedies available as stated above are adequate to address the issues in these instances.

5. As a condition for the issuance of a permit to construct Hunter Lake, the City of Springfield, for any real property that is developed adjacent to the project area and subsequently annexed by the City of Springfield, should then be required to pay over to the library district annually an amount of the property taxes on this developed property equal to the then existing assessed value and applicable library district tax rate. 5

We, the members of the Board of Library Trustees of the Chatham Area Public Library District, appreciate the opportunity to respond to the Draft Environmental Impact Statement concerning the proposed Hunter Lake project in Sangamon County, Illinois. Please do not hesitate to contact Linda Meyer, Library Administrator, at (217) 483-2713 if you should have any questions or need additional information.

Respectfully submitted,

Board of Library Trustees
Chatham Area Public Library District

By: Linda Meyer
Linda Meyer
Library Administrator

Dated: May 28, 1999

A-43

1

L3

*Sangamon County Soil and Water Conservation District*
**40 Adloff Lane, Suite 7**
**Springfield, IL 62703**

May 26, 1999

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Environmental Analysis Branch [Charlene Carmack]
Clock Tower Building, P.O. Box 2004
Rock Island, IL 61204-2004

Dear Colonel Mudd,

I appreciate the opportunity to comment regarding the City of Springfield's request for a permit for Hunter Lake.

A-44

Our Conservation District has had a long and mutually beneficial working relationship with Springfield City Water, Light and Power involving the implementation of practices to conserve soil and protect the water quality of Lake Springfield. CWLP has provided cost-share funding for conservation structures, a no-till planter for demonstration purposes, and a no-till drill capable of seeding all types of grasses which was used through out the county. The city is also a partner in a Best Management Practices research project that we are conducting to learn where the water quality problems of the watershed stem from on a site specific basis and to provide assistance in addressing those issues. If the city is successful in obtaining this permit , we also expect to be involved in the planning and implementation of conservation and water quality measures for Hunter Lake not only by the district, but also with our sub-entity - the Lake Springfield Watershed Resource Planning Committee.

As a general rule, the district is not in favor of any project which permanently removes the limited supply of farmland from existence. However due to the nature of the typography for Hunter Lake, the land that would be removed is generally not prime farmland. However as a safeguard for the future, we believe that it should be agreed as part of this permit that any land that the city owns or controls that would be adjacent to this lake must permanently retain its current agricultural status, unless it is converted to an even more natural conservation setting, the intent being to forever forbid commercial or residential development

1

L3.
Sangamon County Soil and Water Conservation District
40 Adloff Lane, Suite 7
Springfield, IL 62703
5/26/99

*1. As noted in Section 4.1.3. of the DEIS and FEIS, the Springfield City Council has committed by ordinance to protect the City-owned marginal lands around Hunter Lake from residential or commercial development. Section 4.1.9 of the FEIS outlines the applicant's proposed mitigation plan which would involve conversion of croplands in the marginal areas to forest or grassland cover.

1

Additionally, if the proper conservation measures were utilized, this project might actually benefit the local environment as compared to the current situation. We also feel that all public entities need to be as economically prudent as possible, and it is apparent that Hunter Lake is the least costly alternative.

If Hunter Lake is constructed, a unique opportunity will exist to be proactive and perform conservation measures at the time instead of on a remedial basis while always chasing a problem. It has become apparent that the agricultural community is not going to provide the level of conservation needed from a reduction in soil tillage on a voluntary basis. In fact, the tide is flowing backwards in regard to progress in this area. Therefore, the district would like to see retention and other appropriate permanent structures used wherever possible, and also reparian buffers or grass filterstrips utilized along all the tributaries of the lake, possibly in conjunction with the purchase of permanent easements along the streams. Additionally, the Lake Springfield Watershed Resource Planning Committee could be broadened to encompass the appropriate issues and provide public input for both lakes. 2

We feel that generous funding for soil conservation and water quality protection should be mandated in the construction budget, as well as appropriate levels for the maintenance and improvement of these practices for future years. 3

In summary, we support the request for the permit by the City of Springfield with the stipulation that all opportunities for conservation measures, water quality protection, and farmland preservation are given just consideration and are addressed.

Sincerely,



John C. Greene
Chairman

A-45

*2. Measures proposed by the applicant for mitigation of wetland and other natural resources to be implemented within the Hunter Lake property boundary are described in Section 4.1.9 of the FEIS. These measures also would contribute to reducing soil erosion, protecting water quality, and preserving storage capacity within the reservoir. A discussion of anticipated and proposed resource protection planning needs within the larger watershed are included in Section 4.1.6.2 of the FEIS. Watershed management is always a work in progress. Any implication that a watershed plan could be fully implemented prior to construction would be misleading. Should the Corps issue a permit for construction of Hunter Lake, a watershed committee could be established by the applicant early in the planning stages prior to construction. Resource priorities are realized upon receiving input from the participants, and plans are made to accomplish identified goals. Ultimately, the management takes place on the private watershed lands as the grass roots committee's ideas are accepted and implemented by the landowners and farm operators in the watershed. Implementation of such a plan is an ongoing effort.

*3. Section 2.3.1.3 of the DEIS and FEIS describes the applicant's anticipated project land and watershed management activities. The estimated annual maintenance cost of $455,000 shown in Table 2.3.1.2 of the DEIS and FEIS should reflect anticipated expenditures for these activities.

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L4

# *VILLAGE OF PAWNEE*

617 SEVENTH STREET P.O. BOX 560
PAWNEE, ILLINOIS 62558

MAYOR'S OFFICE (217) 625-2951 • UTILITY OFFICE (217) 625-2941 • FAX NO. (217) 625-7729

June 8, 1999

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Charlene Carmack - Environmental Analysis Branch
Clock Tower Building
PO Box 2004
Rock Island, Illinois 61204-2004

Dear Ms. Carmack:

As Village President of Pawnee, my concerns are few and simple.

A-46

Will there be any negative effects on our sanitary and storm sewer system, our flood plains and our schools athletic fields? 1

We have worked hard on all of these and would truly hate to lose ground and start over.

Sincerely,

Kenton D. Manning
Village President
Pawnee, Illinois

KENTON D. MANNING, *MAYOR* ELAINE SUE BROOKMAN, *CLERK* GLENN SMITH, *TREASURER*
*BOARD OF TRUSTEES:* WILLIAM K. BROOKMAN LUTHER W. LOVELACE JOETTE M. MANNING
BILLY J. MILLER EMERSON RODERICK TERRY WOODCOCK
*VILLAGE ATTORNEY:* JOHN MYERS

L4.
Village of Pawnee
617 Seventh Street
P.O Box 560
Pawnee, IL 62558
6/8/99

1. As stated in Section 4.1.14 of the DEIS and FEIS, construction of Hunter Lake would impact three wastewater treatment plants that discharge into the Hunter Lake watershed, one of these being the Pawnee Sewage Treatment Plant (STP). The cost of relocating the Pawnee, Divernon, and Virden-East STP is included as part of the Hunter Lake project costs displayed in Table 2.3.1.1 of the DEIS and FEIS. As stated in Section 4.1.7 of the DEIS and FEIS, modeling of the 100-year flood event has identified approximately 142 acres upstream of Hunter Lake for which the applicant would be required to purchase flood easements, if a permit is issued for the project.

1

N1

3682 New City Rd
Pawnee, IL 62558
April 19, 1999

District Engineer
US Army Engineer District, Rock Island
ATTN: Environmental Analysis Branch
Charlene Carmack
Clock Tower Building - PO Box 2004
Rock Island, Illinois 61204-2004

**Re: Hunter Lake Proposal**

Dear Ms. Carmack,

Instead of a new lake I endorse the alternative of Water Conservation. According to the Corps' Draft Statement, the conservation option was an "Alternative Eliminated From Detailed Analysis" by CWLP. However, even the limited analysis that was done by CWLP is very revealing. It studied 11 conservation measures (A-L). These included: A. Voluntary Plumbing Retrofit Program, B. Residential Turf Incentives, C. New Commercial and Industrial Turf Area Restriction, D. Direct Contact Water Audit for Nonresidential Customers With High Water Use, E. Voluntary Residential Home Water Audit, F. Public Education/Public Information Program, G. Outdoor Water Use Management Program, H. Water Conserving Fixture Ordinance, I. Ultralow-Flush Toilet Rebate Program, (No J is listed), K. Water Price Increase, L. Watering Time Restrictions.

Ordinances in relation to Measures A and H have been enacted by the City of Springfield already, but Measure A was implemented only for the years 1988 - 1989 and Measure H has not received the kind of continuous publicity over time that it would need to be effective. Though CWLP mentions the beneficial nature of the other conservation measures in passing, it has never chosen to implement any of them voluntarily. It might never do so unless conservation was its only option. It concludes its findings to the Corps on water conservation by saying, "Conservation measures are not adequate to offset demand sufficiently to meet existing drought requirements for Springfield... Water conservation can offset only a small portion of the projected demand. Springfield does not consider conservation as a viable alternative to supply augmentation."

I challenge the assumptions upon which CWLP bases this conclusion. Firstly, CWLP assumes unrestricted development as a given. In explaining their heightened "Water Demand Forecasts," they say, "Development within Springfield and surrounding communities served by the CWLP has increased significantly in recent years." There is no attempt to question this unregulated development in itself as being one of the roots of the problem. Instead it is accepted as a given and future projections are made accordingly.

1

A-47

**Non-Governmental Organizations**

N1.
Ron Sakolsky
Help Our Park Endure (HOPE)
3682 New City Road
Pawnee, IL 62558
4/19/99

1. As stated in Section 2.2.7 of the DEIS and FEIS, the total effectiveness of implementing the remaining conservation measures (B, C, D, E, F, G, I, K, and L) is approximately 0.65 mgd. The applicant's stated purpose and need is to augment the existing water supply system to withstand a severe drought (100-year recurrence probability, 18-month duration). Implementation of these remaining measures would fall far short of eliminating the projected deficit of the existing system in meeting the 100-year, 18-month drought demand. Water conservation measures are not considered a feasible alternative to meet the purpose and need of the proposed action.

1

If the City of Springfield took a proactive stance against unrestricted development as being environmentally unsound rather than subsidizing it, we would not be entertaining the need for a new lake in the first place. Instead, we as citizens are encouraged by CWLP to blame ourselves for what are really the poor planning decisions of our elected officials and those vested real estate and banking interests that lobby against development-related conservation measures behind the scenes.

In relation to Measure D, "Direct Contact Water Audit For Nonresidential Customers With High Water Use," CWLP does not provide us with "cost-benefit ratios" based upon "site specific" data. This is not because they cannot do them, it is because they have *refused* to do them. Yet they do note in relation to Measure D, "Its high social acceptability indicates that its inclusion in the comprehensive program could alleviate 'fairness' concerns among the general public and perhaps lead to greater public support and participation for other water conservation measures." In other words, because of its emphasis on equity, the implementation of Measure D could cause the public to more fully endorse the other conservation measures while at the same time, augmenting our present water supply. I conclude that our public priorities must be environmental rather than business-oriented and instead of a blaming the victim approach I demand equity in the impact of any conservation measures.

In short, CWLP's estimate that water conservation measures will not meet the city's future water needs are not based on objective truth, but are instead biased, shortsighted and misleading. I therefore support the Water Conservation option that CWLP simply dismissed out of hand. At the very least, I ask that no permit be granted until CWLP does new conservation estimates based upon site-specific audits of the present water usage of its corporate and other non-residential customers.

Sincerely,

Ron Sakolsky

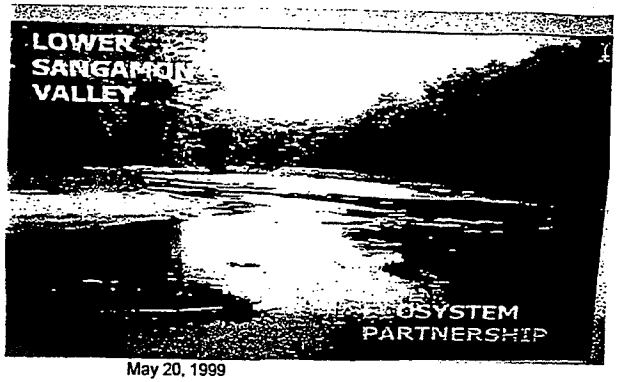
Ron Sakolsky
Founding Member, Help Our Park Endure (HOPE)



2

2. As stated in Table 2.2.7.2 of the DEIS and FEIS, the effectiveness of implementing this specific conservation measure is approximately 0.54 mgd in year 2025. This represents approximately 1.0% of the Year 2025 projected nonresidential (commercial/institutional and industrial) water demand and approximately 0.25% of the projected total treated water demand in Year 2025, as shown in Table 1.2.3.1 of the FEIS.

1




N2

Robert Woodruff
Lower Sangamon Valley Partnership
40 Adloff Lane, Suite # 7
Springfield, Illinois 62703

May 20, 1999

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Environmental Analysis Branch ( Charlene Carmack)
Clock Tower Building – P.O. Box 2004
Rock Island, Illinois 61204-2004
Telephone: 309/794-5570

Dear Sir or Madam:

The Lower Sangamon Valley Ecosystem Partnership understands the concerns with the current source of additional water coming from the South Fork Creek. This source if contaminated by pollutants is being pumped too close to the intake of the water treatment plant. This source also has the potential to dry up during a drought year. The Hunter Lake could clearly be a better source for local drinking water.

We at the Partnership have two major concerns of the Hunter Lake Project. The first major concern is the protection of the lake from non-source point pollutants and sediments. Certain Best Management Practices need to be in place before construction begins to insure its integrity. We feel that a Comprehensive Resource Plan be in place before construction can begin. This plan should be approved by resource management agencies like IDNR, IEPA, NRCS, and the local SWCD. This plan should allow ample time to establish these practices so they are at optimum performance. We have seen no such plan or budget. What assurance do we have that this plan will be implemented? Managers need to be assigned to the implementation of this comprehensive resource management plan. Accountable steps need to be insured at each stage of its development. 1

The second concern is the woodland acres being displaced. While we understand that the quality of these woodland ecosystems is not the best, the number of acres being replace is way short to maintain the habitat that will survive the construction. It is our hope that it is in the city's plan to apply for easements on ground that surrounds the new lake. A land owner easement from IDNR, IEPA, or NRCS Riparian Buffers for example could benefit all parties at hand, as well as Hunter Lake. The ground that has been purchased to date we feel falls short in many places around the new lake. 2

Sincerely,

Robert Woodruff

Lower Sangamon Valley Partnership Council Member



N2.
Robert Woodruff
Lower Sangamon Valley Ecosystem Partnership
40 Adloff Lane, Suite 7
Springfield, IL 62703
5/20/99

1. Measures proposed by the applicant for mitigation of wetland and other natural resources to be implemented within the Hunter Lake property boundary are described in Section 4.1.9 of the FEIS. These measures also would contribute to reducing soil erosion, protecting water quality, and preserving storage capacity within the reservoir. A discussion of anticipated and proposed resource protection planning needs within the larger watershed are included in Section 4.1.6.2 of the FEIS. Watershed management is always a work in progress. Any implication that a watershed plan could be fully implemented prior to construction would be misleading. Should the Corps issue a permit for construction of Hunter Lake, a watershed committee could be established by the applicant early in the planning stages prior to construction. Resource priorities are realized upon receiving input from the participants, and plans are made to accomplish identified goals. Ultimately, the management takes place on the private watershed lands as the grass roots committee's ideas are accepted and implemented by the landowners and farm operators in the watershed. Implementation of such a plan is an ongoing effort.

2. The City of Springfield will own the entire lake shoreline. Approximately 4,785 acres of marginal lands have been acquired or are planned for acquisition by the applicant if a permit is issued for Hunter Lake. A revised mitigation plan for wetland and other natural resource impacts has been developed by the applicant. This plan is described in Section 4.1.9 of the FEIS. This proposed mitigation plan involves conversion of all croplands in the City-owned marginal lands to grassland or forest cover types.

N3

The Chamber
THE GREATER SPRINGFIELD CHAMBER OF COMMERCE

May 24, 1999

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Environmental Analysis Branch
(Charlene Carmack)
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004

Ladies & Gentlemen:

A-50

The Infrastructure Committee, the Agribusiness Committee, and the Board of Directors of The Greater Springfield Chamber of Commerce have reviewed the Draft Environmental Impact Statement for Hunter Lake.

We find the DEIS to be thorough and accurate. We concur with the conclusion that construction of Hunter Lake is the best alternative available for supplementing the water supply requirements of Springfield and environs. We also believe that the City of Springfield has proposed practical and proactive strategies to minimize and mitigate negative environmental impacts of the construction. 1

We urge the Corps of Engineers to issue the proposed permit to enable expeditious implementation of this most important project.

Your questions are welcome and we appreciate your consideration of this input.

J. Michael Houston
Chairman of the Board

Michael P. Boer
President & CEO

CC: Hon. Karen Hasara
Phil Gonet

3 SOUTH OLD STATE CAPITOL PLAZA • SPRINGFIELD, ILLINOIS 62701-1593 • 217.525.1173 • FAX 217.525.8768

N3.
Michael P. Boer
Greater Springfield Chamber of Commerce
3 South Old State Capitol Plaza
Springfield, IL 62701-1593
5/24/99

1. Hunter Lake is identified in the DEIS as the applicant's preferred alternative and the DEIS makes no conclusion as to its feasibility relative to other feasible alternatives identified in the document.

1

N4

May 28, 1999

District Engineer
U.S. Army Engineer District, Rock Island
Attn: Environmental Analysis Branch (Charlene Carmack)
Clock Tower Building – P.O. Box 2004
Rock Island, Illinois 61204-2004

Subject: City of Springfield, Illinois Permit Application Number 187020

Dear Sir & Madam:

On behalf of Citizens For Sensible Water Use we request your consideration of the following comments, requests for corrections and requests for further information to be incorporated into a revised version of the above Applicant's Hunter Lake Draft Environmental Impact Statement of April, 1999.

**Section 1.2.3 Water Demand Forecasts**

On page 1-5 and in Figure 1.2.1 we wish to bring to your attention that Salisbury township residents located west of the Sangamon river acquire water from the Pleasant Plains Water District, the Curran-Gardner Water District, or private wells - not from Springfield. Both water supply systems are wells in the Sangamon River acquifer downstream from Springfield. Water demand growth in this area will not impact Springfield's supply. 1

On page 1-6 the fact that the Springfield – MAIN computer model was accurate to within 2 percent of City Water Light & Power (CWLP) historical records in backcast modeling does not mean it is accurate in forecasting future water demand. The model was adjusted only for voluntary conservation measures recommended in 1992. The water efficiency standards established by the federal Energy Act of 1992 requires nearly all indoor water appliances to be manufactured from January 1, 1994 on to save significant amounts of water (see page 167 of USEPA Water Conservation Plan Guidelines, August 6, 1998). All new residential, office and commercial construction will contain the efficient devices that are estimated to save 31 percent per capita per day of total indoor water use (see page 163, IBID). In addition, all remodeling of existing bathrooms and kitchens will use the efficient appliances. Therefore, indoor water demand will decrease per capita resulting in less total water demand even with a 2

A-51

N4.
Donald D. Davis
Citizens for Sensible Water Use
6363 Stagecoach Road
Pleasant Plains, IL 62677
5/28/99

*1. Water demand forecasts are based on estimates of growth in population and projected areas of expansion. The last census data for Salisbury Township showed 591 people – less than one half of one percent of the total population of the existing service area plus the 12-township projected expansion area. Inclusion of the entire 12-township projected expansion area (Salisbury plus the other 11 townships) in demand projections raises the estimated total water demand by 1.7 mgd. Additionally, since the current water demand projections were developed, the City of Springfield and, hence, its customer base has expanded into Curran and Gardener Townships which were not included in the original 12-township design. Springfield's expansion on its west side already overlaps the Curran-Gardener Water District and new subdivisions utilize the Springfield water supply. Springfield and Curran-Gardener Water District are presently connected for mutual aid during emergency conditions.

2. Base treated water demand forecasts shown in Table 1.2.3.1 and Figure 1.2.3.1 of the DEIS were adjusted to incorporate projected water savings of conservation measures already enacted by the City of Springfield (Measures A and H listed in Section 2.2.7 of the DEIS). While Measure A may be considered a voluntary program, Measure H (Water-Conserving Fixture Ordinance) was enacted by the City in 1990. Water savings projections for these and other conservation measures (all described in Section 2.2.7 of the DEIS) were based on reduction factors and coverage estimates developed for the Springfield area. Based on U.S. Census Bureau population projections of 138,080 for 2000 and 154,914 for 2025, future estimates of treated water demand as shown in Table 1.2.3.1 of the DEIS reflect a projected per capita decrease of approximately 4% over the 25-year period.

The referenced 1998 USEPA report states that estimates such as the 31% reduction in water use (for 6 types of indoor water-using fixtures, plus leaks) are provided for illustrative purposes only and may not be applicable to a given situation. The effectiveness of a specific conservation measure is a product of three factors: percent of reduction in use (e.g., the 31%), coverage (extent of implementation in the applicable water use sector), and the unrestricted water use for the sector to which the reduction is applied (the amount that would be used without conservation). The blanket application of a 31% reduction in estimating the effectiveness of this measure to reduce total treated water demand does not account for the latter two factors.

1

moderate increase in CWLP's service population. The U.S. Geological Survey recently reported that

> ... despite a growing population, Americans are using 2 percent less water than they did in 1990. [Total] freshwater per-capita use dropped from 1,340 gallons a day in 1990 to 1,280 gallon a day in 1995. Scientific American, December 1998, page28.

Therefore, we request adjustment of the Springfield –MAIN computer model and water demand forecasts displayed in Table 1.2.3.1 to incorporate the water savings generated by both the efficiency standards of the Energy Policy Act of 1992 and the switch to front-loading horizontal axis domestic clothes washers that use about 40 percent less water than top-loading vertical axis models.

On page 1-7 the use of 10.0 million gallons per day (mgd) for sluice water demand and the 4.6 mgd for forced evaporation in the 2025 severe drought analysis is unrealistic and misleading. Peak power generation is or soon will be met with gas turbine generators and photovoltaic panels. Both require no water for ash sluicing or forced evaporation of surface water. Since CWLP already generates electricity to be sold during peak demand, and the decision to build more water-cooled, coal-fired generators on Lake Springfield is unlikely, it is unrealistic to project raw water demand for coal-fired generation above present levels of 8.6 mgd and 2.2 mgd. Therefore, we request the values of 10.0 mgd sluice water demand and 4.6 mgd forced evaporation be removed from the Total Water Demand analysis and Table 1.2.3.2 values be revised accordingly. 3

**Section 2.2.7 Water Conservation**

On page 2-14 in Table 2.2.7.2, measures A and H are now mandatory nationwide due to the Energy Policy Act of 1992. Measure I is also being phased in as a result of this federal legislation. Therefore, as requested above, the Springfield-MAIN model and its projections in Table 1.2.3.2 must be revised accordingly. We also request correction of the text in Section 2.2.7 to include the effects of the Energy Policy Act of 1992 and the water efficiency planning measures presented in the USEPA Water Conservation Plan Guidelines August 6, 1998 (WCPG). 4

The Effectiveness (mgd) values displayed in Table 2.2.7.2 are not credible. According to figure 1.2.3.1, indoor water use, which is essential water use, currently amounts to about 20 mgd. With the phase in of the January 1, 1994 national water appliance standards, USEPA in its WCPG suggests a 31 percent per capita per day reduction in indoor water use is probable. This 5



*3. The data in the DEIS recognized and is based upon a doubling in electric power generation capacity with a much smaller percentage increase in estimated water use. The DEIS recognized a possible decrease in water demand for ash sluice. The applicant presently estimates that 1 to 3 of its coal units will still be in operation at the end of the planning period used for this project. The "peak power units" referred to in the comment are used infrequently. USEPA defines a peaking unit as something that operates less than 10% of the year. The City's coal plants are not units that would be considered "peaking" units. The potential future technology referred to in the comment would not replace these units. The applicant's projection would require the City to install additional generating capacity to meet its baseload, which would either be a clean coal technology or a combined cycle technology. Both of these types of units would have raw water and cooling water demands. Additionally, gas turbine peaking generators do have their own water requirements. Water injection is utilized on the City's newest gas turbine, and output efficiency is enhanced by a water-based wet compression system. The water used by the City's Interstate gas turbine is 60,000-110,000 gallons per day, depending upon whether the wet compression system is in operation. For these reasons, increased values for forced evaporation and sluicing were incorporated into water demand figures for the year 2025.

4. See response to comment #2 above.

5. The values presented in Table 1.2.3.1 and Figure 1.2.3.1 represent total treated water demand, which includes both indoor and outdoor water use for residential, commercial, industrial, unclassified, and wholesale sectors. The breakdown of use projections for each of these sectors is shown in a new Table 1.2.3.1 in the FEIS. The blanket application of a 31% reduction in use of indoor residential water fixtures and appliances in future projections of total treated water demand fails to consider other determining factors such as coverage and percentage of unrestricted water use, as noted in the response to comment #2 above.

1

corresponds to 16.5 years of population growth at the average annual rate of 1.9 per cent per year between 1990 and 1996, before (essential) indoor water use rises above the current 20 mgd.

The Effectiveness (mgd) and Benefit-Cost Ratios of Measures B, C, G, and L as displayed in Table 2.2.7.2 are not credible. On page 152 of WCPG, USEPA states:

> Outdoor water usage drives maximum-day demand, which in turn drives requirements for transmission and treatment facilities. Reducing outdoor usage can thus be a very effective conservation strategy. Outdoor water use can be reduced through efficiency-oriented landscaping principles.

We conclude that the Applicant has misused the Springfield-MAIN computer model to mislead the District Engineer and citizens of Springfield on the effectiveness and benefit-cost ratios of measures B, C, G, and L in an attempt to eliminate water use efficiency as a feasible water supply alternative. Table 2.2.7.2 is an example of the garbage-in/garbage-out error of computer modeling. Therefore, we request revision of Section 2.2.7 Water Conservation and other DEIS text to include the concepts and data analysis techniques presented in the USEPA Water Conservation Plan Guidelines August 6, 1998.

6

**Section 2.3.6 Havana Lowlands Well Field**

We expect there is potential merit in a use efficiency version of the Havana Lowlands Well Field (HLWF) for long term essential indoor water demand. It is quite possible this groundwater is directly potable without further treatment other than softening. Certainly use of sand filters and clarifiers currently needed to treat Lake Springfield raw water would not be needed if HLWF water is pumped directly into the CWLP plant instead of being dumped into the Lake. HLWF water as a supply is inherently more resistant to a prolonged drought when surface water supplies cannot recover from drawdown and evaporation. HLWF may also be more resistant to microbiological contamination than a surface water supply due to its isolation and vadose zone filtering of percolating surface water. The volume of HLWF water and its movement through the acquifer may provide sufficient dilution to be more resistant to agricultural fertilizer and pesticide pollution, a constant threat to surface water in the Springfield area. The HLWF alternative as noted in this DEIS is much less land intensive, thus allowing continued ecological and hydrological functioning of the Horse and Brush Creeks watershed. The 7,795 acres of land to be acquired for Lake II/Hunter Lake should be kept in tact to serve as a biophysical sink for

7



6. As stated in Section 1.2.3 of the DEIS and FEIS, the Springfield-MAIN computer model was developed by adapting the Corps' IWR-MAIN Water Use Forecasting System to local water use patterns. Effectiveness of each of the 11 conservation measures was evaluated taking into consideration the extent of coverage and unrestricted use in applicable sectors as well as the percent of reduction in use, as stated in the response to comment #2 above. The Corps has reviewed both the applicant's analyses of the effectiveness of identified conservation measures (PMCL 1992) and the USEPA's Water Conservation Plan Guidelines (WCPG) referenced in this comment. In its WCPG, USEPA explicitly states "These data are provided for illustrative purposes only and may not be current or applicable. To the extent practicable, planners should (use) regionally appropriate or system-specific assumptions and estimates." The Corps considers the applicant's use of the Springfield-MAIN model and water conservation effectiveness factors appropriate to develop demand forecasts that are neither unrealistically high nor low.

7. The current Section 404 permit application covers only the proposed construction of Hunter Lake. Should the Corps deny a permit for this activity, the lake could not be constructed. In the absence of any other Federal action involving Hunter Lake project lands currently owned by the applicant, the future disposition, use and management of these lands would be determined solely by the applicant.

1

carbon dioxide and other tropospheric gaseous matter emitted by CWLP's fossil-fueled electricity generation. Therefore we request the Applicant to perform a feasibility study and benefit/cost analysis including ecological function values of this water use efficiency version of the Havana Lowlands Well Field alternative. We further request the study perform the following at a minimum:

1. Project demand of metered water incorporating the following:
   (a) the efficiency effects of the 1992 Energy Policy Act;
   (b) the outdoor water use efficiency measures presented in the USEPA Water Conservation Plan Guidelines August 6, 1998; and
   (c) a 1.9 per cent average annual population growth rate in the CWLP service area to the year 2050.
2. Based on the above metered water demand projection, determine the size of the Havana Lowlands Well Field and transmission pipelines to the CWLP plant, to meet this essential water use demand.
3. Determine the operation & maintenance costs and capital costs avoided over the life of the supply by direct piping of this groundwater into the CWLP distribution system without use of the sandfilters, clarifiers, sludge sluicing facilities and other treatment processes required for raw surface water treatment.

For the foreseeable future we expect the prudent continued use of the South Fork Pump Station will meet the drought water supply needs of the City of Springfield and CWLP water customers with reasonable outdoor water demand management policy and procedures. Treated and pumped water is as much of a fossil energy product as electricity. The City of Springfield and other electric utilities have had electric power demand management policies and programs in place for a number of years. It is time for demand management to be applied to outdoor water use. 8

In summary, we find the Applicant's Draft Environmental Impact Statement to contain misleading water demand information based on computer-generated prevarications. This DEIS does not contain sufficient information of ecological benefit/cost values of the alternatives presented to make a wise choice. The analysis of water use efficiency as an alternative supply is as far from the truth as the Applicant's use of the Springfield-MAIN computer model could project. This DEIS grossly underestimates both the economic and ecological values of groundwater supply alternatives. 9



8. Yield estimates for the existing water supply system described in Section 1.2.4 and displayed in Table 1.2.4.1 of the DEIS and FEIS include use of the South Fork pumping station. These estimated yields are inadequate to meet projected demand during 100-year, 18-month drought conditions, as stated in Section 1.3 of the DEIS and FEIS.

9. The DEIS for Hunter Lake is the Corps of Engineer's document, not the applicant's. As the Federal agency having jurisdiction over the proposed Federal action, the Corps is responsible for preparation of the EIS and for the adequacy of its content. The Corps has required the applicant to furnish information required for the EIS, and has reviewed and evaluated the information furnished by the applicant and the applicant's consultants. The Corps considers the information in the DEIS to be accurate and adequate. 1

We look forward to receiving the Applicant's responses to our above requests for corrections, further information, and comments on the Hunter Lake Draft Environmental Impact Statement of April 1999.

This opportunity to comment of the City of Springfield, Illinois 404 Permit Application #187020 is appreciated.

Sincerely,

Donald D. Davis

Donald D. Davis
Citizens For Sensible Water Use
6363 stagecoach Road
Pleasant Plains, IL 62677

cc: file
Bruce Hannon, UIUC Department of Geography

N5

**Sierra Club**
Illinois Chapter

1 North LaSalle St., Suite 4242, Chicago, IL 60602
(312) 251-1680 • (312) 251-1780 (FAX)

May 28, 1999

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Environmental Analysis Branch (Charlene Carmack)
Clock Tower Building - P.O. Box 2004
Rock Island, IL 61204-2004

RE: DRAFT ENVIRONMENTAL IMPACT STATEMENT
PROPOSED NEW SUPPLEMENTAL WATER SUPPLY
RESERVOIR, SANGAMON COUNTY, ILLINOIS

Dear Ms. Carmack:

The Sierra Club, Illinois Chapter urges the Corps to deny the permit for placement of material in Horse Creek, Sangamon County, as part of the construction of a new reservoir to supplement existing municipal water supplies.

The Draft Environmental Impact Statement for this project does not adequately evaluate favorable alternatives to the proposed project, in particular increased water conservation programs in the City of Springfield. Such programs could eliminate the need for any supplemental water supply whatsoever. 1

It appears that substantial natural resources and waters of the United States would be destroyed or degraded by the proposed project. Significant wooded areas along Horse Creek and Brush Creek would be among the 7,000 acres inundated with water, destroying existing habitat for wildlife, and a considerable portion of the wooded areas remaining in Sangamon County. 2

We strongly urge the Corps to deny the permit for the proposed project and urge instead the development and implementation of effective water conservation measures in the City of Springfield.

Sincerely,

Jack Darin
State Field Representative

*One Earth, One Chance*
*This paper was recycled from 50-100% post-consumer waste using a chlorine-free bleaching process.*

A-56

N5.
Jack Darin
State Field Representative
Sierra Club Illinois Chapter
1 North LaSalle Street
Suite 4242
Chicago, IL 60602
5/28/99

1. Water conservation measures were evaluated and determined not feasible as an alternative to Hunter Lake on the basis of inadequate yield, as stated in Section 2.2.7 of the DEIS and FEIS.

2. Comment is noted. The environmental impacts of Hunter Lake are described in Section 4.1 of the DEIS and FEIS and displayed for comparative purposes with the impacts of other feasible alternatives in Table 4.1 of the DEIS and FEIS.

1

N6

# Save Old Springfield

A Non-Profit Historic Preservation Advocacy and Consulting Service
2617 Clifton Drive (217) 787-0939
Springfield, Illinois 62704 fax(217) 787-8269

June 9, 1999

Ms. Charlene Carmack
U. S. Army Corps of Engineers
Clocktower Building
P. O. Box 2004
Rock Island, IL 61204-2004

RE: Hunter Lake, Springfield, Illinois,
Draft Environmental Impact Statement

Dear Ms. Carmack:

I have read the referenced document and have the following comments relative to cultural resource issues.

A-57

Sections 3.1.3, 4.1.4, and Appendix C: Considering the historic and/or architectural significance of at least three of the sites discovered in the cultural resources survey conducted for the Illinois State Museum, it seems that giving the city the option to destroy them without providing for options other than marketing and recordation of those properties violates the spirit of Section 106 of the Historic Preservation Act of 1966. The sites are the Brunk family cemetery, the Pensacola Tavern (Site FRR 29) and the Meredith House (Site FRR 17). The draft programmatic agreement allows demolition of the last two should no recipient be found who is willing to move the structures, and other sources indicate that an undisclosed number of some of the oldest graves in the cemetery would be moved. While such measures may be ultimately necessary, other options should first be explored. 1

Both the Meredith House–a rare intact example in this part of Illinois of a Greek Revival residence–and the cemetery, perhaps the oldest in Sangamon County, would be relatively close to shore. Accordingly, the feasibility of constructing protective levees should be addressed. The tavern building, however, described by one historian as "one of the few surviving buildings of its function and era in all of central Illinois," lies in an area of proposed deep inundation. Rather than provide only for demolition should no recipient be found willing to move it , the city itself should agree to move the building to a site as close as possible to its original location, should such a move be deemed feasible from an engineering standpoint. The building should then be stabilized until the city can arrange for its restoration. This treatment also should be afforded the Meredith House, if the levee option prove unfeasible. 2

Page 6-1: Two parties not on the list of recipients of the DEIS should be given the opportunity to comment on the draft document. Representatives of Native American groups claiming descent from peoples who inhabited this area in the prehistoric and early historic periods should be given such opportunity, since hundreds of sites of those periods have been discovered. They also should be given that opportunity in light of the potential, conceded elsewhere in the document (Appendix Page C-4[2.5.3]), of the discovery of unmarked graves, some of which could be of Native Americans. 3

Also, The Landmarks Preservation Council of Illinois, the statewide historic preservation association, should be given the opportunity to comment on this document, since hundreds of Illinois historic resources will be impacted in the area of the preferred alternative. 4

N6.
Jerome Jacobson
Save Old Springfield
2617 Clifton Drive
Springfield, IL 62704
6/9/99

1. Stipulations in the final Programmatic Agreement (PA) address the recordation, marking, and, if necessary, the destruction of historic properties and were fully coordinated with the Illinois Historic Preservation Agency and the Advisory Council on Historic Preservation. Execution of the PA satisfies the Corps' responsibilities under Section 106 of the National Historic Preservation Act of 1966, as amended.

2. Comment is noted.

3. The Corps determined through consultation with the Illinois Historic Preservation Agency that the Peoria and Kickapoo tribes were the relevant federally recognized tribes with whom to coordinate the action. Addresses of the points of contact for these two tribes are listed on page 6-5 of the DEIS. Both tribes were provided opportunity to comment on the draft PA (30 days) and then on the DEIS (45 days). No comments were received.

4. Comment is noted. The Landmarks Preservation Council was provided a copy of the DEIS for review. Their letter of comment is included in the FEIS.

On a more general note, we support the requests for possible corrections, further information, and comments on the DEIS, by Donald D. Davis, of the Citizens for Sensible Water Use, in his letterof May 28th to your office. Mr. Davis implies that the need for Hunter Lake may be obviated by water conservation and other measures. Should that be the case, the potentially devastating impacts to the important cultural resources mentioned above woud be avoided.

Please keep me informed about the project, especially concerning the issues raised in this letter.

Yours truly,

Jerome Jacobson
Principal

N7

SIERRA CLUB
FOUNDED 1892

Sangamon Valley Group
P.O.B. 1452
Springfield, IL 62705

District Engineer
U.S. Army Engineer District, Rock Island
Attention: Environmental Analysis Branch, Charlene Carmack
Clock Tower Building - POB 2004
Rock Island, Illinois 61204

The Sangamon Valley group of the Sierra Club agrees that Springfield City Water, Light and Power should provide an adequate water supply for the future; however, the proposed Hunter Lake would be a fiscally irresponsible action which will be environmentally damaging and will cause the destruction of 2,500 acres of the best farmland in the world.

We urge C.W.L.P. to enact the following alternative measures to augment the water supply: increase pumping from the South Fork; switch to a dry ash disposal system for waste from the power plant; create a low water dam on the Sangamon River; and actively promote consumer conservation measures.

Currently a pumping station on the South Fork can provide 20 million gallons per day (mgd) into Lake Springfield, but is only activated when the water level in the lake is several feet below full pool. By setting an earlier trigger for pumping, the lake can be maintained at a higher level in preparation for a drought situation (the seventy four million dollars saved by not building Hunter Lake will easily offset the cost of such vigilance). 1

C.W.L.P. could also save 8.6 mgd by switching from a water sluice ash disposal system to a dry ash system. According to statements made by C.W.L.P to the Illinois Pollution Control Board this dry ash system would cost 11.9 million dollars to implement and have a total mgd cost of 1.3 million dollars, compared to Hunter Lakes total mgd cost of 3.5 million dollars. 2

An environmentally innocuous (and relatively low cost) low water dam could be built on the Sangamon River which could be used to supplement the Lake Springfield water level in a drought year. Any water quality problems which may occur on the Sangamon River could easily be corrected. 3

Finally, we feel that C.W.L.P. could do much more to enhance its customer based water conservation program, especially in drought years. 4

The Sangamon Valley Group of the Sierra Club urges the Army Corps of Engineers to protect our streams and rivers and pocket books by rejecting the Hunter Lake permit.

Bill Crook
Chair

Darren Miller
Legislative Chair

A-59

N7.
Bill Crook
Darren Miller
Sierra Club Sangamon Valley Group
P.O. Box 1452
Springfield, IL 62705

*1. The yield of water from the South Fork of the Sangamon River pump station is incorporated into the yield deficits predicted for the Hunter Lake project as identified in Section 1.2 of the DEIS. Historically pumping from the South Fork may not have been initiated until the water level was several feet below the long-term average level during any given time of the year. By pumping when the lake level first begins to fall below the average pool, which is the current operating mode, the Illinois State Water Survey has estimated the increase in yield to be about 0.4 mgd during the 100-year drought. Frequent pumping occurs under this scenario during non-drought years. Similarly, if pumping were to be initiated each time the lake dropped below full pool, the 100-year drought yield in this case would be an additional 1 mgd. In this case, significant pumpage would occur in non-drought years. Neither of these operating modes is significant enough to offset the identified deficit yield without augmenting the source of supply.

*2. This comment relates to a proceeding in which the City obtained an adjusted standard for boron concentrations in its ash pond discharge to Sugar Creek below Spaulding Dam at Lake Springfield. The City operates five coal fired electric generating units. Two different types of coal ash are created by the City's operations—bottom ash and fly ash. Bottom ash is collected at the base of the boilers. Fly ash is collected from flue gas by electrostatic precipitators. Four of the City's boilers are cyclone type and the majority of the ash created is bottom ash (80%). One unit is tangential fired, and the majority of the ash from that unit is fly ash (80%). The dry ash handling systems that were referred to were for fly ash only. Even with the addition of dry fly ash handling systems, substantial water requirements would remain for bottom ash. Bottom ash sluicing generally operates on a continuous basis while fly ash sluicing is more discretionary as operations dictate. The only savings would be the incremental water use for fly ash sluicing which would not satisfy the demand/yield deficits identified for this project.

3. As noted in Section 1.3 of the DEIS and FEIS, in 1988 the City requested permits from the Corps and the State to temporarily dam the Sangamon River to obtain supplemental water supply as part of a drought emergency response, as recommended in the comment. While conditional permits were issued for the emergency plan in 1998 (and again in 2000 ), specific objections to the action were raised by the U.S. Fish and Wildlife Service and the Illinois Environmental Protection Agency, due to concerns over potential adverse effects to water quality and other environmental impacts. It was expressed in permit negotiations that this measure was not to be considered a permanent solution to the applicant's drought supply problem.

*4. Springfield previously instituted mandatory water conservation measures as imposed by ordinance during the 1988 and 2000 drought events. Also, the city's Emergency Water Supply Plan was formulated with various conservation measures incorporated and triggered based on declining lake levels. These conservation measures focused on reductions in both outdoor water use such as regulations on irrigation and vehicle washing, and operational provisions such as system pressure reductions, prohibition on street sweeping, curtailing flow testing of fire hydrants, and limitations on public golf course waterings, among others. Some of these emergency conservation measures may still be appropriate to include as part of a Hunter Lake operating plan, if the Corps decides to issue a permit for the lake.

Among the other measures identified in the suite of conservation alternatives for Springfield, CWLP has also produced two educational pamphlets which have been offered through the city's *Dispatch* newsletter to all water and electric customers, and conducts Home Energy Audits at the request of its customers, which include information on ways to reduce water use.

N8

ILLINOIS FARM BUREAU

*"Improve the economic well-being of agriculture and enrich the quality of farm family life."*

June 18, 1999

Colonel James V. Mudd, Dist. Engineer
U.S. Army Engineer District, Rock Island
Attn: Environmental Analysis Branch (Charlene Carmack)
Clock Tower Building
PO Box 2004
Rock Island, IL 61204-2004

Dear Colonel Mudd:

Please accept these comments from Illinois Farm Bureau® on the Draft Environmental Impact Statement (DEIS) for the Proposed Water Supply Reservoir, Hunter Lake, Springfield, Illinois, Permit Application #187020. Illinois Farm Bureau is a nonprofit organization whose members include about three-fourths of the farmers in the state. This project will impact area farmers in numerous ways, and we have concerns with the proposal.

A-60

First, farmers downstream are concerned that the extra discharge from Hunter Lake during crest stages will create problems for them. If the lake gates are opened to prevent flooding behind the dam, more water will be pushed into the system at an increased rate, thereby adding pressure to downstream levees. How will the Corps address concerns with downstream flooding impacts? 1

The loss of tax base is also a concern. The removal of taxes with the development of the lake will impact schools, roads, and county funding of services. Who will bear the increased tax burden to compensate for this decreased tax base? 2

The lake will also affect the routes of transportation for those residents who remain in the area. 3

The lake will also have significant impact on farmland within and close to the project site. The total project area is approximately 7,800 acres, 59% of which is considered prime farmland. Farmland adjacent to the project may also be removed from production agriculture for various reasons. 4

The loss of farmland cannot be mitigated, and once it is gone it cannot be reproduced. The impact statement should acknowledge the many values that farmland in the project area has. 5

ILLINOIS AGRICULTURAL ASSOCIATION®
1701 N. Towanda Avenue • P.O. Box 2901 • Bloomington, Illinois • 61702-2901
Phone: 309.557.2111 • Fax: 309.557.2559

N8.
Nancy Erickson
Illinois Farm Bureau
1701 North Towanda Avenue
P.O. Box 2901
Bloomington, IL 61702-2901
6/18/99

1. Impacts to downstream areas and measures to address these impacts are summarized in Section 4.1.7 of the DEIS and FEIS.

2. As noted in Section 4.1.1 of the DEIS and FEIS, the total annual tax loss to 24 local taxing authorities is estimated to be approximately $150,000. This is an adverse impact to the affected authorities who would bear this loss. As noted in the DEIS and FEIS, this loss represents approximately 0.6% of the estimated total property tax receipts of these authorities. Less services would need to be provided in the project area.

3. Comment is noted. Impacts to local road networks are addressed in Sections 2.3.1.2 and 4.1.11.1 of the DEIS and FEIS.

4. Comment is noted. Impacts to farmland are address in Sections 4.1.3 and 4.1.5.1 of the DEIS and FEIS.

5. As noted in Sections 3.1.2, 4.1.2, and 4.1.3, and as illustrated in Tables S-4 and 4.1, the DEIS does recognize farmland as a significant resource that would be impacted by the applicant's proposed action. Impacts to the economic values of farmland are addressed in Sections 4.1.1 and 4.1.2 of the DEIS and FEIS. Active or passive conversion of cropfields to other land cover types is not expected to destroy or diminish the natural resource value of soils classified as prime or important farmland. In some cases, the natural resource values of these soils would be enhanced by reducing or reversing current rates of topsoil loss or nutrient depletion.

1

The removal of agricultural land will weaken the infrastructure of the remaining farming community. There will be fewer farmers and fewer businesses to support the farmers who remain in the area. The loss of existing farmers will mean it will be less economically viable for businesses that sell seed, farm machinery, etc., to remain in the area. 6

We urge the Corps to further evaluate and assess the detrimental impact the project will have on agriculture and address these concerns.

Thank you for the opportunity to comment on the Draft Environmental Impact Statement.

Sincerely,

ILLINOIS FARM BUREAU

Nancy Erickson

Nancy Erickson
Director of Natural and Environmental Resources

NJE:ah
A/nje50002



6. The term "farm units" as used in the DEIS and FEIS denotes parcels of farmland, not farmsteads or entire farming operations. The 3,781 acres of existing cropland in the Hunter Lake project area represents less than 1% of farmland within Sangamon County and approximately 5% farmlands within the Horse Creek-Brush Creek watershed. According to U.S. Bureau of the Census statistics, the $1,164,000 represents approximately 0.03% of estimated 1993 total income for Sangamon County. Agriculture-related business within Sangamon County are not expected to be significantly affected by the conversion of croplands within the Hunter Lake project area. Impacts of property tax losses on townships and other taxing authorities are addressed in Section 4.1.1 of the DEIS and FEIS.

1

N9

LANDMARKS PRESERVATION COUNCIL OF ILLINOIS

June 18, 1999

Ms. Charlene Carmack
U. S. Army Corps of Engineers
Clocktower Building
P.O. Box 2004
Rock Island, IL 61204-2004

Dear Ms. Carmack:

I would like to thank you for giving the Landmarks Preservation Council of Illinois the opportunity to comment on the Draft Environmental Impact Statement for the proposed water supply reservoir at Hunter Lake, in Springfield, Illinois.

After reviewing the document, I am concerned about the treatment of the Brunk family cemetery, the Pensacola Tavern, and the Meredith House. Each of these sites are rare examples of their type in central Illinois. Simply making a record of these properties with photographic documentation or, in the cemetery's case, of archeological documentation is not enough. The resources should be moved to new sites, or measures should be taken in order to preserve them in place. 1

Thank you again for allowing us to comment on this proposal and we hope that you will continue to keep us informed of its progress.

Sincerely,

David Bahlman
Executive Director

EXECUTIVE COMMITTEE
David Keene
President

Judith Paine McBrien
Executive Vice President
David H. Holan
Vice President, Development
Clarine Hall
Vice President, Legislation
Martin C. Tangora
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Bruce Wechsler
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The Monadnock Building
53 W. Jackson Blvd., # 752
Chicago, IL 60604-3699
Tel: 312-922-1742
Fax: 312-922-8112

A-62

N9.
David Bahlman
Landmarks Preservation Council of Illinois
The Monadnock Building
53 West Jackson Boulevard #752
Chicago, IL 60604-3699
6/18/99

1. Treatment of significant historic properties as stipulated in the final Programmatic Agreement (PA) between the Corps, the Illinois Historic Preservation Agency, the Advisory Council on Historic Preservation, and the City of Springfield has been fully coordinated among the signatories and relevant federally recognized tribes. Execution of the PA evidences compliance with Section 106 of the National Historic Preservation Act of 1966, as amended.

1

N10.

SANGAMON COUNTY FARM BUREAU
2449 DIRKSEN PARKWAY NORTH
SPRINGFIELD, IL 62702-1487
217-753-5200
FAX 217-753-5210

June 18, 1999

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Environmental Analysis Branch (Charlene Carmack)
Clock Tower Building
P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Sirs:

Please consider the following comments from Sangamon County Farm Bureau® pertaining to the Draft Environmental Impact Statement (DEIS) for the proposed Hunter Lake project in the City of Springfield.

Our organization has been monitoring this project for many years. Since the release of the DEIS we feel that many aspects of the agricultural impacts of this project have been inadequately addressed and/or researched. We hope that the following issues will be addresses more thoroughly in the final EIS, thereby limiting any negative impacts to the vital farmland and agricultural industry within this area.

Those issues most important to the members of this organization and specifically to those within the project area include:

1. Additional Flooding Downstream. A large portion of the structures and waterways downstream of the project will be subject to increased flooding. Many of the agricultural levees and flood structures will have additional stresses placed on them with the opportunity of failure becoming much more likely. How will this problem be addressed? 1

2. Wetland Mitigation. The DEIS indicates that both forested and non-forested wetlands will be mitigated to other acreage nearby.

   A. How many acres would be converted to forested and non-forested wetlands? 2

   B. If that land is currently farmed, what is its Prime/Important soil status? 3



N10.
Keith Cravens
Sangamon Co. Farm Bureau
2449 Dirksen Parkway North
Springfield, IL 62702-1487
6/18/99

1. Impacts to downstream areas and measures to address these impacts are summarized in Section 4.1.7 of the DEIS and FEIS.

*2, 3, 4, 5. A revised mitigation plan for wetland and other natural resource impacts has been developed by the applicant. This plan is described in Section 4.1.9 of the FEIS.

1

3. Forest and Vegetation Tracts. DEIS states that two large forest tracts and two large native prairie vegetation tracts would be created.

   A. Where would they be located? 4

   B. If the land is currently farmed, what is its Prime/Important soil status? 5

4. Local Tax Revenue Decreases. We are concerned that by taking additional land from the tax roll it will further reduce the already strained resources of the local public services to provide adequate schools, township services, roads, etc. Will there be any permanent funding established to offset this tax revenue loss? 6

5. Agricultural Displacement. The DEIS indicates that sixty farms and one fertilizer operation will be displaced. The farm income loss has been estimated at $1,164,000 annually. The DEIS did not address the indirect losses attributable to the displacements. Ag related businesses such as trucking, fertilizer, seed, fuel companies, etc., would realize revenue loss associated with a reduction of customer base. 7

6. Disruption of Local Road Systems. With the loss of roads through the project area a hardship will be placed on agricultural operations and rural residents. How will they **realistically** travel to grain and livestock markets, field locations, and other nearby destinations important to agricultural livelihood. 8

7. Outlying Agricultural Drainage Systems. Due to hydrology, will farm acreage drainage systems adjacent to the project be viable after completion of the lake? 9

8. Agricultural Operations Restrictions. If the proposed project succeeds, will there be any attempt to limit the operations of production agriculture on adjacent or nearby lands? Example, limiting the application of pesticides and fertilizer, hours of operation, noise restrictions, etc. 10



6. As noted in Section 4.1.1 of the DEIS and FEIS, the total annual tax loss to 24 local taxing authorities is estimated to be approximately $150,000. This is an adverse impact to the affected authorities, who would bear the loss. As noted in the DEIS and FEIS, this loss represents approximately 0.6% of the estimated total property tax receipts of these authorities. Less services would need to be provided in the project area.

7. The term "farm units" as used in the DEIS and FEIS denotes parcels of farmland, not farmsteads or entire farming operations. The 3,781 acres of existing cropland in the Hunter Lake project area represents less than 1% of farmland within Sangamon County and approximately 5% farmlands within the Horse Creek-Brush Creek watershed. According to U.S. Bureau of the Census statistics, the $1,164,000 represents approximately 0.03% of estimated 1993 total income for Sangamon County. Agriculture-related business within Sangamon County are not expected to be significantly affected by the conversion of croplands within the Hunter Lake project area. Impacts of property tax losses on townships and other taxing authorities are addressed in Section 4.1.1 of the FEIS.

8. As stated in Section 4.1.1.13 of the DEIS and FEIS, a minimal increase in emergency response and travel time may be experienced by residents of remote areas adjacent to the project site. Because all primary and secondary roads will remain and continue to be served by crossroads, no major increase in response time is foreseen. As stated in Section 2.3.1.2 of the DEIS and FEIS, the relocated roadway network was designed with input from the County Highway Department and Township Road Commissioners to minimize adverse travel and emergency response times through the project area.

9. The 100-year flood elevation with the lake in place is evaluated to be approximately 575.2 feet above sea level. This level is about 4 feet above the 571-foot full pool elevation of the lake. Tile drain outlets with invert elevations at or above 575.2 above sea level should not be affected by the lake.

10. As noted in Section 4.1.3. of the DEIS and FEIS, the Springfield City Council has committed by ordinance to protect the City-owned marginal lands around Hunter Lake from residential or commercial development. Because no residential or intensive recreational development is proposed for project lands, several of the potential restrictions listed in the comment (e.g., restrictions on noise levels and operating hours) are unlikely to result from development or operation of the proposed lake. Section 4.1.9 of the FEIS outlines the applicant's proposed mitigation plan which would involve conversion of croplands in the marginal areas to forest or grassland cover. Section 2.3.1.3 of the DEIS and FEIS describes the applicant's anticipated project land and watershed management activities. A discussion of anticipated and proposed resource protection planning needs within the larger watershed are included in Section 4.1.6.2 of the FEIS.

Due to these concerns we believe that the current lake with an upgrade of the pumping system on the Sangamon River can provide more than adequate quantity and quality of water to the city. 11

We also believe that the previously documented plan for additional well/pipeline alternatives should be given more consideration and research if the current lake system and pumping upgrade cannot provide the necessary water quantity/quality. 12

Please consider these comments and address them in the Final EIS of Hunter Lake.

Sincerely,

SANGAMON COUNTY FARM BUREAU®

Keith W. Cravens

Keith Cravens
President

cc: Director Joe Hampton, Illinois Department of Agriculture
James R. Hartwig, Supervisor, Illinois Department of Agriculture
Nancy Erickson, Illinois Farm Bureau®



11. Yield estimates for the existing water supply system described in Section 1.2.4 and displayed in Table 1.2.4.1 of the DEIS and FEIS include use of the South Fork pumping station. These estimated yields are inadequate to meet projected demand during 100-year, 18-month drought conditions, as stated in Section 1.3 of the DEIS and FEIS.

12. Feasible alternatives involving well fields and pipelines are identified in Sections 2.3.3, 2.3.4, 2.3.5, and 2.3.6 of the DEIS and FEIS. Potential impacts of these alternatives are addressed in Sections 4.2, 4.3, 4.7, and 4.8 of the DEIS and FEIS.

P1

April 16, 1999

Mrs. Charlene Carmack,

My family is concerned about the future of Pet Paradise Cemetery which a Mr. Vansil sold to City Utr. Lite End Pwr. in Spfld. IL.

We have several pets buried there and will exhaust all legal action to make sure that Cemetery is protected when the new Hunter Lake is built.

Mr. Les Pauly, Information Officer for CWLP was quoted in the paper as saying that CWLP is not in the business of taking care of cemeteries.

This leads us to believe that CWLP will give it no consideration.

1

P1.
Don Daggett
620 South Douglas
Springfield, IL 62704
4/16/99

*1. While there are no statutory provisions requiring protection for pet cemeteries, the applicant does not anticipate that great effort would be needed to keep this site from being impacted by the construction of the reservoir. The pet cemetery is situated above the full pool level of the reservoir and all but the extreme northwest corner remains entirely above the 100-year flood elevation. Minor berming or riprap protection if appropriate would be factors considered more critically during the construction plan preparation stage if a permit is issued for this project.

1

Pet Paradise Cemetery was
not Mr. Daniels to sell.
a significant price was
paid when the lot was
purchased and the animals
were buried.
No amt. of money is too
great for us to pay in
order to legally protect
this cemetery.

This letter is being written
on a steno pad - by hand.

Please do not let that
fool you!

Yours Truly

Don Daggett
620 So. Douglas
Spfld. IL
62704

P2

David C. Holloway
58 Luriel Lane
Auburn, Il. 62615

April 27, 1999

District Engineer
US Army Engineer Branch, Rock Island
Clock Tower Building - PO Box 2004
Rock Island, Illinois 61204-2004

To Whom It May Concern,

I am very much opposed to the building of the proposed Hunter Lake (Lake Springfield II). City Water Light and Power's estimate that water conservation measures will not meet the city's future needs are not based on objective truth, but are instead biased, shortsighted and misleading. I support the Water Conservation option that CWLP simply dismissed out of hand. At the very least, I ask that no permit be granted until CWLP does new conservation estimates based upon site-specific audits of the present water usage of its corporate and other non-residential customers. 1

Thank you for your attention to this matter.

Sincerely,

David C. Holloway

A-68

P2.
David C. Holloway
58 Luriel Lane
Auburn, IL 62615
4/27/99

1. A breakdown of projected treated water demand by sector for the years 2000 through 2025 is shown in Table 1.2.3.1 of the FEIS. As stated in Section 2.2.7 of the DEIS and FEIS, the total effectiveness of implementing the remaining conservation measures (B, C, D, E, F, G, I, K, and L) is approximately 0.65 mgd. The applicant's stated purpose and need is to augment the existing water supply system to withstand a severe drought (100-year recurrence probability, 18-month duration). Implementation of these remaining measure would fall far short of eliminating the projected deficit of the existing system in meeting the 100-year, 18-month drought demand. Water conservation measures are not considered a feasible alternative to meet the purpose and need of the proposed action. As shown in Table 2.2.7.2 of the DEIS and FEIS, the effectiveness of implementing conservation measure D (Direct Contact Audit for Nonresidential Customers with High Water Use) is approximately 0.54 mgd in year 2025. This represents approximately 1.0 percent of the Year 2025 projected nonresidential (commercial/institutional and industrial) water demand and approximately 0.25 percent of the projected total treated water demand in Year 2025, as shown in Table 1.2.3.1 of the FEIS.

1

P3

JEAN (CARY) BRICKEY
10137 N. PAWNEE ROAD
PAWNEE, IL 62558
217/498-8892 EVENING
217/498-8181 DAYTIME

May 3, 1999

The U.S. Army Engineer District
Rock Island
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004

Dear Ms. Carmack:

I read with interest the article in the 5/3/99 Illinois State Journal Register regarding the building of Lake II. I was born and raised on a farm that was condemned by the City of Springfield close to 25 years ago supposedly to build a second lake. In fact, I remember doing a paper in high school my Senior year (1973) regarding Lake II and if it would be built or not. My parents, unlike many of our neighbors, did have some property left in which they could build a new home and start over again. When I got married, my husband and I also built a home in this area. I slowly watched the deterioration of my happy childhood home as renters moved in-and-out and eventually this home was ransacked to the point where it had to be bulldozed down.

I have had "city" friends say: "What's the big deal, your parents were paid good money for their property." What they don't realize is that farm was our way of life, our livelihood, and our inheritance to future generations. Farm families don't move. They stay in the same place generation after generation. They know the land like the back of their hand.

A-69

Much of my grandmother's property was also condemned and now that she has passed on, my sisters and I have inherited what was left. On Saturday April 24th, I, my 2 sisters, a nephew, and two great nieces decided to go back into woods that my grandmother used to own; but, of course, is now Lake II property. Our farmland borders these woods. We ran across the most wonderful scene: bluebells blooming by the hundreds by the creek and above them in the trees Blue Herons nesting. There were at least a dozen of them. They, of course, were disturbed by our presence so we tried to leave as quietly as possible. Upon leaving the woods, I couldn't help but think that this will all be under water if Lake II is built. These woods are home to deer, bats and many other species of birds besides the Blue Herons. 1

This letter will not be able to save my childhood home, but perhaps it can help save some of my long-time neighbors homes as well as the wildlife's home. Thank you for giving us the opportunity to voice our concerns.

Sincerely,

Jean Brickey

Jean Brickey

P3.
Jean (Cary) Brickey
10137 North Pawnee Road
Pawnee, IL 62558
5/3/99

1. The Corps requested the ILDNR to verify the location and composition of the heron rookery described in the letter (see ILDNR letter dated May 13, 1999). The Corps appreciates the assistance of Ms. Brickey in identifying this new natural resource information for the project area. Information on the presence of the heron rookery and potential impacts due to construction of Hunter Lake are included in Sections 3.1.5.4 and 4.1.5.1 of the FEIS.

1

P4

May 3, 1999

Lake II

Dear Ms Carmack

I would like to express my concern about the second lake. The need for another lake for the city of Springfield is unnecessary. If they would of taken care of the current lake there would be no need to build a storage lake. How many millions of gallons does the city lose when they open all of the gates at Spaulding Dam? Since the present lake is contaminated anyone one is able to use it. Why don't they quit opening the gates and keep the water in the lake. What would happen if lake II is filled and we get another week of rain and lake I & II are both over capacity? The creek's you intend to burn will destroy the rest of the land around them.

The city first approved my grandfather about the second

A-70

1

P4.
Patricia Marconi
3718 New City Road
Pawnee, IL 62558
5/3/99

1. When Lake Springfield is at full capacity, any additional inflow from rainfall or runoff in the watershed must be passed through the dam to avoid flooding on the lake.

as far back as 1976-1977. They had
told him they would condem his
land if he wouldn't sell any
property to them. His farm is a
centennial farm. How do you think
he felt about losing everything
he had helped his father build.
Luckily he passed on before he had
to give up his land. I live on
the homestead now, I can remember
when the road was low and you
had to drive up a big hill on the
2 east + west side of the house where
I now live. But the road was
built way up high because "they"
wanted to keep the water from
flooding the land on the other side of
the road. Since the city is building
upon the west and south west
of Springfield, why not have holding
lake built in that part of town
and leave the environment alone.

Thank you for your time [illegible]
[illegible]
[illegible]
[illegible]
[illegible]

2. Lick Creek Reservoir, described in Section 2.3, is one of the feasible alternatives to Hunter Lake identified by the applicant and evaluated in the EIS. The location of this lake would be southwest of Springfield. The environmental impacts of this alternative are displayed in Table 4.1 and described in Sections 4.4, 4.5, and 4.6 of the DEIS and FEIS.

P5

Hunter Lake

May 3rd, 1999

Dear Ms. Carmack: Re: Springfield's Hunter Lake

I have always appreciated conservative attitudes, and thoughtful approaches to problem solving but the length of time it has taken the A.C.E. to approve or not approve issuing a permit for the construction of Hunter Lake defies reason. Were you responsible for the necessary environmental investigation I might understand, but for you simply to review the information provided by others and then cull opinions from supposedly interested parties seems to indicate that there is something seriously wrong with your decision making abilities. In the private sectors of consequential business this kind of time frame would be deemed short sighted, wasteful, inefficient, and appallingly arrogant. 1

We are dealing with the fact that living things need water in order to survive. Our community has realized that it's needs might not be well served in the future by the existing water supply and has gone to great lengths to formulate a plan to provide against drought and non potable water. They also realize that unless backed up to the wall the general citizenry will not conserve. During our last shortage not one car wash closed even temporarily, and I witnessed with my own eyes people stealing water from public hydrants in order to fill swimming pools. So much for human nature.

Given the many realities as they exist concerning this matter I would suggest that you address this matter in a timely fashion, something which you have not done to date. Considering the length of time it will take to implement the project I would hope you would consider the matter one requiring a sense of urgency rather than an endless and pointless forum for public information gathering. By any standard ten years goes far beyond the pale of the length of time required to make a rational and reasoned decision. 2

Sincerely,
Clyde Donald Smith

A-72

P5.
Clyde Donald Smith
12 Villa Grove
Springfield, IL 62707
5/3/99

1. The Corps of Engineers is responsible for the EIS prepared for the Hunter Lake Section 404 permit application. The Corps has required the applicant (Springfield CWLP) to furnish information necessary to prepare the EIS. The Corps is responsible for evaluating the information provided by the applicant and the applicant's consultants, to ensure that the content of the EIS will be accurate and adequate to make an informed decision on the permit application.

2. See response to comment #1 above. As stated in Section 1.3 of the DEIS, the City of Springfield initiated planning and design of the proposed lake in 1965, and applied to the Corps for a Section 404 permit for this lake in 1989. The Corps can and has required the applicant to provide the information needed to prepare the EIS, but the Corps has not required the applicant to provide requested information within a specified time frame.

District Engineer:-

In your list of options to A Second Lake for Springfield, IL, Why was no consideration given to Dredging our present lake? Please Reply, including the approximate Cost of Dredging.

Thank You,
Betty E. Green

Betty E. Green
216 Astoria Rd.
Springfield, IL 62704-1285

5/5/99

1



P6.
Betty E. Green
216 Astoria Road
Springfield, IL 62704-1285
5/5/99

1. The original storage capacity of Lake Springfield, immediately after construction in 1934, was approximately 59,900 acre-feet (about 19.5 billion gallons). Over the next 50 years, sedimentation reduced the storage of the lake by approximately 9,400 acre-feet to an estimated capacity of 50,500 acre-feet (about 16.5 billion gallons). The City dredged the upper portion of the lake over the period 1985-1989. This dredging restored nearly 2,000 acre-feet of storage (approximately 650 million gallons) at an estimated cost of approximately $8.0 million dollars. The present capacity of the lake is estimated to be 52,500 acre-feet (approximately 17.2 billion gallons). Additional dredging in quantities sufficient to restore all of Lake Springfield's original storage capacity would not increase the yield of the existing water supply system enough to meet projected water demand during extreme drought conditions, irrespective of the cost of such dredging.

1

P7

*Springfield Surgical Associates*

a Division of Springfield Clinic

May 5, 1999

US Army Engineer District
Rock Island Illinois Clock Tower BLDG
PO BOX 2004
Rock Island, Illinois 61204-2004
Attention: Mr. Carmack

Dear Mr. Carmack:

I am writing this letter in support of the proposal by the City of Springfield to develop a second lake. In my view, the proposal for this lake solves a number of issues facing Springfield and the immediate region. I believe that the environmental effect of this will be negligible and certainly, on balance, worth the expenditure of time and money. The people of Springfield will greatly benefit from this proposal and I am strongly in favor of this. A second water supply will enhance our ability to provide an adequate water supply for the future in addition to the environmental, recreational, aesthetic, and commercial effects of this lake are tremendous potential enhancements to our community and have minimal detrimental side effects. 1

Once again, I strongly support the development of a new lake in Springfield, Illinois.

Yours truly,

Max D. Hammer, M.D.

MDH\jj

A-74

[illegible] ■ [illegible] ■ Springfield, Illinois 62794-9248 ■ [illegible] ■ [illegible]
[illegible] Mandatory Health Care, Inc.

P7.
Max D. Hammer, M.D.
501 North First Street
P.O. Box 19248
Springfield, IL 62794-9248
5/5/99

1. Significant environmental impacts of the proposed action are described in Section 4.1 of the DEIS and FEIS.

P8

Sara Upton
15941 S. Kennedy Rd.
Auburn, Il. 62615

May 10, 1999

District Engineer
US Army Engineer Branch, Rock Island
Clock Tower Building - PO Box 2004
Rock Island, Illinois 61204-2004

To Whom It May Concern,

I am responding to the US Army Corps of Engineers Draft Environmental Impact Statement by stating my opposition to the building of the proposed Hunter Lake (Lake Springfield II). City Water Light and Power's estimate that water conservation measures will not meet the city's future needs are not based on objective truth, but are instead biased, shortsighted and misleading. I support the Water Conservation option that CWLP simply dismissed out of hand. At the very least, I ask that no permit be granted until CWLP does new conservation estimates based upon site-specific audits of the present water usage of its corporate and other non-residential customers. 1

Thank you for your attention to this matter.

Sincerely,
Sara Upton
Sara Upton



P8.
Sara Upton
15941 South Kennedy Road
Auburn, IL 62615
5/10/99

1. A breakdown of projected treated water demand by sector for the years 2000 through 2025 is shown in Table 1.2.3.1 of the FEIS. As stated in Section 2.2.7 of the DEIS and FEIS, the total effectiveness of implementing the remaining conservation measures (B, C, D, E, F, G, I, K, and L) is approximately 0.65 mgd. The applicant's stated purpose and need is to augment the existing water supply system to withstand a severe drought (100-year recurrence probability, 18-month duration). Implementation of these remaining measure would fall far short of eliminating the projected deficit of the existing system in meeting the 100-year, 18-month drought demand. Water conservation measures are not considered a feasible alternative to meet the purpose and need of the proposed action. As shown in Table 2.2.7.2 of the DEIS and FEIS, the effectiveness of implementing conservation measure D (Direct Contact Audit for Nonresidential Customers with High Water Use) is approximately 0.54 mgd in year 2025. This represents approximately 1.0 percent of the Year 2025 projected nonresidential (commercial/institutional and industrial) water demand and approximately 0.25 percent of the projected total treated water demand in Year 2025, as shown in Table 1.2.3.1 of the FEIS.

1

5/11/99

Dear Sirs,

Just taking a moment to endorse my vote in favor of the development of Lake Springfield II in Springfield, Illinois. The need for a second lake is long overdue and will have many benefits for our city.

Sincerely,

Regina F. Serra

1



P9.
Regina F. Serra
5/11/99

1. Comment noted. No additional response required.

1

P10

Celia Wesle
74 Trailridge Lane
Springfield, Illinois 62704

5-13-99

District Engineer
US Army Engineer District,
Rock Island
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004

Dear Sir:

I want to urge you to oppose
the proposed Hunter Lake
Please support the wiser
Water Conservation option.

Sincerely,
Celia Wesle

1

A-77

P10.
Celia Wesle
74 Trailridge Lane
Springfield, IL 62704
5/13/99

1. A breakdown of projected treated water demand by sector for the years 2000 through 2025 is shown in Table 1.2.3.1 of the FEIS. As stated in Section 2.2.7 of the DEIS and FEIS, the total effectiveness of implementing the remaining conservation measures (B, C, D, E, F, G, I, K, and L) is approximately 0.65 mgd. The applicant's stated purpose and need is to augment the existing water supply system to withstand a severe drought (100-year recurrence probability, 18-month duration). Implementation of these remaining measure would fall far short of eliminating the projected deficit of the existing system in meeting the 100-year, 18-month drought demand. Water conservation measures are not considered a feasible alternative to meet the purpose and need of the proposed action. As shown in Table 2.2.7.2 of the DEIS and FEIS, the effectiveness of implementing conservation measure D (Direct Contact Audit for Nonresidential Customers with High Water Use) is approximately 0.54 mgd in year 2025. This represents approximately 1.0 percent of the Year 2025 projected nonresidential (commercial/institutional and industrial) water demand and approximately 0.25 percent of the projected total treated water demand in Year 2025, as shown in Table 1.2.3.1 of the FEIS.

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P11

May 14, 1999

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Environmental Analysis Branch (Charlene Carmack)
Clock Tower Building - P.O. Box 2004
Rock Island, Illinois 61204

This letter is being written to encourage the U.S. Army Corps of Engineers to **deny** a permit to the city of Springfield, Illinois for the construction of "Hunter Lake." The city's application tends to select advantageous data to support their application, while omitting relevant information.

The city cites population growth data of 11.2 percent from 1990 to 1997 without reporting the fact that thousands of the people were annexed into Springfield and that most were already City, Water, Light and Power (CWLP) customers. I myself became a resident that way. Another way to provide an indication of the areas growth is to note that Sangamon County grew only 7.3 percent during this period. 1

There is also a concern that CWLP could not maintain an additional lake as they are not preserving Lake Springfield in a prudent manner. As a lake resident, I can easily see (particularly in the dredged area which is West of the Interstate - 55 bridge) the dirt embankments which have no rip rap protection. Most of the miles of shoreline on this part of the lake are subject to intense wave erosion even though CWLP spent about $8 million to have this section dredged about ten or so years ago. One can easily measure the depth of the siltation that has occurred since the dredging by the softness of the top layer. 2

A-78

The permit application breifly cites the 8.6 million gallons a day (mgd) of potential reclying water which moves the coal cinders, etc. to the ash pond which is north of the lake. It notes that this water is often discharged downstrean. This waste of water happened most of the summer in 1989 during the most recent drought. CWLP has the capacity to recycle this water and sometimes pumps it back into the lake. 3

This 8.6 million gallons a day (mgd) loss of water should be considered a resource which could meet future growth needs of the city. A nearly closed loop system drawing primarily from the ash pond would reduce demand as would a conveyer system or even truck cartage. These methods have to be less expensive and less destructive than an additional lake!

Sincerely,

Larry Michaud

Larry Michaud
Research Economist
40 Bay Ridge
Springfield, Il. 62707

P11.
Larry Michaud
40 Bay Ridge
Springfield, IL 62707
5/14/99

1. The results of the 1997 special census referenced in Section 1.2.3 of the DEIS and FEIS were not used to develop the base demand projections cited in Table 1.2.3.1 of the DEIS. Treated water demand projections were developed in 1990 by Planning and Management Consultants, Ltd., under contract with the City of Springfield. Demand forecasts were developed by PMCL using demographic and socioeconomic data provided by the U.S. Bureau of the Census, Illinois Department of Commerce and Community Affairs, Springfield-Sangamon County Regional Planning Commission, and Springfield City Water, Light, and Power. Population projections used to develop base treated water demand forecasts were based on U.S. Census Bureau projections which estimated an annual population growth rate of approximately 0.5 percent for the period 1990-2025 in the 1990 service territory, and approximately 0.36 percent for Sangamon County. By comparison, the 7.3 percent growth rate for Sangamon County cited in the comment would represent an average annual growth rate of approximately 1.0 percent over the 1990-1997 period.

2. As displayed in Table 2.3.1.1 of the DEIS and FEIS, project cost estimates for construction of Hunter Lake include funds for shoreline stabilization. The need for periodic maintenance of some shoreline areas is also recognized in Section 2.3.1.3 of the DEIS and FEIS. The applicant's stated commitment to protecting marginal lands from residential and commercial development, and the revised mitigation plan presented in Section 4.1.9 of the FEIS which includes conversion of croplands in the marginal areas to grassland and forest cover, would be expected to reduce the potential for shoreline erosion and sedimentation.

3. As stated in Section 1.3 of the DEIS, CWLP constructed facilities to allow pumping of clarified sluice water from the ash ponds back into Lake Springfield during periods of low precipitation. In 1993, the Illinois Pollution Control Board granted the City an Adjusted Standard for boron concentration in discharges of ash pond water to Sugar Creek, which precluded recycling of this discharge back to the lake. The restriction on recycling ash pond water continued until July, 2000, when an NPDES permit modification was requested by CWLP and granted by the IEPA. This permit modification allows CWLP to pump ash pond water back to the Dallman Power Plant where it will mix with condenser cooling water discharged into the lake. The recycling of ash pond water will add 1.6 mgd to the yield estimates presented in Section 1.2 of the DEIS. This information and the modifications of yield estimates are included in the FEIS.

1

P12

5/16/99

District Engineer
US Army Corps of Engineers
Rock Island District
Clock Tower Building
Post Office Box 2004
Rock Island, Illinois 61204-2004

Re: Permit To Build Hunter Lake At Springfield, Illinois

From: Carroll Huffendick - ID#34053

I would like to express my full support for the proposed water supply reservoir, Hunter Lake. Around 1972 I had 4 acres of my 10-acre tract purchased by Springfield City Water Light & Power through condemnation proceedings. I have since rented the 4 acres. 1

Springfield is growing at a rapid pace. This supplemental water supply will ensure water availability in time of need and add much needed light water-recreation to the area.

A-79

P12.
Carroll Huffendick
5/16/99

1. Comment noted. No additional response required.

1

P13

May 18, 1999

The U. S. Army Engineer District
ATTN: Carmack/Springfield, IL Lake II Comments
Clock Tower Building
P. O. Box 2004
Rock Island, IL 61204-2004

RE: Comments on the Springfield, IL, Lake II Proposal

I would appreciate it if my comments made herein, be entered into the official record of Lake II Comments.

In the early 1950's my father took me out to what was then Lake Springfield. The severe drought resulted in large cracks in the bottom of the lake that were in excess of 8 inches across. We were able to walk across large areas of what was once underwater. Fortunately, within a short period of time the Lake was refilled in a normal fashion. However, I have never forgotten that experience.

The citizen's of the City of Springfield are very lucky to have an abundant supply of clean, pure water. The methods of water purification that are now used world-wide were first developed here in Springfield, Illinois. City Water Light & Power is able to sell it's clean pure water to adjoining communities at nominal cost.

A-80

The recreational advantages of an expanded Lake II are too numerous to mention. The citizen's of Springfield can endure many hardships and shortages indefinitely, however, the lack of water is not one of them. Our population has increased significantly since I was nine years old and walked across Lake Springfield.

Please approve the Lake Springfield, Lake II Project so that construction may finally begin. Our citizen's deserve the security of knowing that their beloved Lake Springfield will never again run short of potable water. 1

Sincerely,

Roy E. Nottingham

Roy E. Nottingham 217/544-9273
1916 South College roy@cityscape.net
Springfield, IL 62704-3923

cc: Mayor Hasara

P13.
Roy E. Nottingham
1916 South College
Springfield, IL 62704-3923
5/18/99

1. Comment noted. No additional response required.

1

P14

11484 N. Pawnee Rd.
Pawnee, Il 62558
May 18, 1999

Department of the Army
U. S. Army Engineer District, Rock Island
Corps of Engineers
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Sirs

Springfield should take care of the present lake before thinking of constructing another. Buy and discard can no longer apply to land. As Will Rogers said, "they aren't making any more of it." And already purchased land was allowed to grow up in weeds. Hard homes and buildings were destroyed. So much for proper management.

Environmental impact would be severe. We now have the red-headed woodpecker - soon to be on the endangered list. Our son has seen a few pileated woodpeckers in the wooded area - I believe already on the endangered list. There are barn owls and hoot owls. Some of the land along Horse Creek is virgin land with native flowers, mushrooms, etc. We occasionally see pheasants and quail. Deer are plentiful. There are walnut and hickory nut trees. Should all this be destroyed because of greed!

A-81

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P14.
Ruth Watts
11484 North Pawnee Road
Pawnee, IL 62558
5/18/99

1. Biological impacts of Hunter Lake are described in Section 4.1.5. and displayed in Table 4.1 of the DEIS and FEIS. Impacts to forests and to wildlife species dependent on forest habitat, such as the birds and mammals cited in the comment, would be mostly negative. Potential negative impacts to wetland, forest, and stream habitat which were identified in the DEIS and during public review of the DEIS, necessitated the development of a revised mitigation plan by the applicant. This revised mitigation plan is described in Section 4.1.9 of the FEIS.

1

People living on the present lake say the boundaries are not well maintained. Specyfield would have sufficient water for all needs by conserving water and taking care of what they have. 2

Please help us help Nature.

Sincerely,
Ruth Watts

2. A breakdown of projected treated water demand by sector for the years 2000 through 2025 is shown in Table 1.2.3.1 of the FEIS. As stated in Section 2.2.7 of the DEIS and FEIS, the total effectiveness of implementing the remaining conservation measures (B, C, D, E, F, G, I, K, and L) is approximately 0.65 mgd. The applicant's stated purpose and need is to augment the existing water supply system to withstand a severe drought (100-year recurrence probability, 18-month duration). Implementation of these remaining measure would fall far short of eliminating the projected deficit of the existing system in meeting the 100-year, 18-month drought demand. Water conservation measures are not considered a feasible alternative to meet the purpose and need of the proposed action. As shown in Table 2.2.7.2 of the DEIS and FEIS, the effectiveness of implementing conservation measure D (Direct Contact Audit for Nonresidential Customers with High Water Use) is approximately 0.54 mgd in year 2025. This represents approximately 1.0 percent of the Year 2025 projected nonresidential (commercial/institutional and industrial) water demand and approximately 0.25 percent of the projected total treated water demand in Year 2025, as shown in Table 1.2.3.1 of the FEIS.

1

May 19 1999
Pawnee Okl.

Attn: Planing Div.

I have been following the planning of Hunter Lake since it was first announced many years ago. I live in Pawnee in an area that could be affected by this lake. I live on the north side of the Pawnee school.

In the mid 70's I was a member of the Pawnee school board. We were approached at that time by the city of Springfield about the lake project and its effect on the school property. We could get few answers to our questions.

In May of 1995 CWLP had an open house at the water plant. I went to this event to get the following information from the people who should know

what's going on.

On an average they use 2.7 mil gallons per day. One day in that summer they used 35 million gal.

Water loss from evaporation can run 25 mil. gal. per day. (Same thing for Hunter Pt.) The pumps on the east side of the lake (35 mil gal per day x 2) could replace a lot of water if they were used on a regular basis. When water is available So why another lake? 1 2

A new lake would eliminate much of this water source. The State Journal-Register on Oct 24-95 carried an article about Hunter Lake. One of the Corps suggestions was increasing the capacity of Lake Springfield. 3

Another subject being displayed at that May 95 plant tour



P15.
John Thoele
P.O. Box 401
Pawnee, IL 62558
5/19/99

1. Water demand forecasts for the years 2000-2025 are summarized in Section 1.2.3 of the DEIS and FEIS.

2. As stated in Section 1.2.1 and 1.2.4 of the DEIS and FEIS, the existing water supply system includes the South Fork pump station, and yield estimates include water pumped from the South Fork. The yield of the existing system is inadequate to meet projected total water demand during a severe drought (100-year recurrence probability, 18-month duration) such as the Springfield area experienced during the 1953-1954 period.

3. As described in Section 2.2.8 of the DEIS and FEIS, raising the level of Lake Springfield was evaluated as a potential source of supply augmentation and was determined to be infeasible as an alternative to Hunter Lake.

was the dieging of the lake. 3.2 mil. cu. yds was removed. First time since the lake was built. Cost was 7.8 mil. This added 500 mil. gal. of water to the lake. This operation could be repeated and expanded to more areas of the lake, and for a lot less cost.

Everybody agrees that Horse — creek floods from time to time. There is a large floodplain down stream for all that water to go to.

A dam would just retain a water level that could make a much worse situation for people like me and the school.

I'm certainly against putting a dam on Horsecreek.

Thank you
John Thiele

A-85

4. The original storage capacity of Lake Springfield, immediately after construction in 1934, was approximately 59,900 acre-feet (about 19.5 billion gallons). Over the next 50 years, sedimentation reduced the storage of the lake by approximately 9,400 acre-feet to an estimated capacity of 50,500 acre-feet (about 16.5 billion gallons). The City dredged the upper portion of the lake over the period 1985-1989. This dredging restored nearly 2,000 acre-feet of storage (approximately 650 million gallons) at an estimated cost of approximately $8.0 million dollars. The present capacity of the lake is estimated to be 52,500 acre-feet (approximately 17.2 billion gallons). Additional dredging in quantities sufficient to restore all of Lake Springfield's original storage capacity would not increase the yield of the existing water supply system enough to meet projected water demand during extreme drought conditions, irrespective of the cost of such dredging.

5. Impacts to upstream areas resulting from development of Hunter Lake are summarized in Section 4.1.7 of the DEIS and FEIS. The total area of flood easements required upstream of the proposed reservoir is estimated at approximately 142 acres. Additionally, construction of the lake would require the relocation of wastewater discharge from the Pawnee sewage treatment plant. This impact is addressed in Section 4.1.14 of the DEIS and FEIS.

P16

May 25, 1999

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Environmental Analysis Branch
(Charlene Carmack)
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004

Dear Ms. Carmack:

I am writing to urge the Corps of Engineers to decide against the building of Hunter Lake in Springfield and to focus greater effort on conservation in addressing any future shortages of water. I am very concerned about the negative environmental impact a second lake would have, especially considering the recent leptospirosis outbreak in Lake Springfield. At the very least, shouldn't any decision on a second lake be delayed until the cause of the outbreak is discovered? What if there is some aspect of Lake Springfield's design or operation that is creating a foul environment in which the bacteria thrive? By forging ahead on a second lake without first determining the cause of the leptospirosis infestation, you're risking creating another health hazard. 1

It seems to me that City, Water, Light, and Power has not explored conservation measures in much depth because they have their heart set on a second lake. Just to cite one example--why not install low-flow shower nozzles and toilets in existing homes, instead of just new ones? Last December I moved here from New York City, where the city replaced the nozzles and toilets in every apartment and coop in the city to conserve water. Surely that would be much cheaper and make much more sense than building a second lake. 2

I am a writer of magazine articles and children's books on science with a masters degree in science and environmental reporting from New York University. It disturbs me that people are so concerned with fulfilling their own desires that they don't have any consideration for the land and the wildlife that would be destroyed by the lake. We've got to start taking our responsibility to care for our environment seriously NOW before it's too late. Please make the right decision for future generations.

Sincerely,

Karen Fitzgerald

Karen Fitzgerald
416 N. Clay St.
Pleasant Plains, IL 62677

A-86

P16.
Karen Fitzgerald
416 North Clay Street
Pleasant Plains, IL 62677
5/25/99

*1. Leptospira bacteria are carried by domestic, wild, and exotic animals, and are also ubiquitous in the environment. The pathogenic strains of the bacteria thrive in certain animals, and are subsequently shed into the environment through urination. Human contact most often occurs when the bacteria make their way into a body of water used for recreation. Reported human leptospirosis cases between 1988 and 1998 occurred in the following Illinois counties: Bureau (5), Cook (3), LaSalle (2), Hancock (2), Logan (1), Whiteside (1), Monroe (1), and Carroll (1).

The Springfield (Sangamon County) leptospirosis outbreak in the summer of 1998 followed heavy rains totaling nearly 10 inches in June. Although pathogenic Leptospira do not survive long in water, they were likely introduced into the upper reaches of Lake Springfield by this pattern of precipitation, infecting many recreational users. The Springfield Ironhorse Triathlon had 851 swimmers on a 1.5-mile course in one of these upper lake areas the morning after a 2-inch rain, and 52 triathletes later became ill with leptospirosis. This was the first time in the 15-year history of the event that any widespread illness problems were reported and this was the first known outbreak of leptospirosis from Lake Springfield.

The search for the animal source of pathogenic Leptospira bacteria in the Lake Springfield watershed included 199 domestic or exotic animals from 15 facilities (farms, stables, and zoos) and many wild animals. Only a few cattle and one dog showed serological evidence of infection, but the strains found were not the strains of the bacteria that caused the human outbreak. Wild animals tested included 33 deer, 16 raccoons, 9 opossums and 3 muskrats. None showed titers sufficient to indicate infection with the strain of the bacteria that caused the human outbreak.

There is no reason to believe that the sources of Leptospira bacteria in the Lake Springfield watershed are substantially different than other Central Illinois watersheds, and it is not likely that we will ever know the source of the bacteria that caused the 1998 outbreak. There were no reported cases of Leptospira related to exposure to Lake Springfield in 1999. We can be reasonably sure that no concentration of infected animals exists in the watershed, and that there are no characteristics unique to the Lake Springfield or future Hunter Lake watersheds that would promote unusually high Leptospira concentrations and runoff into the reservoir.

2. Water conservation as an alternative to construction of Hunter Lake was evaluated as described in Section 2.2.7 of the DEIS and FEIS. A breakdown of projected treated water demand by sector for the years 2000 through 2025 is shown in Table 1.2.3.1 of the FEIS. As stated in Section 2.2.7 of the DEIS and FEIS, the total effectiveness of implementing the remaining conservation measures (B, C, D, E, F, G, I, K, and L) is approximately 0.65 mgd. The applicant's stated purpose and need is to augment the existing water supply system to withstand a severe drought (100-year recurrence probability, 18-month duration). Implementation of these remaining measure would fall far short of eliminating the projected deficit of the existing system in meeting the 100-year, 18-month drought demand. Water conservation measures are not considered a feasible alternative to meet the purpose and need of the proposed action.

P17

5-27-99

DEAR SIR:

RE: HUNTER LAKE

THIS IS IN RESPONSE TO REQUEST FOR COMMENTS WITH REGARDS TO THE BUILDING OF HUNTER LAKE.
I WAS BORN & RAISED IN SPRINGFIELD, WENT TO ST. LOUIS UNVERSITY AFTER WWII, AND GRADUATED IN 1949.
I AM FIRMLY CONVINCED THAT THE BUILDING OF THE LAKE WILL RESULT IN POLITICS AT ITS WORST, WITH OVERRUNS & KICKBACKS THAT WILL BOGGLE THE MIND.
THERE IS ENOUGH WATER UNDERGROUND THAT WOULD SUPPLY ALL OF THE CITIES FUTURE NEEDS.
BEFORE THE SPRINGFIELD SANITARY DISTRICT INSTALLED A HOUSING (PUMPING SERVICE) FOR THE ROCHESTER SEWER SYSTEM IN THE SOUTH FORK RIVER BOTTOM, THEY ENCOUNTERED A MASSIVE SUPPLY OF WATER. THIS REQUIRED DIGGING FOUR(4) WELLS & INSTALLING PUMPS TO LOWER THE WATER TABLE. THREE(3) 7½ HORSEPOWER & ONE(1)5HORSEPOWER PUMPS WERE RUN CONSTANTLY FOR WEEKS, USING FIRE ENGINE HOSES TO PUSH THE WATER OVER THE OLD RAILROAD TRESSEL INTO THE DITCH AND DOWN TO THE RIVER.TWO OF THE WELLS (65'DEEP) WERE ON MY PROPERTY, ONE OF WHICH IS NOW BEING USED TO WATER THE LIVESTOCK.
THE TAKING OF PRIME FARMLAND OUT OF PRODUCTION IS UNCONSCIONABLE, ESPECIALLY WHEN THERE IS ANOTHER & PERHAPS A BETTER WAY.

1

SINCERELY,
EDWARD J ECK
2632 HILLTOP RD
SPRINGFIELD IL
PH 529-8899

P.S. SEE INCLOSED COPY OF KEITH CRAVENS LETTER CONCERNING THE FRIVOLOUS USE OF FARMLAND.



P17.
Edward J. Eck
2632 Hilltop Road
Springfield, IL
5/27/99

1. Feasible alternatives to Hunter Lake that include groundwater sources are described in Sections 2.3.3, 2.3.4, 2.3.5, 2.3.6, and 2.3.7 of the DEIS and FEIS.

1

P18

MARTHA J. SMITH
3516 South Vigal Road • Pawnee, IL 62558-4619 • Telephone (217) 529-7068

May 27, 1999

Ms. Charlene Carmack
Community Planner
U.S. Army Engineer District - Rock Island
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004

Re: Proposed Springfield Lake II EIS

Ms. Carmack:

I have not been able to review the latest Environmental Impact Study because I am home bound and unable to get to a library and did not find the report on the Internet. I had hoped that I would receive a copy of the Study from the Corps of Engineers, inasmuch as the City of Springfield has taken all or part of three different parcels in which I have interest. If it is possible for you to provide me with a copy of the Study, I would appreciate it. In the meantime, I cannot be specific to your Study results, but have the following comments and questions regarding the feasibility, integrity, legality and environmental and humanity impact of the City's proposed Hunter Lake.

A-88

1. This proposed lake has had an impact on my family for over 40 years. There was "talk" of another lake in this same general area before my father passed away in 1953. He feared we would lose our farm that ran along Horse Creek west of New City, which he purchased in 1943 and on which he had toiled and labored to provide tillable land to raise his family of 8 children. When my mother passed away in 1963, this talk of another lake by damming Horse Creek was even stronger. The thought of losing the farm played heavily on her mind, knowing the farm was all she had to offer her children as a family legacy. The original small house which didn't even have a bathroom, had been gutted in 1963, except for the fireplace, and a new modern home was built for her - new carpet being installed just one week before she died. Two brothers and I were still living at home at the time of her death and continued the farm operation. It was a picturesque park-like place where family reunions were held, giant cookouts, group harvesting and preserving the truck patch produce, and a time for children, grandchildren, great grandchildren, cousins, aunts, uncles, neighbors and friends gathered for fellowship, to grieve the loss of a loved one, to remember our roots and make memories.

The farm was purchased from my brother by the City of Springfield in the early 1970's. The remaining seven siblings had and still retain a share in the coal, mineral and mining rights to that property, which the City of Springfield never attempted to obtain. The title the City received from that property as well as a parcel of the farm that my brother had previously sold to other parties for a building site, indicates that the mineral rights were intact; however, they are not. With individuals holding title to coal, minerals and mining rights to property obtained by the City, can the City of Springfield proceed with the lake if they did not obtain a clear title to the property?

1

2. Shortly after the purchase of the farm, the City rented the farm and home. The house rent was far in arrears when the numerous occupants were evicted. They stripped the house of cabinets, carpeting, fixtures, awnings, etc., leaving a house no more than 15 years old gutted and unlivable. The house was dozed in and all our ties with our homeland were buried. Marijuana was growing in the flower beds my mother had planted, and the property was filled with trash, dead animals and overgrown with brush. How heart sick we

P18.
Martha J. Smith
3516 South Vigal Road
Pawnee, IL 62558-4619
5/27/99

*1. The applicant reports that in 1974, the City acquired approximately 13.5 acres from Carroll Beck, a brother of the commenter. Mr. Beck had inherited a one-eighth interest in this property from his mother who died intestate in 1963. Mr. Beck had seven other brothers and sisters. Mr. Beck obtained a quit claim deed from each of his siblings. Each quit claim deed reserved unto the grantor sibling an undivided 1/8 interest in "all coal, minerals and mining rights." In Mr. Beck's conveyance to the City, he excepted "7/8ths of the coal and minerals." Therefore, the City is the owner of 1/8 of the coal and minerals, while Mr. Beck's siblings appear to still own the remaining 7/8ths, or did in 1974.

In Illinois, unless the terms of the grant or reservation show an intent to the contrary, a grant or reservation of minerals generally gives to the owner of the minerals the incidental right of entering, occupying, and making use of the surface lands as is reasonably necessary in exploring, mining, removing and marketing the coal and minerals. The surface rights of the mineral owner are limited to as much of the surface and such uses thereof as are reasonably necessary to properly mine and carry away the minerals, and do not include the right to use the surface in such a way as unnecessarily to destroy or impair it. Any coal in the project area would only be removed by underground methods and not by pit mining or open surface mining.

The right to reasonably use this surface only relates to removing the coal and minerals from that particular tract. It would not extend to using the surface to remove coal and minerals from other lands. Uses which intrinsically could occupy huge surface areas may or may not be placed on the surface by implied right depending on the proportion of the total surface to be occupied by such uses and on whether those uses will serve only mining on the particular tract or also on neighboring tracts. Generally the mineral owner would need to acquire additional surface rights.

The applicant states that the City has clear title to the surface subject to an exception of 7/8ths of the coal and minerals. This is not inconsistent with the proposed project, and that extraction, if any, would occur by underground methods, and would not require use of the surface. The applicant reports that the file concerning the City's acquisition of this property from Carroll Beck indicates that the City did attempt to secure the siblings' release of surface rights in the 13.5 acres relative to the mineral ownership, and that this attempt was not successful.

1

all felt that the City of Springfield had allowed a beautiful farm and home to be destroyed by irresponsible renters!

This was not an isolated case. More than 25 years ago, many homes were purchased from elderly people who had lived their entire lives in those homes. They were uprooted from the homes they cherished, were forced to relocate, the properties rented to outsiders who had no pride in the neighborhoods, and the homes were destroyed by them and made unlivable and a disgrace to the neighborhood. The original owners had to re-establish a life in an unfamiliar area and try to "start over" in the late stages of their lives. Those elderly people could have continued to live and then die there in their familiar homes where their roots were so deeply planted. Instead, the City of Springfield buying up and neglecting that property has virtually ruined what was a wonderful neighborhood where doors were never locked and there was no fear of robbery or killings. Brush has been allowed to grow up on the properties, and many have been turned into pitiful and unhealthy dumping grounds for people who have no morals.

3. There are four cemeteries in the proposed lake area where my ancestors, parents and siblings are buried. What effects will Hunter Lake have on these cemeteries? Will graves be disturbed and relocated in areas affected by the water or by road access? A burial place is sacred and should be one's "final resting place;" however, even the dead will be disturbed because of the proposed lake. 2

4. My own homestead on Vigal Road will all be changed due to the proposed lake with the damming of Brush Creek. The City purchased a portion on the back of my land just a few years ago. If I understand the plans correctly, the high water line will be not only behind my house, but across the road, and at my neighbor's driveway. Obviously, with all the "fingers" of the proposed lake, the water will be shallow and leave pools of standing water in dry periods and after pumped to Lake Springfield. This will create an environment for snakes, mosquitoes and noxious weeds right in our back yards. With the timbers, trees, nesting and bedding areas for natural predators destroyed by the lake, the Eco-system will be detrimentally affected. How will the City of Springfield compensate for these problems? 3

5. The area I am in is residential with small children. Plans show Vigal Road will be closed at my neighbor's driveway. The road drops off greatly past there to the Brush Creek bottom, and I have a fear that the City would put a boat ramp in that area. That would totally ruin the residential aspect of the area, creating traffic hazards and unsafe conditions for area residents. Is there any way to prevent that from happening? 4

6. Since I am unable to get out much because of physical problems, my home is my haven. I am awakened by the birds singing and the sights and sounds of the country are a joy. The first thing I do when I get up is go in my screen room where I watch and listen to the many varieties of birds. I have watched deer eating in my field, listened to coyotes howl, watched small animals meandering through my property, and even saw a red wolf that had escaped from a nearby zoo trot through. The water will cover the secret morel mushroom patches, the blackberry patches and the homes of so many untold birds and animals. The deer have a path worn along my field and up into my yard. My young grandson and I have explored the paths and noted the different sizes of cloven tracks from giant bucks to the tiny fawns. The owls have awakened me during the night with their "hooting." For several years, there has been a hawk or screech or barn owl that comes to lite on the fence at night and we "talk" to each other. Each year the young ones join on the fence and chime in with their squeaky chirps. Two years ago there was a dead raccoon at the edge of my freshly planted corn field by my yard. It was muddy and I was unable to get to it to bury. I will never forget the sights I witnessed from my screen room during the next few days. First there was one turkey vulture exploring the carcass, later two or three. One day there were thirteen turkey vultures right at the back of my yard. Watching their pecking order was fascinating. They were perched on the ground, one eating at the carcass with a semi-circle of six more just waiting to sneak a bite as opportunity afforded. Behind that brood, there were five more patiently waiting their turn to the meal, one apparently being the lowest on the totem pole and so intimidated by the others that it sat with its back to the activity --- or possibly that was the sentry keeping lookout for other scavengers. Within three or four days, there was not a shred of evidence anything, even the birds had been there. No hair, no feathers, no bones. It is obvious that these huge birds



2. As stated in Section 4.1.11.4 of the DEIS and FEIS, Eldredge Cemetery would have to be relocated because of inundation. Four other cemeteries near the lake's proposed high water mark may require levee protection.

3. A revised mitigation plan for wetland and other natural resource impacts has been developed by the applicant. This plan is described in Section 4.1.9 of the FEIS.

4. As noted in Sections 2.3.1.2 and 4.1.3 of the DEIS and FEIS, the applicant's proposed design for Hunter Lake includes construction of two lake access areas, one on each of the County highways. The exact locations of these accesses have not yet been specified, and no other such facilities are currently proposed by the applicant.

1

have a nesting place in the area, as do the owls, hawks, the herons and other birds that live among us. What will become of these tree and ground nesters when Lake II is a reality? 5

7. My father found many Indian artifacts on our farm during the years, including a majestic specimen of a stone ax. Our family has found many more such artifacts throughout the years. It is obvious that the Indian tribes frequented the lands in this area. Has there been any attempt to determine if there are burial grounds in the hills and mounds in the land that the City of Springfield has taken? 6

This land is full of history. Selecting a home in an area to raise ones family is a crucial part of life. When we make that selection, we do not expect an entity to come in a force us to give up our cherished home or property, our roots, the burial grounds of our family, friends and neighbors, and leave the area to become a dumping ground, a growth of brush and trees mixed among remaining lovely homes. I realize that change is inevitable for this country to prosper, but Lake II is not the only option, although the City says it is the least expensive. Whether or not that is totally true, I am not convinced. Other methods of water supply would not have the vastly detrimental affect on the people, property, the community, our tax base, the roads, the environment or humanity in general. 7

Thank you for hearing my concerns and I trust you will seriously weigh the issues of all the concerned citizens on the proposed Hunter Lake. Again, I would appreciate a copy of the Environmental Impact Study if that is possible.

Very truly yours,

Martha J. Smith

cc: City of Springfield



5. Biological impacts of Hunter Lake are described in Section 4.1.5. and displayed in Table 4.1 of the DEIS and FEIS. Impacts to forests and to wildlife species dependent on forest habitat, such as the birds and mammals cited in the comment, would be mostly negative. Potential negative impacts to wetland, forest, and stream habitat which were identified in the DEIS and during public review of the DEIS, necessitated the development of a revised mitigation plan by the applicant. This revised mitigation plan is described in Section 4.1.9 of the FEIS.

6. A survey of cultural resources in the Hunter Lake project area was conducted by the Illinois State Museum under contract with the City of Springfield. The results of these investigations are summarized in Section 3.1.3 of the DEIS and FEIS. Potential impacts of Hunter Lake, and measures to be undertaken to protect historic properties if a permit is issued for reservoir construction, are summarized in Section 4.1.4 of the DEIS and FEIS.

7. Estimated costs of Hunter Lake and all feasible alternatives are displayed for comparative purposes in Table 2.1.3 of the DEIS and FEIS. Significant environmental effects of Hunter Lake and all feasible alternatives are displayed for comparative purposes in Table 4.1 of the DEIS and FEIS. These two tables together represent a comparative summary of monetary and non-monetary costs of the proposed action and alternatives.

P19

WALTER E. HANSON

May 28, 1999

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Environmental Analysis Branch (Charlene Carmack)
Clock Tower Building
P.O. Box 2004
Rock Island, Illinois 61204-2004

Re: Draft Environmental Impact Statement
Municipal Water Supply Reservoir
Springfield, Illinois (Hunter Lake)

Dear Sir:

Your Draft Environmental Impact Statement, issued with your letter dated April 9, 1999, is comprehensive and well presented. It demonstrates clearly that the Hunter Lake project is the best choice for the supplemental water supply for Springfield and surrounding communities. 1

A-91

During the 1953-1955 drought, it was clear that cooling water needed for the City's power generation was as critical as water for other needs. I think this is a factor that should be emphasized, because another drought as severe as the one 45 years ago would necessitate that all of Springfield's power be generated elsewhere.

My family and I have lived in Springfield since 1951. For 35 years we lived on a lake lease and observed the yearly and seasonal fluctuations of the lake level. We sincerely hope that Hunter Lake will be completed before another severe drought occurs.

I have hesitated to write this letter, because I was the founder of Hanson Engineers who has had considerable involvement in this project over the years past. However, I retired in 1986 and am writing this letter as a concerned citizen, not as a stockholder in any of the engineering firms who have participated in this excellent report.

Thank you for your consideration and for the excellent report.

Very Truly Yours,

Walter E. Hanson

Walter E. Hanson

JG 05/28/99 15 TURNBERRY PLACE • SPRINGFIELD, IL 62704-3174

P19.
Walter E. Hanson
15 Turnberry Place
Springfield, IL 62704-3174
5/28/99

1. Hunter Lake is identified in the DEIS as the applicant's preferred alternative and the DEIS makes no conclusion as to its feasibility relative to other feasible alternative identified in the document.

1

P20

3691 Honeywell Road
Rochester, Illinois 62563

May 28, 1999

District Engineer
U.S. Army Engineer District
Clock Tower Building
P. O. Box 2004
Rock Island, Illinois 61204-2004

Attention: Planning Division

I am writing in opposition to the construction of Hunter Lake in Springfield.

Construction of Hunter Lake and dam will destroy the history of this area. The peaceful habitat for wildlife in this agricultural area and Horse Creek will be negatively impacted.

Your chief concerns have been for drought years, but I don't feel you have taken into full consideration flood seasons and flood years. You will be creating the potential for flooding of farmland and low lying areas to the full expanse of Riverton, Illinois. This will be a major impact to our area. There would be a potential loss not only to those in the agriculture business, but many others as well. Are you prepared to help incur the losses due to flooding? 1

Reconstruction of roads and utilities will be disruptive to the area also. Please reconsider your plans for this area.

Thank you for the opportunity to express my concerns for Hunter Lake reservoir.

Sincerely,

Don Mohler

Don Mohler PHONE: 529-1020 (217)

A-92

P20.
Donald Mohler
3691 Honeywell Road
Rochester, IL 62563
5/28/99

1. As stated in Section 4.1.7 of the DEIS and FEIS, modeling of the 100-year flood event has identified approximately 142 acres upstream of Hunter Lake for which the applicant would be required to purchase flood easements, if a permit is issued for the project. In addition, flood easements would be required for 53 structures located downstream of the proposed dam site that would be affected by development of the lake.

1

P21

**Mr. & Mrs. Richard B. Schmidt JR**

4120 KOA RD
Rochester, IL 62563

Phone 217-525-2224
Fax 217-525-7367
Home Phone 217-498-5907

June 03, 1999

US Army Corps of Engineers
Rock Island District, Clock Tower Building
P O Box 2004
Rock Island, IL 61204-2004

RE: HUNTER LAKE

Dear Ms. Charlene Carmack,

We currently live on KOA Rd, this is a very beautiful place to have your home and family. We have two boys 11 & 7 years of age, it is really great to know that we do not have to worry about all the troubles like living in town bring. We have looked for a place like this one for many years. We were disappointed that we were not able to purchase the home, but very happy to be able to lease. When we inquired about said property (4120 KOA RD) there was no talk concerning Hunter Lake, next thing you know we are receiving a letter and hearing alot of said project. I wish all of you could see how beautiful it really is here, we have many different types of animals that come up in the yard especially many deers, we have even put out mineral blocks for them to feed and have put up many No Hunting signs. What will happen to these animals that have the right to be here? Let alone all the families that reside here. I know from my own past experience that finding a home like this one located in such a nice setting will be impossible, let alone in the Chatham School District. 1

We have read your letter and see that the only reason anyone wants to do this project is for the drought that may or may not happen in the year 2025. That is not good enough reasons to cause such a disturbance for so many families and animals.

A-93

Sincerely,

Richard B. Schmidt
Pamela J Schmidt

P21.
Richard B. and Pamela J. Schmidt
4120 KOA Road
Rochester, IL 62563
6/3/99

1. Biological impacts of Hunter Lake are described in Section 4.1.5. and displayed in Table 4.1 of the DEIS and FEIS. Impacts to forests and to wildlife species dependent on forest habitat, such as the birds and mammals cited in the comment, would be mostly negative. Displacement of residents of properties in the Hunter Lake project area are addressed in Section 4.1.1 of the DEIS and FEIS. Overall, the social impact of lake construction would be negative for the majority of residents in the project area. 1

P22

Helping Hands
of Springfield

MIKEL WEISSER
Program Coordinator

200 S. 11th Street, Springfield, IL 62703
Telephone: 217-522-0048 Fax: 217-522-0549
E-Mail: helphands@cityscape.net

6/03/99

Dear sirs:

We here in Springfield long ago learned we need to look at public projects with a skeptical eye. Being the base of power for Illinois we have all too often found that for every promise of improvement for the masses which appears to be followed through, in actuality, there is, for the connected, merely another dollar being made. There will be plenty of dollars made in the building of Hunter Lake II, but few real improvements for the people. The projected possible population increases which might warrant an additional water supply are unlikely and without a sincere program of water and soil conservation there is no supply large enough to sate our squander. Please resist this transparent ploy to further endow the wealthy by further plundering our precious land. 1

Mikel Weisser

A-94

P22.
Mikel Weisser
200 South 11th Street
Springfield, IL 62703
6/3/99

1. Comment noted. No additional response necessary.

1

P23

June 3, 1999

Charlene Carmack, Community Planner
The U.S. Army Engineer District, Rock Island
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004

Dear Ms. Carmack,

This letter is in regards to the development of Hunter Lake for City Water, Light and Power (CWLP) and the City of Springfield. I am concerned about the environmental impact from creating such a lake and the city and CWLP's ability to maintain another lake. From my observation, Lake Springfield has not been properly maintained. The lake is polluted, commercialized and has too many residential houses. 1

A-95

If Hunter Lake is allowed to be developed. Please recommend the area around the lake to be strictly for native wildlife. With consideration for some well thought out and maintained trails. In the Springfield area there are very few wildlife areas. I would also recommend eliminating any recreational vehicles from Hunter Lake. 2

I would prefer to see Lake Springfield and the water sheds flowing into it cleaned up, dredged and maintained. Thanks for listening to my concerns.

Sincerely,

Faith Winston-Yanor

Faith Winston-Yanor
5747 Mansion Road
Chatham, IL 62629

P23.
Faith Winston-Yanor
5747 Mansion Road
Chatham, IL 62629
6/3/99

1. Comment is noted.

2. As stated in Section 4.1.3 of the DEIS and FEIS, the Springfield City Council has committed by ordinance to protect the marginal lands within the Hunter Lake project area boundary from development. In addition, a revised mitigation plan for wetland and other natural resource impacts has been developed by the applicant. This plan is described in Section 4.1.9 of the FEIS.

P24

E.L. CHAPIN 1857-1934
ROGER E. CHAPIN 1890-1966

JOHN R. CHAPIN
CHARLES A. CHAPIN

CHAPIN & CHAPIN
LAWYERS
205 SOUTH FIFTH STREET, ROOM 1000
SPRINGFIELD, ILLINOIS 62701

AREA CODE 217
TELEPHONE 523-5611
FACSIMILE 523-5612

June 4, 1999

District Engineer
U.S. Army Corps of Engineers
Attn: Environmental Analysis Branch
Clocktower Bldg.
P.O. Box 2004
Rock Island, IL 61204

Re: Hunter Lake, Springfield, IL

Gentlemen:

This is a vote in favor of Hunter Lake or Lake Springfield II. 1

Nearly every city in the country (or the world) is built on a river, lake, ocean, or some body of water, fresh or salt.

Springfield was built on a creek which became know as the Town Branch. Then about 100 years ago it was encased in brick and continues to this day to be the main sewer. Our closest natural fresh water is Sangamon River, 7 miles away.

Those of us who remember 1955-'56, when Lake Springfield dried up and became a field of horse weeds with occasional little ponds in which fish were trapped, also remember that the situation was remedied slightly by pumping water from the South Fork of the Sangamon. What a remedy!

We can have our own fresh water reserve supply instead of seeking effluvium and detritus from numerous towns and villages upstream.

Very truly yours,

John R. Chapin

A-96

P24.
John R. Chapin
205 South Fifth Street
Room 1000
Springfield, IL 62701
6/4/99

1. Comment noted. No additional response necessary.

1

P25

June 5, 1999

U.S. Army Engineer,

Dear Sirs,

I Can not believe anyone who has lived in the County of the United States of America and would think of destroying the beauty of the country around Spfld, Ill. I am talking about the people who want to make a reservoir of water that would not do the good it should for Spfld Ill. There has to be a different way to put water in Lake Spfld. Once the beauty of the trees, birds, animals and flowers are gone they can not be replaced. They have pumped water from the South Fork River into Lake Spfld for years when needed. Lots of time they would wait to long To start, but it would do the job for the year. If they want to build a 2nd lake why don't they dig the South Fork with more storage so they can pump it into lake Spfld. Water could Go on Past the Lake Pump station on down river, With little damage to the environment. I think that after these Hundred of Acres are destroyed and the beauty gone, it will never be back or replaced. If Hunter Lake was going to be for water Sports, Water Supply Homes & Recreation & other things it would be better. Septic tanks could be used that do not contaminate the Water and Ground. I hope you will take time & Consider other options.

A-97

1

Thank you
Alvin R Boggs

Alvin R. Boggs
7645 N. Pawnee Rd.
Springfield, IL 62707

P25.
Alvin R. Boggs
7645 North Pawnee Road
Springfield, IL 62707
6/5/99

1. Construction of a permanent reservoir on the South Fork was evaluated as a potential alternative to Hunter Lake, as described in Section 2.2.3 of the DEIS and FEIS. This alternative was determined not feasible on the basis of potential environmental impacts and anticipated high costs.

1

P26

June 05, 1999

U S Army District personnel

In regard for plans to develop Lake !! South of Springfield, I do have several questions, and comments.

I have lived in that area since 1961, and attended the 1st meeting(s) which were held regarding this project. I remember other landowners asking in astonishment, of John Hunter--- "What if we do not wish to sell our land to the City of Springfield,,?" and his blunt replay, "I have the power of condemnation, and I intend to use it" My added comment to this is it is my personal belief that if John Hunter had not died so suddenly, the Lake would have been a part of the landscape for several years by now.

A-98

As a land owner of 3 different properties , 2 of which were purchased by the City of Springfield, my questions at this time is:

I live at 9 South, & 8.5 East, on the North side of the New City Road. A small creek runs through 10 acres of my farmland, on which I raise corn & beans, alternately. I was told the creek is a subsidiary of Lick Creek. will there be flooding, as a consequence of the damning of this creek further up ? 1

I own 20 acres surrounding this creek...South Fork of the Sangamon River runs behind my property.

As far as taking so much farm land out of production, I believe the answer to this argument is that so much farm land around me is at present under various Government programs of crop lay-by that possibly could be raising crops, if necessary.

Also, water is a far more precious commodity than food, that any loss of crop production would be far out weighed by water provided.

I pray that your response and final decision is to go ahead as quickly as possible with Lake II. This project has been in limbo for 40 years. Property owners, at the loss of their land, should at least see something positive result from that loss.

Sincerely, and awaiting a reply,
June Murphy, 7993 New City Road, ROchester, Il. , 62563
(217) 498-8910

June Murphy

P26.
June Murphy
7993 New City Road
Rochester, IL 62563
6/5/99

1. From the location description provided in the letter, it appears that this property is within the larger South Fork drainage, but not located within the Horse Creek watershed. As such, water levels in Hunter Lake would not be expected to affect this property.

P27

Lila Phelps Van Giesen
706 South Clay Street
Taylorville Ill 62568-2526

June 6th

I dont want Hunter Lake to do away with Eldredge cemetery which is the burial place of my Great Great Grandparents. James & Belinda Morgan. one stone down other up. they once owned the land where cemetery is. If Lake does go in would I be notified where their grave and stones moved to. I would like an answer when and where.

Lila Van Giesen

A-99

OFFICE OF PUBLIC UTILITIES
CITY OF SPRINGFIELD, ILLINOIS

KAREN HASARA, MAYOR

GENERAL OFFICE

June 9, 1999

Ms. Lila Phelps Van Giesen
706 South Clay Street
Taylorville, Illinois 62568-2526

RE: Hunter Lake Project
Eldredge Cemetery

Dear Ms. Van Giesen:

Your letter of June 6 regarding Eldredge Cemetery was referred to my attention. Over the last 10 years I have had several contacts from several persons who have ancestors interred in the former Eldredge Cemetery.

If the City was to receive a permit to proceed with the Hunter Lake Project, the site of the Eldredge Cemetery would need to be addressed. Our current information would indicate that the site would in inundated by the lake. We would therefore be required to relocate the graves. Eldredge Cemetery would be classified as an "abandoned" cemetery under Illinois statutes. As such, the City's activities would be regulated by the rules and guidelines of Illinois Historic Preservation Agency.

We anticipate that if relocated, the graves would be moved to another active cemetery in the area such as the Brunk Cemetery in the project area or Stout Cemetery west of the project area north of the Ball Elementary School. We would expect to consult with known relatives regarding the new locations. We will retain your correspondence for future reference.

In the meantime, if you have any questions or comments regarding this project, please let me know. I may be contacted by telephone at 217-789-2116 extension 501.

Very truly yours,

William A Murray

William A. Murray
Regulatory Affairs Manager

Cy: Tom Skelly

ROOM 400 MUNICIPAL CENTER EAST • 800 EAST MONROE • SPRINGFIELD, ILLINOIS 62757 • (217) 789-2116 • FAX (217) 789-2136

P28

June 7, 1999

U.S. Army Engineer District, Rock Island
Attn: Charlene Carmack
Clock Tower Building
PC Box 2004
Rock Island, IL 61204-2004

Dear District Engineer:

In reviewing the Draft Environmental Impact Statement for the proposed Hunter Lake, I find very little mention of the impact on downstream farmland in spite of the fact that the subject of streambank erosion and scouring was brought up at the Hunter Lake Scoping Meeting. 1

A-100

Currently there is a chain of events in the relationships between the watershed of South Fork and the watershed of Horse Creek which creates stability in the floodplain of Horse Creek and makes it economically viable and productive farmland. Hunter Lake will disrupt that chain of events and eventually destroy the productivity of the lands between the Hunter Lake dam and the intersection of South Fork.

When a 3½ inch or more rainfall event occurs over the entire area of both watersheds, the normal pattern is for Horse Creek to exceed its banks and overflow farmland in this area for about 48 hours. At that time Horse Creek has very rapid flow and tremendous turbidity. As it passes over tillable land, it tends to scour on lands that have been tilled recently or that have no attached residue to hold the soil in place. During this time, the South Fork is well within its banks and the runoff from its much larger and longer watershed has not arrived at the intersection of Horse

P28.
David Ramsey, Mary Jean Western, and Richard Ramsey
6/7/99

1. Impacts of Hunter Lake on downstream areas are summarized in Section 4.1.7 of the DEIS and FEIS.

1

Creek by then. Horse Creek then settles back to bank full or slightly above until the South Fork exceeds the level of Horse Creek, which occurs about 80 to 100 hours after the initial rainfall event. From that point forward the Horse Creek floodplain becomes stilled from the Honeywell Road Bridge to the intersection with South Fork. The turbidity of Horse Creek then settles out in the Horse Creek floodplain which at this point, has become the backwaters of South Fork. Several mils of soil are then deposited over the Horse Creek floodplains to replace what may have been scoured only a couple of days before. If another rainfall event occurs in the Horse Creek watershed anytime within the next five days or so, then Horse Creek again becomes violent and turbid only to end up depositing even more dirt into the floodplain below Honeywell Bridge. I have farmed this land for 32 years, since 1967, and I have seen this type of event deposit an inch or more of soil in the floodplain on at least 10 occasions. The net effect of this chain of events is that this floodplain remains very productive and stable in spite of the fact that it is constantly shifting and changing, or scouring and filling. In 32 years, we have only had 2 crops that were unprofitable, and those were the result of late summer floods that destroyed the crop when it was too late to replant.

A-101

If Hunter Lake is built, there will be three disruptions to this chain of events that will devastate the productivity of this land. First of all is the extreme speed at which a rainfall event on the upper Horse Creek watershed will reach the Honeywell Bridge when the lake is at full pool. This is referred to in section 4.1.7 of the Draft Environmental Impact Statement. The result of the faster arrival will be a higher water level in the floodplain during the inital scouring period described earlier in this letter. Secondly, the kinetic energy of this water falling 41 feet in a spillway instead of meandering 10 miles over a wooded creek bank will result in water velocity that will increase the scouring effect exponentially. I'm certainly no physicist, but any 10 year old kid playing with a water lose in a sand box could figure that one out. No amount of stilling ponds or structure can remove all of that kinetic energy. Thirdly, as mentioned in section S.4 of

2

2. Hydraulic modeling of potential flooding effects indicated that under existing conditions (without the lake), almost all the floodplains downstream of the proposed dam site would be flooded, with or without concurrent flooding on the South Fork. The increase in depth caused by the proposed Hunter Lake (ranging from 0.16 to 0.48 feet) was calculated to persist for approximately 1 day. This increase in depth would not be expected to cause additional flooding to a larger area, because of the topography of the floodplain downstream of the dam site. This information has been added to Section 4.1.7 of the FEIS.

1

the Draft Impact Statement, the turbidity levels of Horse Creek would forever be reduced below baseline levels. Therefore the replenishment of soils following the increased scouring would become almost nonexistant as described earlier in this letter. My family has owned and farmed these bottoms since 1941 and based on our experience, we would predict that the productivity of at least 200 acres of floodplain from Honeywell Bridge to South Fork will be completely destroyed within 20 years after Hunter Lake achieves full pool. CWLP should recognize these problems and compensate accordingly. 3

Streambank erosion is another problem associated with the lake in which we have a recent event to refer. In the mid 1970's when the Honeywell Bridge was built, 1000 feet of Horse Creek was straightened south of the bridge to assist in the alignment and location of the bridge. A large hook in the stream was bypassed which can still be seen south of the bridge. Within 5 years the streambank erosion on every curve of Horse Creek for 2 miles north was increased tremendously. It was worst of course on the first curve north of the bridge and in spite of filter strips and tree planting has gouged about 3 feet out of 2 acres of the floodplain on that curve since that time. That situation was somewhat expected, but the effects downstream were not. The change in impact on that first curve caused the average directioned flow to deviate all the way to South Fork and caused scouring of as much as 30 inches in the center of fields 1½ miles north of Honeywell Bridge. In the last ten years, this damage has stabilized, but if Hunter Lake adds volume and velocity to these waters, it will literally cause Horse Creek to cut these farms in two. 4

The families who own these bottoms have put two generations of sweat and capitol into them and we would expect the Army Corps of Engineers to understand these problems as well as anyone, and for them to require CWLP to compensate for these problems and not just run roughshod over our land.

A-102

3. If Hunter Lake is constructed, it would be expected to reduce some of the sediment load in Horse Creek below the dam. This could in turn reduce the potential for deposition of sediments from Horse Creek flows onto floodplain lands downstream of the reservoir. The future productivity of these downstream lands, is expected to be dependent on a number of factors, with or without the existence of Hunter Lake. Other factors potentially influencing downstream productivity include the amount of sediment inflow to Horse and Brush Creek from the upstream watershed, the amount of sediment inflow from the South Fork backwater effect, and agricultural activities on the lands in question.

4. If Hunter Lake is constructed, a potential effect downstream of the dam could be a lowering of the channel bed elevation during normal (non-flood) flow periods, if the reduction of sediment load and increased head differential increase the scouring capacity of the outflow discharge from the lake. Lowering of the bed elevation could increase the potential for bank erosion along the stream channel. The scope and degree of this potential effect cannot be effectively measured. This information has been added to Section 4.1.7 of the FEIS.

1

Sincerely,

David Ramsey, Landowner & Tenant

Mary Jean Western, Landowner

Richard Ramsey, Landowner

P29

**Carmack, Charlene MVR**

**From:** Jim and Anne Watson [murphywatson@juno.com]
**Sent:** Tuesday, June 08, 1999 8:48 PM
**To:** charlene.carmack@usace.army.mil
**Subject:** Hunter Lake proposal

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Environmental Analysis Branch

I would like to respond to your Draft Environmental Impact Statement by adding my opposition to the Hunter Lake proposal. I respectfully request you consider these arguments as to why I believe a new lake is not in my best interest.

1) Need Is there truly a pressing need to build a new lake in the Springfield area? Of the two significant droughts experienced in the area in 50 years, the first was before a pumping station had been operable on the South Fork. The second was easily managed by the slightest of conservation methods. Perhaps these conservation methods need to be reconsidered as the least expensive way to weather droughts. I feel conservation should be at the top of CWLP's list, rather than be dismissed outright. 1

Decatur doesn't have two lakes. Champaign-Urbana doesn't have two lakes (let alone four). Neither Rockford, Bloomington, Normal, Kankakee, or Bellville have two lakes apiece. Does Springfield need two lakes?

Chatham, the fastest growing town near Springfield, is exploring an alternative to CWLP drinking water. Could not this indicate a decreasing need for Hunter Lake, rather than an increasing need? Instead of trying to predict a need for Hunter Lake 50 years from now, CWLP and the city of Springfield should take care of the resource they have available today: Lake Springfield. Which brings up point #2. 2

2) Stewardship If CWLP cannot maintain the cleanliness of Lake Springfield, I do not want TWO polluted lakes in the area. If CWLP cannot manage Lake Springfield, how can it manage two lakes? I see Hunter Lake as destroying thousands of acres of arable farmland, not to mention the loss of habitat for animals and birds. I can't help but see CWLP as a poor steward of resources. I certainly don't want CWLP creeping closer and closer to my home five miles from the city looking for more land to drown. I'm beginning to fear for the safety of every small town near Springfield. 3

3) Responsibility I believe the city of Springfield needs to learn to live within it's means. If there isn't enough drinking water to supply the residents of the city, CWLP should look first at water use and misuse. CWLP should not look at acquisition of farmland to flood; it needs to consider responsible conservation and the reliable maintenance of Lake Springfield. Rather than encouraging urban sprawl and irresponsible growth, the city must develop a plan to decrease environmental impact. Springfield is becoming the monster that ate central Illinois. Business interests are placed far ahead of environmental issues in Springfield.

I urge you to deny a construction permit to CWLP for Hunter Lake. I request instead that conservation measures be considered as the least expensive and most environmentally acceptable solution. 4

Sincerely,

Anne Murphy Watson

Get the Internet just the way you want it.
Free software, free e-mail, and free Internet access for a month!





P29.
Anne Murphy Watson
6/8/99

1. Water conservation as an alternative to construction of Hunter Lake was evaluated as described in Section 2.2.7 of the DEIS and FEIS. A breakdown of projected treated water demand by sector for the years 2000 through 2025 is shown in Table 1.2.3.1 of the FEIS. As stated in Section 2.2.7 of the DEIS and FEIS, the total effectiveness of implementing the remaining conservation measures (B, C, D, E, F, G, I, K, and L) is approximately 0.65 mgd. The applicant's stated purpose and need is to augment the existing water supply system to withstand a severe drought (100-year recurrence probability, 18-month duration). Implementation of these remaining measure would fall far short of eliminating the projected deficit of the existing system in meeting the 100-year, 18-month drought demand. Water conservation measures are not considered a feasible alternative to meet the purpose and need of the proposed action.

2. As indicated in Section 1.2.3 of the DEIS and FEIS, water demand forecasts were developed both for the existing service territory and for an expanded 12-township area (including Chatham) which could potentially encompass the CWLP service area by the year 2025. The anticipated yield of the existing water supply system during a 100-year, 18-month drought would be inadequate to meet projected demand for both the current service territory and the expanded 12-township area.

3. Potential impacts of Hunter Lake and all feasible alternatives are summarized in Table 4.1 and described in Section 4 of the DEIS and FEIS.

4. See response to comment #1 above.

1

P30

June 9, 1999

District Engineer
U.S. Army Corps of Engineers
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004

To Whom This Concerns,

Please be advised that I am strongly opposed to the construction of the Hunter "Lake" proposal for Springfield Illinois. The city nor the county requires additional water since any halfway sensible water conservation measures energetically instituted and consistently adhered to would provide more than enough water for the area. The destruction of arable land and wildlife habitat caused by an additional body of water would be an irretrievable loss. An extra artificial body of water would also get as polluted as the current one (Lake Springfield) is. Hordes of "recreational" abuses from oil-leaking machines would only add to the current disfunctional state already existing. Of course runoff from herbicides/pesticides would add to the destruction of the environment. Speculation on real estate is not the best indicator of future need. Best now to concentrate on cleaning up the present body of water and save time, money, peace of mind and the environment. I urge you to deny any permit seeking impoundments for additional bodies of water. 1

Thanks,

Ed Gutierrez
6057 Horsebarn Rd.
Pleasant Plains, IL 62677

T

A-105

P30.
Ed Gutierrez
6057 Horsebarn Road
Pleasant Plains, IL 62677
6/9/99

1. Water conservation as an alternative to construction of Hunter Lake was evaluated as described in Section 2.2.7 of the DEIS and FEIS. A breakdown of projected treated water demand by sector for the years 2000 through 2025 is shown in Table 1.2.3.1 of the FEIS. As stated in Section 2.2.7 of the DEIS and FEIS, the total effectiveness of implementing the remaining conservation measures (B, C, D, E, F, G, I, K, and L) is approximately 0.65 mgd. The applicant's stated purpose and need is to augment the existing water supply system to withstand a severe drought (100-year recurrence probability, 18-month duration). Implementation of these remaining measure would fall far short of eliminating the projected deficit of the existing system in meeting the 100-year, 18-month drought demand. Water conservation measures are not considered a feasible alternative to meet the purpose and need of the proposed action.

1

P31

Richard F. Watts
11484 N. Pawnee Rd.
Pawnee, IL 62558

June 9, 1999

District Engineer
US Army Corps of Engineers
Rock Island District, Clock Tower Building
Post Office Box 2004
Rock Island, IL 61204-2004

Dear Sirs:

This letter is in reference to the Hunter Lake project proposed by Springfield City Water, Light and Power. **I urge you not to grant the permit** based upon the negative environmental impact that the proposed Hunter Lake will cause to southern Sangamon county. The proposed Hunter lake would eliminate seed, fruit and cover for the wild birds and animals in southern Sangamon county. Living there for the majority of my life, I can attest that there are deer, raccoons, coyotes, barn owls, great horned owls, screech owls, pheasants, quail, fox, ground hogs, squirrels, brown bats, beaver, and a variety of snakes and insects that would be eliminated from this area by the proposed Hunter Lake. They would more than likely die due to a lack of food source or the inability to migrate as there is no other suitable habitat in southern Sangamon county for these animals to exist in. The land that would be displaced by the water currently has a large food source for wild animals that would be eliminated. There are walnut, red oak, white oak, hickory, hazelnut, mulberry, and other food bearing trees on this land that would be eliminated by Hunter Lake. There is virgin land that would be covered by the water from Hunter Lake. There are many varieties of mushrooms, gooseberries, blackberries, raspberries, elderberries, and other wild food sources that would be eliminated by Hunter lake. The creek habitat and aquatic life in the creeks would also be destroyed as the lake would not be a suitable habitat. In closing, **I again urge you not to grant the permit** for construction of this lake, as it would be devastating to the environment of southern Sangamon county.

Sincerely,

Richard F. Watts

Richard F. Watts

1

P31.
Richard F. Watts
11484 North Pawnee Road
Pawnee, IL 62558
6/9/99

1. Biological impacts of Hunter Lake are described in Section 4.1.5. and displayed in Table 4.1 of the DEIS and FEIS. Impacts to forests and to wildlife species dependent on forest habitat, such as the birds and mammals cited in the comment, would be mostly negative. Potential negative impacts to wetland, forest, and stream habitat which were identified in the DEIS and during public review of the DEIS, necessitated the development of a revised mitigation plan by the applicant. This revised mitigation plan is described in Section 4.1.9 of the FEIS.

1

P32 -

June 10, 1999

Re: Hunter Lake Permit

To whom it may Concern:

As a concerned citizen I am opposed to the construction of Hunter Lake.

I feel we need to be more concerned about protecting the natural environment. With the construction of Hunter Lake many acres of farm land, timber and wild life habitat would be destroyed as well as many roads, bridges and homes. It would close many roads, destroy bridges, close mail routes, cause many problems for school districts for transportation, many miles for the school buses, taxes etc.

We already have 2 lakes in the area. Hunter Lake would be between the two. It would seem more consideration should be given to the other methods of obtaining additional water supply if it is truly needed. The other alternatives would not destroy so much land or have the effect ~~of~~ building the lake would have. 1

Establishing the deep wells or pumping from Havana would not destroy as much of our farm land, homes, roads, natural habitat. Why wouldn't it be much better to dredge the lake we already have? It seemed to help when they did a small amount of dredging a few years ago. That certainly wouldn't be as destructive as the other lake. 2

I feel it's time we got serious consideration and save our land - When it's gone there will be no more available.

Mary Kern, Concerned Citizen

A-107

P32.
Mary Kern
6/10/99

1. Feasible alternatives to Hunter Lake are addressed in Section 4 and summarized in comparative form in Table 4.1 of the DEIS and FEIS.

2. The original storage capacity of Lake Springfield, immediately after construction in 1934, was approximately 59,900 acre-feet (about 19.5 billion gallons). Over the next 50 years, sedimentation reduced the storage of the lake by approximately 9,400 acre-feet to an estimated capacity of 50,500 acre-feet (about 16.5 billion gallons). The City dredged the upper portion of the lake over the period 1985-1989. This dredging restored nearly 2,000 acre-feet of storage (approximately 650 million gallons) at an estimated cost of approximately $8.0 million dollars. The present capacity of the lake is estimated to be 52,500 acre-feet (approximately 17.2 billion gallons). Additional dredging in quantities sufficient to restore all of Lake Springfield's original storage capacity would not increase the yield of the existing water supply system enough to meet projected water demand during extreme drought conditions, irrespective of the cost of such dredging.

1

P33

June 10, 1999

Walt Zyznieuski
2404 Parkview Dr.
Springfield, IL 62704

District Engineer
U.S. Army Engineer District,
Rock Island
ATTN: Environmental Analysis Branch
(Charlene Carmack)
Clock Tower Building-P.O. Box 2004
Rock Island, IL 61204-2004

RE: Hunter Lake-Draft Environmental Impact Statement

Dear Ms. Carmack:

Thank you for the opportunity to comment on the Hunter Lake DEIS. I offer the following objective comments on this DEIS as a private citizen of Springfield. I am neither a proponent nor an opponent of this proposal, and offer comments for your consideration.

1. Section S Summary. This Section and Table S2 should be put in order as it is outlined in this section. For example, Table S2 should list the alternatives in the order they are discussed in the text. In addition this table should be listed as Table S1 and Table S4 should be S2. 1

2. Table S4. The alternatives listed should be in the same order as listed in the section. In addition, the column identified as "Increased Recreation Potential" should be deleted as these are not impacts. 2

3. Page 1-5, first paragraph. Tables or pie charts should be added showing water uses by percentage for typical users. For example, under residential: 40% for lawn watering, 10% for drinking, etc. 3

4. Page 1-6, Figure 1.2.3.1. Should the base year be listed as 1999 rather than 1990? 4

5. Page 1-7, second paragraph. Does CWLP have a "best management plan" in place where the ash sluiced over to the ponds is the least amount needed. In other words, does someone keep an eye on the pumps to start them and shut them off appropriately only when the waste materials are being sluiced? Or, are the pumps left on at times with no waste materials being pumped? 5

If no, a new section titled "commitments" should be added to the FEIS, with a commitment that CWLP will develop this plan, in order to reduce the amount of raw water which is lost to Sugar Creek.

6. Page 1-7. Figure 1.2.3.2. See comment # 4. 6

7. Page 2-1, fourth paragraph. This paragraph should be deleted, and the appropriate studies listed in the reference section. 7

8. Page 2-2, Environmental Impacts. Also, the following should be considered for impacts: # acres of prime farmland, wetlands to be destroyed, and acres of forest destroyed. 8

A-108

P33.
Walt Zyznieuski
2404 Parkview Drive
Springfield, IL 62704
6/10/99

1. Alternatives in S2 are listed in the same order as in Section 2 of the main report, as are S3 and Section 3, and S4 and Section 4. The tables are labeled as S1 and S2 in the FEIS.

2. The order of alternatives in the table has been revised. Changes in recreational opportunities or use are considered impacts.

3. A new Table 1.2.3.1 has been added to the FEIS which displays projected water use by sector (residential, commercial/institutional, industrial, wholesale, and unaccounted).

4. Water demand forecasts were developed by the applicant's consultant in 1991, using actual treated and billed water data through the year 1990. For this reason, 1990 is identified as the base year.

*5. As part of the applicant's practices to conserve water during drought events, the City has in the past instituted operational guidelines to eliminate non-necessary operation of sluice pumps, and the applicant has stated they would continue this practice in drought events.

6. See response to comment #4.

7. The references are in fact listed in the reference section of the DEIS and FEIS. This paragraph is included in the DEIS and FEIS to indicate which of the references listed in Section 8.0 of the document contain information used to prepare Section 2.0, as is the last paragraph of Section 1.1.

8. The referenced paragraph has been revised to focus on impacts that are considered to be limiting factors, i.e. factors that could result in a determination that a particular augmentation measure was not a feasible alternative to supplement the existing water supply system, rather than simply a less environmentally desirable alternative.

9. Page 2-3, second paragraph from the bottom. I believe that the Kinkaid Power Plant has been purchased already. 9

10. Page 2-11, third paragraph. Could the City petition the Pollution Control Board to get an adjusted groundwater standard for boron, if required, similar to their adjusted boron standard they received for the outlet discharges to Sugar Creek? If this is a feasible/potential option, which the DEIS is silent on, slightly less than half of the future needs (less any minimum flow required for Sugar Creek), may be realized by implementing a totally closed sluice system. I believe that the Kinkaid Power Plant is on a totally closed ash sluice system. Also, are there any other users of groundwater in the general vicinity that rely on groundwater for their water supply source? 10

11. Page 2-11. An exhibit showing the SMSD in relation to CWLP should be included. 11

12. Pages 2-11 and 2-12. Water Conservation. Not many of these water conservation measures have been implemented by the City; many more need to be. A commitment should be made in the EIS, that the City will implement additional water conservation measures and will work closely with all communities it serves to have them implement water conservation measures. 12

13. Page 2-17, second paragraph from the bottom, last sentence. It should be added that water conservation measures are appropriate measures to take by all users and the City will encourage it. 13

14. Page 3-4, third paragraph. What percent of the total county forest cover will Hunter Lake use? What percent does the City plan to restore to reduce this loss? 14

15. Pages 4-2,4-3, Table 4.1. The order of this table should be the same order as shown in the text. Also, the column titled "Increased Recreation Potential" should be deleted as this is not an impact. 15

16. Page 4-4, second paragraph. Would all agriculture land (other than which is inudated), that is part of the Hunter Lake area, be converted to natural landscapes. This needs to be clarified. 16

17. Page 4-4, third paragraph. Does the City have any plans to extend any water lines out to the Hunter Lake area? If no, a committment should be made in the EIS that the City will not extend any water lines out to the area to discourage additional development pressures, to protect their proposed water supply source. 17

18. Page 4-4, fourth paragraph. The City did an excellent job by passing this ordinance. A copy of this ordinance, and any other related Hunter Lake Ordinances should be included in the Appendix. In addition, a commitment should be made in the EIS as well as in the Corps Permit, that the city will protect the area around Hunter Lake and will not allow development to occur, nor will they issue leases on Hunter Lake property. This will protect the water supply from chemicals, sewage, runoff, erosion, etc. If this commitment and Corps permit stipulation wasn't in place, what would stop a future City Council from rescinding this and other Hunter Lake Ordinances? 18

19. Page 4-4 fourth and fifth paragraphs. Fishing is not considered "land use impacts." 19

20. Page 4-4, fifth paragraph. Motors should be limited to electric only or, at most, to a maximum of 9.9 hp on Hunter Lake. Since this is a proposed water supply source it would seem logical that polluting sources should be prohibited or limited, particularly since Lake Springfield and all other large resorvoirs in the area, are available for the larger motors. This should be listed as a commitment by the City in the EIS. 20



*9. The purchase of the power station at Kincaid, Illinois, was completed. The discussion the City had regarding the possible use of Lake Sangchris as a supplemental water supply was with the ultimate purchaser, Dominion Energy, Inc. The lake is not available for the applicant's uses.

*10. The requirements of the City regarding any petition to the Illinois Pollution Control Board based on the state regulation 35IAC102.141 would be for the City to show that no "technically feasible and economically reasonable" alternative to achieve compliance exists. This demonstration would be difficult given that current operation is both technically and economically reasonable to avoid the violation of a groundwater standard. It is not believed that any residences in the vicinity of the CWLP ash ponds rely on groundwater for potable uses. Despite this consideration, the maximum yield of this option falls well short of the long term demand/yield deficits identified for the project. As such supply augmentation would still be required. The City has received a permit from the IEPA for use of the ash pond water for recycling back to Lake Springfield as part of the Dallman power plant circulating cooling water, which would utilize this same ash pond water proposed for the closed-cycle ash sluice alternative. While some use of this water would be allowed under the new permit, this option would also be limited by the boron content of the water.

11. The water treatment plant for the SMSD is shown in Figure 2.2.6.1.

12. All commitments or proposals made by the applicant to date concerning Hunter Lake or alternative methods of water supply augmentation are included in the FEIS.

13. As stated in the summary paragraph of Section 2.2.7 of the DEIS and FEIS, implementation of the remaining water conservation measures would fall far short of eliminating the projected deficit of the existing system in meeting the 100-year, 18-month drought demand. Water conservation measures are not considered a feasible alternative to meet the purpose and need of the proposed action. While implementation of the remaining conservation measures could help to reduce the use of a supplementary water supply (Hunter Lake or any of the other feasible alternatives), at this time the applicant has made no official commitment to implement these measures. In considering whether to issue a permit for Hunter Lake, the Corps will also consider what conditions, if any, may be appropriate to attach to issuance of the permit. If a permit is denied, any such conditions or stipulations would be rendered moot.

14. The 1985 Illinois forest statistics compiled by the U.S. Department of Agriculture indicated approximately 29,100 acres (about 5.2 percent) of Sangamon County was forested at that time. If these figures and percentages are about the same as in 1985, inundation of the Hunter Lake pool would be expected to convert approximately 5.24 percent of the total county forest cover to open water. A revised mitigation plan for wetland and other natural resource impacts has been developed by the applicant. This plan is described in Section 4.1.9 of the FEIS.

15. See response to comment #2 above.

16. The revised mitigation plan described in Section 4.1.9 of the FEIS does include the active or passive conversion of all croplands within the Hunter Lake project area to forest or grassland cover types.

17. See response to U.S. Department of Interior comment #6.

18. See response to comment #13 above.

19. These two paragraphs address impacts of various potential recreational uses of the Hunter Lake project area which could occur if a reservoir is built.

20. See response to comment #13 above.

21. Page 4-4, Land Use Impacts. A commitment should be made by the City in the EIS, that up to 10% of the land around the lake will be donated to a conservation or land preservation group for the purposes of conservation and nature study. 21

22. Page 4-9, 4.1.9, second paragraph. These two forest tracts should be shown on an exhibit and be a commitment in the EIS. 22

23. Page 4-9, 4.1.9, third paragraph. These two native prairie areas should be shown on an exhibit and be a commitment in the EIS. 23

24. Page 4-9, 4.1.9, fifth paragraph, last sentence. The two locations for the wetlands should be shown on an exhibit. 24

25. Page B-55, first sentence. This sentence states that 500 acres of standing timber will be left with the pool area for habitat. This should be listed as a commitment in the FEIS. 25

26. The two Golf Courses on Lake Springfield pump raw water out of Lake Springfield for watering of their fairways. How much water do they use in a typical summer day and what are their permit requirements, particularly during a drought situation? 26

I would like to thank the Corps of Engineers for the opportunity to comment on this DEIS. Please send me a copy of the FEIS when it is released.

Sincerely,

Walt Zyznieuski



21. See response to comment #13 above.

22. See Figures 4.1.9.1-4 in the FEIS.

23. See Figures 4.1.9.1-4 in the FEIS.

24. See Figures 4.1.9.1-4 in the FEIS.

25. See response to comment #13 above.

26. Water use by golf courses such as the two located on Lake Springfield is included in the commercial/institutional sector displayed in the new Figure 1.2.3.1 in the FEIS.

P34

Pawnee, Ill
June 13, 1999

District Engineer
U. S. Army Engineer
Clock Tower Building
P.O. Box 2004, Rock Island, Il. 61204-2004

Dear Friends

I have read and studied the Draft Environmental Impact study of the Proposed Water Supply Reservoir Hunter Lake in its entirety and have noticed some material in the same that is either innacurate or vague in its content.
One is in Section 3.0; 3.1.1 Socio - Economic Resources in the last paragraph where they quote the amount of loss of tax receipts to be approximately one hundred fifty - thousand Dollars.
The block of property they refer to is only what they have obtained since 1989, which I would estimate to be only about ten per cent of the total property to be used for Hunter Lake. 1
The City of Springfield has been buying property, off and on, since 1969, obtaining about seventy-five to eighty per-cent before 1999.
What about the amount of loss of tax revenue on the whole amount of property to be used, not just what they have aquired since 1989?

(1)

A-111

P34.
Phil Southwick
8591 North Pawnee Road
Pawnee, IL 62558
6/13/99

*1. The reference to property purchased since 1989 is to actual values of residences purchased by the City between 1989 and the date of the study. The data was used to give a then current price range of the market value of improved residential property in the market area. The property tax figure is from the whole 7,700-acre project area, not just the properties the City acquired since 1989.

1

Another vague statement is in Section 4.0 Environmental Consequences 4.1.1 Socio - Economic Impacts

They state in the very last sentence that all homes or businesses would be compensated at fair market value. The authors are apparently not acquainted with the tactics used by the negotiators of CWLP, because this has not been our experience in receiving offers from them for our ten year old home. We discovered that their next to the last offer was nineteen thousand dollars under the value set by their own appraiser. We found that out by accident. It has become a battle of the minds.

Then, too, what about moving and relocation costs? Also, time and effort spent in searching for replacement property, especially farm land?

Land is extremely difficult to replace in this area, one usually has to offer the owner well over the appraised value to get he or she to consider selling.

Their report only mentions in one sentence in 4.1.6.2 that nitrate-nitrogen levels in the proposed lake will be higher than in Lake Springfield.

I would think so, after reading and comparing maps of the present Lake Springfield and the proposed Hunter Lake. The Hunter Lake map shows numerous narrow and irregular fingers up the watershed. Agricultural chemicals are going to be running off and entering the proposed Hunter Lake at a greater

(2)

A-112

2. Compensation at fair market value of lands acquired through eminent domain is normally required by law through the condemnation process.

3. Comment is noted.

1

and faster rate than the present lake.
In past years, Springfield CWLP has been concerned about atrazine levels in Lake Springfield. It occurs to me that Hunter Lake would encounter a greater risk of chemical contamination, possibly rendering the water unfit to use during a rainy season.
The report is full of beneficial things the say will be accomplished in a dry year, but what about a year when we have floods? I contend that when flooding occurs, and a large amount of water goes over the spillway, it is going to play Cheese with the farmland below depositing brush from the dead trees from the lake and a large amount of yellow silt that Horse Creek carries during flood time. This would be an ongoing source of legal problems from the owners of land below the dam. 4
I can also see an unfavorable situation in a normal or dry year when Hunter Lake water level is lowered to maintain the desired water level in Lake Springfield. Upstream from the dam, where we live, Hunter Lake would be a mud flat in places, leaving stagnant potholes, a breeding ground for mosquitoes. 5

I assume that the people who compiled this report were all paid for their services by Springfield CWLP. Human nature and life's experience tells us that the people performing a survey are going to lean toward making conclusions that please the people who are paying them. In the early 1980's the engineering firm of Crawford, Murphy, and Tilly





4. Anticipated impacts to downstream areas are addressed in Section 4.1.7 of the DEIS and FEIS.

5. Anticipated impacts of drawdown of Hunter Lake are addressed in Section 4.1.12 of the DEIS and FEIS.

1

was paid several thousand dollars to conduct a survey which subsequently concluded that Springfield did not need a second lake. That was during a time when that City Council was not in favor of me.

The drought year of 1988 was supposed to have been the worst of the century, and Lake Springfield had adequate water, a two year supply, I was told. Could the low water level of Lake Springfield in 1953+ 1954 been due to the mismanagement of letting too much water out during the previous fall seasons? What about dredging and taking better care of the present Lake Springfield? I am from the old school where we don't believe in giving someone something new after they didn't take care of the first one they had. 6 7

Assuming that Springfield does have to have a secondary water supply, it seems to me that the most feasible solution would be the Sangamon Valley Wells and Gravel Pits, even though the cost may or may not be more than Hunter Lake and I list some of the reasons:

The quality of the water would be better.
Much less land and property would be needed and practically no one would have to relocate.
The wells and gravel pits would not increase the risk of public safety. We all know that no matter how much CWLP would spend for 8





6. Analyses of drought yields on Lake Springfield by the Illinois State Water Survey indicated that the drought of 1953-55 was the most severe on record, followed by 1895, 1931, 1914, and 1988, in that order. This analysis was based on estimated inflows to Lake Springfield, rather than on lake levels or on discharges out of the lake.

7. The original storage capacity of Lake Springfield, immediately after construction in 1934, was approximately 59,900 acre-feet (about 19.5 billion gallons). Over the next 50 years, sedimentation reduced the storage of the lake by approximately 9,400 acre-feet to an estimated capacity of 50,500 acre-feet (about 16.5 billion gallons). The City dredged the upper portion of the lake over the period 1985-1989. This dredging restored nearly 2,000 acre-feet of storage (approximately 650 million gallons) at an estimated cost of approximately $8.0 million dollars. The present capacity of the lake is estimated to be 52,500 acre-feet (approximately 17.2 billion gallons). Additional dredging in quantities sufficient to restore all of Lake Springfield's original storage capacity would not increase the yield of the existing water supply system enough to meet projected water demand during extreme drought conditions, irrespective of the cost of such dredging.

8. Comment is noted. A tabular comparison of potential significant impacts is provided in Table 4.1 of the DEIS and FEIS.

water safety education, as they say they are going to, and no matter how heavy they patrol Hunter Lake, we would have drownings. 9

The above tells us another thing, that not nearly as much manpower would be needed to police and patrol the Sangamon Valley wells and gravel pits as would Hunter Lake

One more advantage for the Sangamon Valley alternative is that it would nearly eliminate the problem of dumping and other illegal activities on the numerous dead end roads that Hunter Lake would create.

In conclusion, let me say this; we must protect and conserve our diminishing land from being used for flooding. My Grandparents lost over one-half of their farm to Lake Springfield in 1932. My brother and I would also lose two-thirds of our land if the proposed Hunter Lake goes in.

My friends, let me remind you that water will continue to fall from the sky and we will be finding more ways to store it for our use, but there will never be any more land created, and if we are going to be responsible to future generations, we must protect and preserve it at all costs.

Very Truly Yours
Phil Lauthwood
8591 No. Pawnee Rd.
Pawnee, Ill. 62558

(5)

9. Anticipated impacts of Hunter Lake on public safety are addressed in Section4.1.11.3 of the DEIS and FEIS.

1

June 13, 1999

We are strongly opposed to Hunter Lake. Lake Springfield can supply the needs of Springfield and surrounding areas. It has only been challenged during the record-breaking drought of 1988 or 1989. Even then, we didn't run out of water because of conservation measures. 1

The proposed Hunter Lake would have a devastating impact on the environment around Springfield! 3,700 acres of rich, fertile farmland would be consumed by the lake. There would also be many acres of woods and secluded wildlife habitat that would be inundated. And as habitat is destroyed, wildlife has no where to live.

Many county roads will be flooded. We love to ride bikes on these roads and have ridden them with our children for 10 years. We hope to ride these same roads with our grandchildren in the coming years.

When the level of the lake drops in the Summer, there will be acres of unsightly mud flats exposed, making it look like a desert wasteland.

We should concentrate on keeping Lake Springfield clean and dredged of silt so it will remain deep enough to hold the water we need. Hunter Lake is unnecessary and would destroy farmland, wildlife habitat, and roads. 2

Sincerely,

Laurie and Barry Wright
19 Marquette
Springfield, IL 62707



P35.
Laurie and Barry Wright
19 Marquette
Springfield, IL 62707
6/13/99

1. Analyses of drought yields on Lake Springfield by the Illinois State Water Survey indicated that the drought of 1953-55 was the most severe on record, followed by 1895, 1931, 1914, and 1988, in that order. This analysis was based on estimated inflows to Lake Springfield, rather than on lake levels or on discharges out of the lake.

2. The original storage capacity of Lake Springfield, immediately after construction in 1934, was approximately 59,900 acre-feet (about 19.5 billion gallons). Over the next 50 years, sedimentation reduced the storage of the lake by approximately 9,400 acre-feet to an estimated capacity of 50,500 acre-feet (about 16.5 billion gallons). The City dredged the upper portion of the lake over the period 1985-1989. This dredging restored nearly 2,000 acre-feet of storage (approximately 650 million gallons) at an estimated cost of approximately $8.0 million dollars. The present capacity of the lake is estimated to be 52,500 acre-feet (approximately 17.2 billion gallons). Additional dredging in quantities sufficient to restore all of Lake Springfield's original storage capacity would not increase the yield of the existing water supply system enough to meet projected water demand during extreme drought conditions, irrespective of the cost of such dredging.

1

P36

June 14, 1999

Dear Ms. Carmack,

I would like to give an emotional plea against Hunter Lake. Although there are many reasons why the Lake would have a negative impact, I would just like to give one - my family.

We are avid bikers and began riding a scenic 7 mile circular route when our children were 6 and 8. This ride was a wonderful family time when we would spot deer and red-tailed hawks. Sometimes we would see who could find the most birds of different species. And we would usually stop at KOA, the half-way point and buy ice cream bars.

As the children grew we ventured onto longer routes, each one receiving a distinctive name known only to our family, such as pig farm road, new horse road, valley view, & asparagus mans road. Now we are riding to Sangchris Lake - a round trip of 22 miles.

If the Hunter Lake is built, many of roads will be flooded. I was looking forward to riding these same roads with my grandchildren, yet to be born. These roads are a part of our family history, a heritage to be passed on to future generations of Wrights. We love each of the areas that would be inundated and feel a terrible sense of loss that our grandchildren would never ride where their parents rode. 1

Please do not build Hunter Lake.

Sincerely,
Laurie Wright
19 Marquette
Springfield, IL 62707

A-117

P36.
Laurie Wright
19 Marquette
Springfield, IL 62707
6/14/99

1. Impacts to the existing area roadway network are addressed in Section 4.1.11.1 of the DEIS and FEIS. Existing roads, and proposed road and bridge relocations, are also shown on Figure 4.1.9.2 of the FEIS.

1

June 15 '99

Dear Army Corp people:

Please put me in the column of those opposed to Hunter Lake. I have lived in Springfield for 30 years, and only twice have there been droughts: and there weren't that severe. The City never put into operation water-saving plans/requests for citizens. (eg, "don't flush" is never suggested.) We don't NEED an expensive lake, which disrupts the ecology. The city can't take care of the lake it has. They have invested money in land: but is it truly smart to spend more money, unnecessarily, to justify money already spent? 1

Needs wildlife spaces, Recreation Please deny the permit; use. Please deny the permit; Recreation is available at Lincoln Park, Lake Springfield, Lake Sangchris, Lake Shelbyville, Carlyle Lake, Rend Lake, Kinkaid Lake, Crab Orchard Lake, Lake Murphysboro, Lake Glendale, Lake Mattoon, Lake Charleston, Lake Paris, Lake Vermilion, Lake Decatur, Lake Lincoln

P38

June 16, 1999

Charlene Carmak
U.S. Army Engineer District
Rock Island. Clock Tower Building
P.O. Box 2004
Rock Island. IL. 61204-2004

Dear Ms. Carmak:

We are writing to protest the building of Hunter Lake. We have lived out in this area for the past fifteen years and know this region of Illinois to be a tremendous natural resource. The wildlife that proliferates here. and whose habitat would be eliminated, is extraordinary. In our yard alone. we have an incredible diversity of birds: Red Headed Woodpeckers, Downy Woodpeckers, Red Breasted Woodpeckers, Indigo Buntings, Baltimore Orioles, Humming Birds. all kinds of finches. Yellow Grosbeaks, huge old owls, quail. doves. cardinals. blue jays. and more.

Sometimes the **cheapest** solution to a problem is not the **least expensive** option. What would be lost in the process we fear will be far more costly than is realized. If another water source is needed for the future, we feel that tapping into the aquifer in Buckhart that Chatham and Rochester were planning on doing before the City of Springfield lowered its cost of water to those two towns. is a reasonable alternative. In the event of a drought, another lake is not going to do the City any good anyway, since the same feeder streams for both bodies of water would dry up. It is not as **cheap,** but is a better long-term solution and preserves this great natural resource. 1 2

We hope that Army Corps of Engineers seriously considers these concerns and looks to more appropriate and environmentally conscious option than the one proposed for Hunter Lake.

Thank you in advance for your consideration of our request.

Sincerely,

Karen Lee and Ronald Cruickshank

A-119

P38.
Karen Lee and Ronald Cruikshank
6/16/99

1. Estimated costs of Hunter Lake and all feasible alternatives are displayed for comparative purposes in Table 2.1.3 of the DEIS and FEIS. Significant environmental effects of Hunter Lake and all feasible alternatives are displayed for comparative purposes in Table 4.1 of the DEIS and FEIS. These two tables together represent a comparative summary of monetary and non-monetary costs of all feasible alternatives.

2. The projected yields of Hunter Lake and Lick Creek reservoirs presented in Section 2 of the DEIS and FEIS were calculated for 100-year, 18-month drought conditions, as was the projected yield for the existing system (Lake Springfield with South Fork pumping).

[illegible]
[illegible]
June 16, 1999

Dear Charles,

I think it would make much more sense to dredge the lake 1
we already have to get more
water or tap on to a lake
already built to get more
water.

City people don't stop to
think that every piece of
farm land they take out of
production the more it is
going to cost city folks.

Springfield keeps selling
water to all the towns around
us so it can't be water we
need to build another lake.

Our city water light and power
is in enough trouble. I think
it should be taken out of politics.

Sincerely,
Helen Rimkus



P39.
Helen Rimkus
6/16/99

1. The original storage capacity of Lake Springfield, immediately after construction in 1934, was approximately 59,900 acre-feet (about 19.5 billion gallons). Over the next 50 years, sedimentation reduced the storage of the lake by approximately 9,400 acre-feet to an estimated capacity of 50,500 acre-feet (about 16.5 billion gallons). The City dredged the upper portion of the lake over the period 1985-1989. This dredging restored nearly 2,000 acre-feet of storage (approximately 650 million gallons) at an estimated cost of approximately $8.0 million dollars. The present capacity of the lake is estimated to be 52,500 acre-feet (approximately 17.2 billion gallons). Additional dredging in quantities sufficient to restore all of Lake Springfield's original storage capacity would not increase the yield of the existing water supply system enough to meet projected water demand during extreme drought conditions, irrespective of the cost of such dredging.

P40

**Jimmy & Cydney Ayers**

8640 Rochester New City Road
Rochester Illinois 62563

Phone 217-498-8235
Fax 217-498-7675

June 17.1999

District Engineer
U.S. Army District. Rock Island
Attn: Enviromental Analysis Branch (Charlene Carmack)
Clock Tower Building - P.O. Box 2004
Rock Island. Illinois 61204-2004
Telephone: 309/794-5570

Dear Ms. Carmack.

I would stongly urge the Army Corp of Engineers to **deny the permit** section 404 to the City of Springfield . Illinois for the construction of Hunter Lake.

The city prefers the lowest cost Alternative (Draft Enviromental Impact Statement Section 2.1.1) even though it is socially. ecomonically. historically and enviromentially damaging to the local area. Other alternatives are just as fuctional and less disruptive to the local communities.

A-121

The projected water service area which includes City.Water.Light & Power (CWLP) existing water services and a 12 township area is an over ambitious goal of CWLP. It is unlikely the city will be the sole water supplier in all the designated area. The study also mentioned 1.5 million gallon day(mgd) for a water intense industrial business. The City of Springfield has in the past had the appearance of running industry out of town instead of encouraging industrialgrowth in the city of Springfield. The water needs of the City of Springfield are over estimated in this study. 1

To properly utilize the resources of the area the city should obtain the water from some source of wells. This would leave the 3.781 acres of cropland (Draft Enviromental Impact Statement Section 3.1.2) to produce food for generations. by proceeding in this fashion humanity will be served to their best needs. Agricultural land is being taken out of production across America for too many public wants now. We as Americans should not short our food production capabilities anymore than necessary. Lets keep future generations in mind. 2

A Map in the study (Draft Enviromental Impact Statement page 2-25) shows the watershed area of Lake Springfield and proposed Hunter Lake. If Sangchris Lake and Lake Taylorville watersheds were applied to the map there would be very little drainage not affected in the southern 1/2 of Sangamon County and southwestern 1/2 of Christian County. also affecting Montgomery & Macoupin Counties. All the drainage would be obstructed with one of four dams for many miles. This would appear to have man made control over too many miles of river in the region.

P40.
Jimmy and Cydney Ayers
8640 Rochester New City Road
Rochester, IL 62563
6/17/99

1. As indicated in Section 1.2.3 of the DEIS and FEIS, water demand forecasts were developed both for the existing service territory and for an expanded 12-township area (including Chatham) which could potentially encompass the CWLP service area by the year 2025. The anticipated yield of the existing water supply system during a 100-year, 18-month drought would be inadequate to meet projected demand either for the current service territory and the expanded 12-township area.

2. Potential impacts of Hunter Lake and all feasible alternatives are displayed in comparative form in Table 4.1 of the DEIS and FEIS.

1

Water quality is an issue that must be addressed. Groundwater is a much more consistent form of quality water than surface water for many health reasons. The farmers and landowners in the Lake Springfield watershed have done a very good job of keep restricted chemicals from entering Lake Springfield. To the southwest a short distance we find Otter Lake (Draft Enviromental Impact Statement page2-25), it has had severe troubles maintaining clean water for the customers that use that lake as a water supply. The proposed Hunter Lake watershed would have a new group of landowners & farmers to deal with in maintaining a clean chemical free source of water. Some of those farmers could be the same farmers that participate in the Otter Lake watershed. To maintain a consistent source of quality water the City of Springfield should look to the ground for their water supply. We can not support any part of the Lick Creek Reservoir as a supply of water for the City of Springfield. The proposed Hunter Lake bedrock is Pennsylvanian Shale. it has very low water yield while the glacier drift yields much more water. For water quality the most favorable area of groundwater in drift is the Sangamon River Valley (Draft Enviromental Impact Statement Section 3.1.6.1) 3

As we assess the City of Springfield's ability to maintain and operate a lake many serious questions arise. After Lake Spingfield silted in and the dredging process was completed CWLP has still failed to build sedimentation basins on the main tributaries of the present lake. We did not read of any such sedimentation basins in the proposed Hunter Lake study. CWLP could have prevented 95% of the siltation of Lake Springfield with a preventative maintence plan. therefore eliminating the need for the proposed lake. The inability of CWLP to find the cause of the Leptospirosis outbreak in Lake Springfield raises serious questions. Does anyone know and understand the present lake? Should CWLP be allowed to experiment with another 7,795 acre (3,010 acres of water) lake area? 4

Economically the study takes into account the residential property since 1989. Our family farm was purchased by the City of Springfield in the mid 60's along with many others. The residential value of property prevouisly purchased and destroyed by the expectations of Lake II far exceed any number in this report. The true taxable losses are no where to be found in this study. The annual loss of revenue from farm income is expected to be $1,164,000 (Draft Enviromental Impact Statement Section 4.1.2) creating a loss of how many jobs? Maybe 15 to 50 ? The estimated recreational revenue of $131,000 to $1,215,000 is expected to create 1 to 15 jobs (Draft Enviromental Impact Statement Section 4.1.3). Recreational dollars from Lake Springfield in 1998 leads me to believe $131,000 of recreational value is to high to expect from Hunter Lake. In an economy where a dollar turns over 5 to 7, times Hunter Lake could be disatrous for our communities economic well being. 5

Socially and publicly many issues come to mind: * Public safety in the Pawnee area for children playing in the water around a populated areas (Draft Enviromental Impact Statement Section 4.1.11.3). * Some 60 farms, 89 Residents and 2 Business are to be displaced creating hardship on everyone of those involved. * The loss of property tax receipts is a burden on 24 taxing units affecting 3 public schools & 1 community college, 2 libraries districts, 5 fire districts, Sangamon county and several townships. * The residential property value has declined from the beginning of this project 20 to 30 years ago. A smaller property value used in the study is based on figures in 1989 not accounting for the property value of the land & homes the City of Springfield has bought over the past 30 years. There is no way to measure the social disruption everyone in the area has had to overcome. The farmers still farming land in the proposed lake area represent jobs in the community but these jobs do not seem to count in the eyes of the City of Springfield. The social changes to the local communities would be detrimental in all aspects of the building of Hunter Lake. * There are less damaging alternatives in the study that fulfill the water needs of the City of Springfield and would be less intrusive on the local communities involved. * Seven utilities will lose close to $300,000 of annual revenue and create an extra burden on the companies to relocate many miles of services that are located in the proposed lake area. Rural Electric Convenience Cooperative Company, a member owned not-for-profit utility would lose the most in annual revenue. This would place an undo burden on the remaining co-op members, adding additional expenses they should not have to incur. 6



*3. A discussion of anticipated and proposed resource protection planning needs within the larger watershed are included in Section 4.1.6.2 of the FEIS. Should the Corps issue a permit for construction of Hunter Lake, a watershed committee could be established by the applicant early in the planning stages prior to construction. Resource priorities are realized upon receiving input from the participants, and plans are made to accomplish identified goals. Ultimately, the management takes place on the private watershed lands as the grass roots committee's ideas are accepted and implemented by the landowners and farm operators in the watershed. Implementation of such a plan is an ongoing effort.

*4. The original storage capacity of Lake Springfield, immediately after construction in 1934, was approximately 59,900 acre-feet (about 19.5 billion gallons). Over the next 50 years, sedimentation reduced the storage of the lake by approximately 9,400 acre-feet to an estimated capacity of 50,500 acre-feet (about 16.5 billion gallons). The City dredged the upper portion of the lake over the period 1985-1989. This dredging restored nearly 2,000 acre-feet of storage (approximately 650 million gallons) at an estimated cost of approximately $8.0 million dollars. The present capacity of the lake is estimated to be 52,500 acre-feet (approximately 17.2 billion gallons). Additional dredging in quantities sufficient to restore all of Lake Springfield's original storage capacity would not increase the yield of the existing water supply system enough to meet projected water demand during extreme drought conditions, irrespective of the cost of such dredging.

While the applicant anticipates a maintenance program for Hunter Lake, the incorporation of watershed protection strategies beginning with the onset of the lake planning and construction is expected to assist in reducing the sedimentation rate if a permit is issued for the reservoir. The establishment of a very active grass roots watershed committee as proposed by the applicant, similar to the successful Lake Springfield Watershed Resources Planning Committee, would help to address the resource concerns of the Hunter Lake watershed landowners, farm operators, and other interested citizens.

5. Past impacts of land acquisition by the City prior to 1989 are not considered to be potential impacts of the proposed action, since these impacts would have occurred regardless of the Corps' impending decision whether to issue or deny a permit for Hunter Lake. The estimates of annual losses of property tax revenues and farm income ($150,000 and $1,164,000, respectively) do include values for properties purchased by the City prior to 1989, because properties which are leased to private parties do continue to generate such revenues.

*6. The term "farm units" as used in the DEIS and FEIS denotes parcels of farmland, not farmsteads or entire farming operations. The number of inhabitable residences has been corrected in the FEIS to 69 inhabitable residences. Of these, the City owns and leases 66. Of the three residences in the project area not owned by the City, all are occupied. Based upon tenant information, the City estimates that the average population of these homes is 3.5 persons, or approximately 240 persons. This revised information and information on expected impacts to residents and businesses has been added to Sections 3.1.1 and 4.1.1 of the FEIS.

Environmentally. Hunter Lake would be very damaging to the area. The report reveals 1.526 acres of forest (4.1.5.1) be inundated with water. The mitigation measure is to replace at least 100 acres of forest (Draft Enviromental Impact Statement Section 4.1.9). One hundred acres is extremely unexceptable for replacement of 1.526 acres of forest. This would destroy a substantial percentage of the forested acreage in the entire Horse Creek and Brush Creek watershed. Wetlands created at a 1.5 to 1 ratio sounds like a responsible move. however . the drawdown to the lake would destory the wetlands as discussed in the study (Draft Enviromental Impact Statement Section 4.1.9). Hunter Lake composed of 3.010 acres of water would be a holding facility for drawdowns to replenish Lake Springfield during drought conditions. Drawdowns of 20 feet are expected during peak consumption. Exposing 2.285 acres of lake bottom destroying all cover for fish. Aquatic life would no longer be a part of the lakes aquatic environment (Draft Enviromental Impact Statement Section 4.1.12). The mosquito issue was discussed in the study as if a full pool of water existed in Hunter Lake (Draft Enviromental Impact Statement Section 4.1.5) no mention was made of 2.285 acres of lake exposed bottom. The mosquito population would be a serious health risk for the local communities. Point source discharges from Divernon. Pawnee and Virden Sewage Treatment Plants(STP) would need to be relocated. The least cost alternative to relocate Divernon and Virden East Sewage Treatment Plants is to discharge to Sugar Creek (Draft Enviromental Impact Statement Section 4.1.14). There is no mention in the study that Sugar Creek is one of the two main watershed areas to Lake Springfield. Why would they go to the expense of relocating effluent discharge to the primary source of water for Springfield? This is another example of CWLP's **improper planning methods.** 7

Cultural resources in the proposed area could be lost forever. An investigation in 1990-1991 revealed 727 historic properties in the project area. Of the prehistoric sites . 110 sites can be dated in a range from 12.000 to 500 years in age. The possibility of inclusion of 117 historic properties in the National Register of Historical Places on the proposed lake property should be reason enough to look elsewhere for a water source(Draft Enviromental Impact Statement Section 3.1.3). The possibilities of futher exploration of the land in time might be pursued by the colleges or other organizations in the area. There are trees that cannot be replaced in the proposed lake area in 50 or more years. We should not allow these items of our past to be covered with a water source when so many other alternatives are availiable. 8

A-123

The Draft Enviromental Impact Statement included several other alternatives for water sources in the area . I can appreciate the City of Springfield trying to pursue the lowest cost alternative to providing what they estimate they need for water in the years to come. However . lowest cost is not always the best choice for all involved . Who knows the historical sites could prove to attract many tourism dollars to the Springfield area. Several alternative sources of water are available that would cause less disruption of the environment and the local communities involved. The City of Springfield should start drilling water wells in a fashion that allows expansion and a slower phase in of costs. 9

I would stongly urge the Army Corp of Engineers to **deny the permit** section 404 to the City of Springfield . Illinois for the construction of Hunter Lake. Thank You for the opportunity to comment on the proposed action.

Sincerely.

Jimmy & Cydney Ayers

7. A revised mitigation plan for wetland and other natural resource impacts has been developed by the applicant. This plan is described in Section 4.1.9 of the FEIS.

8. As stated in Section 4.1.4 of the FEIS, a Programmatic Agreement (PA) for the treatment of cultural resources has been negotiated by the Rock Island District Corps of Engineers, the Advisory Council on Historic Preservation, the Illinois Historic Preservation Officer, and the City of Springfield, Illinois. This PA stipulates measures to be undertaken for inventory, evaluation, preservation, and/or mitigation of cultural resources if a permit is issued for Hunter Lake.

9. Estimated costs of Hunter Lake and all feasible alternatives are displayed for comparative purposes in Table 2.1.3 of the DEIS and FEIS. Significant environmental effects of Hunter Lake and all feasible alternatives are displayed for comparative purposes in Table 4.1 of the DEIS and FEIS. These two tables together represent a comparative summary of monetary and non-monetary costs of all feasible alternatives.

P41

June 18, 1999

District Engineer
US Army Engineer District, Rock Island
ATTN: Environmental Analysis Branch (Charlene Carmack)
Clock Tower Building - P.O. Box 2004
Rock Island, IL 6204-2004

Dear Ms. Carmack,

I submit the following concerned citizen comment on the Draft Environmental Impact Statement (DEIS) issued by your office pursuant to application by the City of Springfield, Illinois for a Clean Water Act permit to construct Hunter Lake reservoir.

My concern is that the DIES may be arbitrarily limited in its analysis of the City of Springfield's projected water supply needs and in its examination of both the range of available alternatives and its evaluation of certain alternatives and/or combinations of alternatives identified. I believe that these shortcomings result from bias on the part of the City of Springfield against no-build alternatives and against options that do not generate near-term economic/construction activity.

In my opinion, assumptions related to demand projections and to components of the water conservation alternative as presented by the applicant have been left relatively unexamined by the authors of the DEIS. I offer the following recommendations in the hope that a more complete DEIS can lead to a better outcome.

A-124

I. The authors of the DEIS' should reconsider acceptance/adoption of the City of Springfield's yield screening criterion for net 16.9 mgd because it represents an attempt to manage 100 year drought risk with oversupply in non-drought years and, in so doing, *a priori* and arbitrarily constrains examination of alternatives. In addition, establishing 16.9 mgd supply target is not supported on a technical and/or analytical basis. The water demand forecasts in the DEIS rely upon outdated demand modeling from 1991 that fail to account for changes in townships included in the service area. New demand modeling needs to be undertaken with updated inputs to include such changes and incorporating results of a more comprehensive water conservation assessment. 1

II. The authors of the DEIS' should reconsider acceptance/adoption of the City of Springfield's rejection of Water Conservation as a combinable alternative. Water Conservation has been rejected on the basis of inadequate yield to meet a 1-mgd screening criterion. The City contends that the maximum possible yield for ten of the twelve water conservation measures that it has identified and not yet implemented is only .65 mgd. The comprehensiveness of the list of identified measures, as well as the completeness of each measure needs to be independently evaluated. In particular, the potential for reducing demand on the part of large commercial and institutional users needs to be comprehensively addressed. The *Direct Contact Water Audit for* 2

P41.
Douglas P. Wagner
900 Airport Drive
Springfield, IL 62707
6/18/99

1. As stated in the first paragraph of Section 1.3 in the DEIS, the existing water supply source is incapable of meeting existing demands during severe drought conditions such as those experienced during 1953-55. The purpose of the applicant's proposed action is to supplement the existing water supply system to meet present and future water supply needs under extreme drought conditions (100-year recurrence probability, 18-month duration). As indicated in Section 1.2.3 of the DEIS and FEIS, water demand forecasts were developed both for the existing service territory and for an expanded 12-township area (including Chatham) which could potentially encompass the CWLP service area by the year 2025. The anticipated yield of the existing water supply system during a 100-year, 18-month drought would be inadequate to meet projected demand either for the current service territory and the expanded 12-township area.

2. A breakdown of projected treated water demand by sector for the years 2000 through 2025 is shown in Table 1.2.3.1 of the FEIS. As stated in the summary paragraph of Section 2.2.7 of the DEIS and FEIS, implementation of the remaining water conservation measures would fall far short of eliminating the projected deficit of the existing system in meeting the 100-year, 18-month drought demand. Water conservation measures are not considered a feasible alternative to meet the purpose and need of the proposed action.

1

*Nonresidential Customers with High Water Use*, identified, as *Measure D.* under *Summary and Evaluation of Conservation Measures* does not begin to meet such a charge. The CWLP service area covers a small number of large institutional users, including, most notably, state government and medical campuses. Among these users, certain divisions involved in special events, e.g., the Illinois Department of Agriculture - State Fair may account for a very significant portion of demand during potentially sensitive periods. Comprehensive assessment of the trade-offs and serious consideration of who is assuming costs associated with water distribution to such high-demand users need to be included in the DEIS. As the DEIS stands, its authors are tacitly sanctioning The City of Springfield's avoidance of discussion of its high demand institutional users.

CWLP should be required to demonstrate both significant performance and a "can-do" attitude with regard to water conservation as conditions of the issuance of any permit under this application.

I advocate that the USACOE consider that a more comprehensive assessment of a wider range of alternatives can lead to meeting a reasonable level of drought risk while preserving the regional environment. Such an investigation might justify, for example, the issuance of a modified permit providing for a combined alternative that could include comprehensive water conservation measures and a water supply reservoir of significantly less area coverage than the proposed Hunter Lake. 3

An additional general recommendation is that the DEIS consider/discuss regional environmental resource and land use management shortcomings extant in the watershed and service area of the proposed reservoir and how these deficiencies potentially exacerbate impacts upon regional ecological diversity associated with the reservoir alternative.

Sincerely,

Douglas P. Wagner
900 Airport Drive,
Springfield, IL 62707

A-125

3. As stated in Section 2.1.1 of the DEIS and FEIS, individual feasible alternatives not capable of providing the full yield are considered in combination with other partial yield sources, and sources that would provide less than 1 mgd are not considered combinable. Feasible combinations of alternatives are described in Section 2.3.7 of the DEIS and FEIS. Of the five feasible combinations identified, three include Lick Creek Reservoir, which would be a smaller size reservoir than Hunter Lake.

1

P42

**Carmack, Charlene MVR**

**From:** WHEEZY3@webtv.net
**Sent:** Saturday, June 19, 1999 9:31 AM
**To:** Charlene.Carmack@usace.army.mil
**Subject:** Hunter Lake study

Might it be too late to send you a few comments reguarding the Hunter Lake project?
I am not all that sure that it is truely needed; as many others, but my real concern is the lack of maintenance on our present lake. Spending the money on this new lake would surely exhaust any budgeting for needed rip-rapping and further dredging.
I have enjoyed living on the north end of Lake Springfield for the past 40 years , next to a small creek that drains a corn field directly north of the Muni Opera grounds. Each spring; during downpours, you can watch the flow of what looks like chocolate milk flow throught the creek and mix with lake water. This has gone on for years and years, even when they left a buffer zone of pasture along the tree line that seperates the Muni from the fields. I'm sure this silting occurs with every feeder creek. Our bay is only 2-3' deep now at full pool,which I would guess to be a loss of 1-1/2 ' in the past 30 years. Never has CWL&P considered dredging this lake except the far south end. There are miles of raw, unprotected shoreline along these small creeks and bays that continue to errode. This could cheaply be dredged during dry periods as typical backhoes and dump trucks could be used. Many homeowners have showed interest in helping, but have been discouraged by restrictions on placement of the reclaimed topsoil. It is my understanding that the soil must be hauled away and not spread on leased yards or surrounding wooded areas.This "rule' has made dredging too costly for the average homeowner to bother. 1
With proper grading and seeding, I don't understand the concern of the soil returning to the lake. Even if some did, the lake would still be deeper and healthier in the long run and the city would have saved. 2
Your comments on this and the lack of rip-rap would be interesting.
Thanks for listening!

Val Watt
808 E Lakeshore Dr.
Springfield,IL.

A-126



P42.
Val Watt
808 East Lakeshore Drive
Springfield, IL
6/19/99

1. Comment noted. No additional response necessary.

*2. Similar to the City's experience at Lake Springfield, the City anticipates the need for shoreline erosion control in most areas of the Hunter Lake reservoir at the full pool elevation. Except for the sites with the steepest slopes, many lake areas tend to draw away from the erodible areas of the shoreline during drought periods, and therefore erosion is less of a concern during drawdowns at many sites. The City has identified the areas of severe slopes in the proposed reservoir and has estimated erosion control needs to be above average in those locations. This information has been added to Section 4.1.6.2 of the FEIS.

HARVEY B. STEPHENS
EDWARD J. CUNNINGHAM
ROBERT A. STUART, JR.
J. PATRICK JOYCE, JR.
ERIC L. GRENZEBACH
JEFFERY M. WILDAY
WILLIAM F. TRAPP
PAUL BOWN
ALMON A. MANSON, JR.
DWIGHT H. O'KEEFE, III
DONALD R. TRACY
EMMET A. FAIRFIELD
DENISE M. DRUHOT
HARVEY M. STEPHENS
JOHN E. CHILDRESS

ELIZABETH W. ANDERSON
JAMES W. BRUNER
LORILEA BUERKETT
MICHAEL J. DRAKE
MARILYN MEDICA
CATHERINE A. DeGENOVA-CARTER
RONALD J. GIACONE, II
RUDOLPH M. BRAUD, JR.

OF COUNSEL
NORMAN P. JONES
BEN L. DeBOICE
SIMON L. FRIEDMAN
ROBERT M. MAGILL

BROWN, HAY & STEPHENS
ATTORNEYS AT LAW
700 MERCANTILE BANK BUILDING
205 S. FIFTH STREET
SPRINGFIELD, ILLINOIS 62701-1489

ROBERT A. STUART
1941-1988
ROBERT H. STEPHENS
1965-1988

TELEPHONE (217) 544-8491
TELECOPIER (217) 544-9609

ADDRESS CORRESPONDENCE TO:
P.O. BOX 2459
SPRINGFIELD, ILLINOIS 62705-2459

Writer's Direct Extension: 260

June 23, 1999

Mr. Phil Gonet
City Water Light & Power
City Hall
Springfield, IL 62701

Re: Hunter Lake

Dear Phil:

Although it may be too late, please include me as one of the many supporters of Hunter Lake. The lake is long overdue and will enhance the prospects for continued growth and prosperity of Springfield for many years to come. It will probably also increase property values at Lake springfield, thereby resulting in an increase in the Springfield city tax base. Although the new lake will cover many acres of prairie, in Central Illinois we have an ample supply of prairieland, but not enough large bodies of water. 1

Sincerely,

Donald R. Tracy

DRT:car

A-127

P43.
Donald R. Tracy
700 Mercantile Bank Building
205 South Fifth Street
Springfield, IL 62701-1489
6/23/99

1. Statistics compiled in 1994 by the Illinois Department of Energy and Natural Resources indicate that less than 1 percent of Illinois' historic (pre-1820) prairie acreage still exists today. None of the historic prairie tracts in the Hunter Lake project area still exist at the present time.

1

P44

Army Corp of Engineers:

I am writing this letter in reference to what has been called Lake II or Hunter Lake, that is to be built southeast of Springfield, Illinois. I am in extreme opposition to this so called lake and I will explain.

First of all, I grew up in Springfield and am well familiar with the area. I live in rural Pawnee about a half mile from Horse Creek. I will not have to move or lose land, but I am concerned about other effects of this reckless venture.

The Pawnee school system is on the banks of the creek that is to be flooded. If that creek rises as much as a couple of feet, it will spill over onto the athletic fields that make up a very important part of the school. In talking to the mayor of Pawnee, I have been told that there has been very little discussion with the Pawnee officials about the effects of this flooded creek on Pawnee. The mayor expressed concerns about the school and Pawnees own water supply. I am personally concerned with the effects on the underground water table, since we are on a well system. 1

There are several other concerns about the way that Springfield officials have handled this matter and the way that they currently take care of the lake and the current water supply.

First of all, they have lied when they call this Lake II or Hunter Lake. Its going to be a flooded creek and thats all. Why have they lied? They need public support and when the public thinks of a lake, they think of more boating, fishing and in general more recreational activities. The truth is there will be no fishing or boating allowed. People will not be able to even live along this flooded creek. But much of the public does not realize this. They call this Hunter Lake. Why? Once again to gain public support. John Hunter was a fine man and an excellent commissioner. Many people [illegible] fond memories of John Hunter and would like to see him honored. I myself have fond memories of him and my mother was his secretary for many years, while he was commissioner. I believe its degrading to him to flood a creek, destroy the environment and put his name on it. 2

The city of Springfield needs to learn first of all how to take care of the current lake. The deepest part of the lake is only about 25 to 30 feet and thats because, except for a medicine dry several years ago, the lake has never been dredged. 3

In the last month, I went to the lake three days in a row and took pictures of the dam with water pouring over and headed for the Sangamon River. What a waste of water, when according to city officials there's a major water problem. I [illegible] pictures of other parts of the lake, [illegible] the water was not high. In fact was well [illegible] areas. This is a common

P44.
John Davidson
12171 Atlanta Drive
Pawnee, IL 62558

1. As stated in Section 2.3.1.2 of the DEIS and FEIS, the relocated roadway network was designed with input from the County Highway Department and Township Road Commissioners to minimize adverse travel and emergency response times through the project area. As stated in Section 4.1.14 of the DEIS and FEIS, construction of Hunter Lake would impact three wastewater treatment plants that discharge into the Hunter Lake watershed, one of these being the Pawnee Sewage Treatment Plant (STP). The cost of relocating the Pawnee, Divernon, and Virden-East STP is included as part of the Hunter Lake project costs displayed in Table 2.3.1.1 of the DEIS and FEIS. As stated in Section 4.1.7 of the DEIS and FEIS, modeling of the 100-year flood event has identified approximately 142 acres upstream of Hunter Lake for which the applicant would be required to purchase flood easements, if a permit is issued for the project.

2. Potential recreational uses of Hunter Lake are addressed in Section 4.1.3 of the DEIS and FEIS. At present the applicant's proposed recreational uses do include fishing and boating.

3. The original storage capacity of Lake Springfield, immediately after construction in 1934, was approximately 59,900 acre-feet (about 19.5 billion gallons). Over the next 50 years, sedimentation reduced the storage of the lake by approximately 9,400 acre-feet to an estimated capacity of 50,500 acre-feet (about 16.5 billion gallons). The City dredged the upper portion of the lake over the period 1985-1989. This dredging restored nearly 2,000 acre-feet of storage (approximately 650 million gallons) at an estimated cost of approximately $8.0 million dollars. The present capacity of the lake is estimated to be 52,500 acre-feet (approximately 17.2 billion gallons). Additional dredging in quantities sufficient to restore all of Lake Springfield's original storage capacity would not increase the yield of the existing water supply system enough to meet projected water demand during extreme drought conditions, irrespective of the cost of such dredging. When Lake Springfield is at full capacity, any additional inflow from rainfall or runoff in the watershed must be passed through the dam to avoid flooding on the lake.

practice. The pictures are included in this letter.

Why can't the area behind the dam be dammed up and the water from the lake that goes over the dam, and be pumped back into the lake if needed. This would solve the problem of destroying the environment. It would also help to solve the problem, when the Sangamon River floods. During heavy rain seasons, the Sangamon River floods and the lake water running into it doesn't help, except to create more flooding. Isn't that ironic! Lake Springfield helps the Sangamon River flood and Springfield officials claim there's a water shortage problem.

I wonder if possibly, there is going to be personal gain on the part of one or more of the backers of this lake. After all Springfield has had a scandal in their electric department recently.

I close asking that you deeply consider all the negative effects and ..... (well I can't think of any positive effects) of this lake.

John Davidson
12171 Atlanta Drive
Pawnee, Illinois 62558

4

A-129

4. As stated in Section 2 of the DEIS, creation of a reservoir on the South Fork of the Sangamon River (Section 2.2.3) and increasing the storage capacity of Lake Springfield by raising the lake level (Section 2.2.8) were both investigated as potential alternatives to Hunter Lake, and both were determined to be not feasible to augment the existing supply system.

1

DEAR U.S. ARMY CORPS of ENGINEERS.

P45

IN YOUR PERMIT YOU DID NOT SPECIFY OF YOUR PIANS FOR ZION CEMETERY.

AND THAT NO ONE HAS EVER BEEN CONTACTED CONCERNING ZION CEMETERY.

I WOULD LIKE TO KNOW IN GREAT DETAIL, WHAT ARE YOUR PLANS FOR ZION CEMETERY? 1

A-130 ZION CEMETERY IS LOCATED IN, COTTON HILL TOWNSHIP, ON ZION ROAD AND THE END of COTTON HILL ROAD.

I AM PRESIDENT OF ZION CEMETERY.

KENNY EDWARDS
5052 ZION ROAD
PAWNEE IL. 62558

Thanks
Kenny Edwards

P45.
Kenny Edwards
5052 Zion Road
Pawnee, IL 62558

*1. Zion Cemetery has been identified as one of four cemeteries located at or near the project boundary. The cemetery would not be affected by the pool area of Hunter Lake. The site is adjacent to, but not within the acquisition area for the project. The uppermost end of a narrow finger of the lake would be approximately 70 feet east of the northeast corner of the cemetery and approximately 10 feet in elevation below this corner of the site. The majority of the cemetery is farther away and at higher elevations from this location.

The 100-year flood elevation with the lake in place is evaluated to be approximately 575.2 feet above sea level. This level is about 4 feet above the 571 foot full pool elevation of the lake. It appears that the Zion Cemetery would not be affected a by 100-year flood event with the lake in place. It does not appear that flooding due to the presence of the reservoir would be a problem.

Portions of the eastern edge and northeastern corner of Zion Cemetery may be subject to periodic inundation, wave run-up and/or erosion. The lake and cemetery elevations would be further critically reviewed during the construction plan preparation stage, and any recommendations for protection of this cemetery would be reviewed by interested parties and incorporated as appropriate at that time. At the present time, it is not anticipated that any measures would be needed to protect this site. If in the future impacts to the cemetery do appear likely, the City of Springfield shall comply with appropriate Illinois and local statutes in the event that protection and/or cemetery relocation measures must be taken.

1

**Owen Linder, M.D.** P46
108 Woodcreek Drive South
Safety Harbor, Florida 34695-5511
Telephone (727) 726-5814
Fax (727) 797-6516 file name farm 499

To Charlene Carmack
Army Corps of Engineers
Rock Island Office

Re:Hunter Lake

Dear Ms. Carmack,

3/1/99 the Illinois State Journal Register carried a story about the plans for Hunter Lake. It mentioned the city plans to buy 750 more acres for the Lake and buffer areas. I need to know if my farm is in those plans. Please send me a copy of the environmental impact study.

The farm of Joseph Alan and Owen Linder is sited on Rural Route two adjacent to land already purchased by the city for the lake. We describe the land as part of the West 1/2 of section 31 Township 15 N Range 4 W (Rochester Township) of about 44 acres. Of course this is Sangamon County.

If the land is not slated for purchase we need to know the restrictions on development. We already understand the newer sewer Northeast of Lake one would need to be extended 4 1/2 miiles to reach our land. The existing sewer around Lake one nearly abutting our property is said to be at capacity. 1

I know I do not have your complete address and it may take some time for this letter to reach you.

Thankyou,

Owen Linder

A-131

tele 1309-794 5570
general 1309 794 4200
U.S. Army Corps of Engineers
Clocktower Bld.
P.O. 2004,
Rock Island
Illinois
6/2014-2004.

P46.
Owen Linder, M.D.
108 Woodcreek Drive South
Safety Harbor, FL 34695-5511

*1. From the description given in the letter, it does not appear that the referenced property lies within the Hunter Lake project area boundary.

In 1973 and 1989, the Council of the City of Springfield enacted Ordinances 335-5-73 and 97-2-89, which precludes development of the project area real estate adjacent to the shoreline. As such, there is no present reason to extend water and sewer to the project area. The project area has not been annexed to the City. Annexation of the project area by the City is not necessary for project operation and maintenance. The unincorporated areas of Sangamon County are subject to the zoning regulations of Sangamon County, as well as incorporated locations that have not adopted any zoning regulations. These rules have specific requirements regarding land use in locations that lack sewer and water service. The County has enforced these regulations in the areas adjacent to the project area, and as recently as October, 1999, refused to allow development on property adjacent to the Hunter Lake project area (Case No. 99-41). The City appeared as an objector in the proceeding. The County Board unanimously denied the petition. The City can continue to actively participate in any zoning matter before the County which could have an adverse impact on Hunter Lake. The City would have even a greater influence in those unincorporated areas of the County within one and one-half miles from the City's corporate limits. Article I, Division 12 of the Illinois Municipal Code enables municipalities to formulate comprehensive plans for the development of land within the municipal boundaries and contiguous areas within one and one-half miles thereof, 65 ILCS § 5/11-12-5. This state law also provides that such plans may be implemented by ordinances: (a) establishing reasonable standards of designs for subdivisions and for resubdivisions of unimproved land and of areas subject to redevelopment in respect to public improvements; (b) establishing reasonable requirements governing the location, width, course, and surfacing of public streets and highways, alleys, ways for public service facilities, curbs, gutters, sidewalks, street lights, parks, playgrounds, school grounds, size of lots to be used for residential purposes, storm water drainage, water supply and distribution, sanitary sewers, and sewage collection and treatment. Pursuant to this statute, the City has adopted a comprehensive plan applicable to contiguous territory and implemented the plan through the adoption of land subdivision control regulations found in Chapter 153 of the City Code. Pursuant to Section 153.102, these regulations apply to all unincorporated land within 1.5 miles of the corporate limits of the City. These regulations include a mandatory review process through the Springfield-Sangamon County Regional Planning Commission, and proposed developments have been rejected if there is found to be unacceptable impacts on Lake Springfield or its watershed.

State law also would extend other territorial jurisdiction of the City to property adjacent to the Hunter Lake Project Area. For example, "the jurisdiction of the municipality to prevent or punish any pollution or injury to the stream or source of water for the supply of the waterworks extends 10 miles beyond its corporate limits." 65 ILCS § 5/11-126-3. Another provision similarly provides that "the jurisdiction of the city or village to prevent or punish any pollution or injury to the stream or source of water, or to waterworks, extends 20 miles beyond its corporate limits or so far as the waterworks may extend." 65 ILCS § 11-125-2. This would extend the City's jurisdiction through much of the project watershed. The above information has been included in Section 4.1.19 of the FEIS.

To whom it may concern.

I have lived in the south Springfield area all my life. The city of Springfield has ample opportunity to improve the water supply in the lake they have, they have not done so, The little dredging they did hardly made a difference. They already have a dam on the South Fork river why don't they improve on that.

I now live 3 miles from the east side of Hunter Lake and every time I drive through the area that will be flooded I dispare on the amount of animals that will be displaced. With the purchase of land for the lake the city has turned the area into a slum because of abandoned homes and roads.

If you would apove this lake it would by a large sore for our area. We need wet lands, farm land and critical hiding places - we don't need more useless lake.

Jeff Mackay
9230 Swiggert Rd
Rochester Ill 62563

1

A-132

P47.
Jeff Mackay
9230 Swiggert Road
Rochester, IL 62563

1. The original storage capacity of Lake Springfield, immediately after construction in 1934, was approximately 59,900 acre-feet (about 19.5 billion gallons). Over the next 50 years, sedimentation reduced the storage of the lake by approximately 9,400 acre-feet to an estimated capacity of 50,500 acre-feet (about 16.5 billion gallons). The City dredged the upper portion of the lake over the period 1985-1989. This dredging restored nearly 2,000 acre-feet of storage (approximately 650 million gallons) at an estimated cost of approximately $8.0 million dollars. The present capacity of the lake is estimated to be 52,500 acre-feet (approximately 17.2 billion gallons). Additional dredging in quantities sufficient to restore all of Lake Springfield's original storage capacity would not increase the yield of the existing water supply system enough to meet projected water demand during extreme drought conditions, irrespective of the cost of such dredging.

1

1648 w monroe
Springfield, Ill
62704

I am against any new
lake for the city of Springfield Illinois as
they already have in place a water supply
that could be used for emergencys. this
water supply is the 30 wells that were
being used for water until the present
lake was put in operation, I got
this information from the story of Lake
Springfield put out by city water, light 1
and power dated oct 1. 1940 which I have
a copy. the second reason for not building
this lake is that this lake will be very
shallow and will have a high potential
to silt and get contaminated with farm
chemicals. the third reason for not
building the lake is the taking of excellent
farm land out of farm production
permanently.

Sincerely Yours
Francis G. Sprinkel



P48.
Francis G. Sprinkel
1648 West Monroe
Springfield, IL 62704

1. As described in Section 2.3.3 of the DEIS and FEIS, re-development of a well system in the Sangamon River Valley is identified as a feasible alternative, when combined with other sources such as sand and gravel pits (Section 2.3.4), a smaller reservoir on Lick Creek (Section 2.3.2), or another well field in the Illinois River Valley (Section 2.3.5) or the Havana Lowlands (Section 2.3.6).

1

P49

1648 W MONROE
SPRINGFIELD, ILL
62704

Please add
this to the file of people who dont
want the excessive amount of money
being spent on a new lake when there
is already in place a water supply. the
water supply I am writing about is
the water supply that was used
before the present lake was built
which was taken from wells. 1

Sincerely Yours
Francis Sprinkel

A-134

P49.
Francis Sprinkel
1648 West Monroe
Springfield, IL 62704

1. Comment noted. No additional response necessary.

1

To: Army Corps of Engineers
From: Sheila Wall
Date: June 17, 1999
Regarding: Springfield's proposed Hunter Lake

- Conservation = yes
- A second lake = no
- Sand is of more use and value!
--- No Lake 2 ---







Charlene Carmack
Clock Tower Building
P.O. Box 2004
Rock Island, IL
61204-2004

1



P50.
Sheila Wall
6/17/99

1. Comment noted. No additional response required.

OFFICE OF PUBLIC UTILITIES
CITY OF SPRINGFIELD, ILLINOIS

KAREN HASARA, MAYOR

GENERAL OFFICE

Charlene Carmack
U.S. Army Corps of Engineers
Planning Division
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004

August 29, 2000

RE: Hunter Lake Environmental Impact Statement

Dear Ms. Carmack:

Enclosed please find the remaining responses to comments that you asked the City to provide regarding the Hunter Lake Draft EIS public comments. The primary response relates to the mitigation plan for natural resources impacts of the reservoir. Please contact me to arrange for providing appropriate types of figures for your final needs.

There are several additional issues addressed in this correspondence. Since publication of the Draft EIS, as you are aware, the City experienced severe drought conditions. Fortunately some unexpected rains in the month of June allowed Lake Springfield to recover. As part of the emergency preparations to combat drought conditions, the City imposed mandatory water conservation measures by City ordinance. Enclosed is a copy of the ordinance passed by the Springfield City Council. Two other ordinances were on file with the City Council to impose further restrictions and surcharges on the rate structure. These latter ordinances were held in committee and never passed due to the timeliness of the rains. The earlier ordinance was also rescinded. These proposed ordinances also are enclosed for your review.

As part of the above emergency planning, the City and the Illinois Environmental Protection Agency devised an appropriate way to recycle ash pond water back to Lake Springfield through the Dallman Power Station condenser cooling water stream. The recycled water is, however, subject to restricted use because of boron content. Support data is enclosed from Hansen Engineers, Inc. which documents the return water flow to be 1.6 mgd during the 18-month, 100-year drought. Given this additional yield of the total water system, we revised the demand values required as part of this project. These changes in yield/demand resulted in numerous changes to modify the amount of water needed through the various alternatives included in the Draft EIS. As such, many adjustments are needed to correct information

ROOM 400 MUNICIPAL CENTER EAST • 800 EAST MONROE • SPRINGFIELD, ILLINOIS 62757 • (217) 789-2116 • FAX (217) 789-2136

presented in the Draft EIS prior to publication of the Final EIS. These changes are noted in the enclosed copy of the Draft EIS.

I trust these enclosures will satisfy the requirements for you to publish the Final EIS for the Hunter Lake project. We look forward to the publication of that document. Please advise if there is anything that we can do to assist you further in the preparation of the Final EIS.

Sincerely,

Tom Skelly

Thomas M. Skelly
Water Division Manager

Enclosures

# APPENDIX B

# FINAL PROGRAMMATIC AGREEMENT

488-9-99

**PROGRAMMATIC AGREEMENT**
AMONG
THE ROCK ISLAND DISTRICT U.S. ARMY CORPS OF ENGINEERS
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
AND THE ILLINOIS STATE HISTORIC PRESERVATION OFFICE
REGARDING THE PROPOSED CONSTRUCTION OF
HUNTER LAKE IN SANGAMON COUNTY, ILLINOIS

**WHEREAS**, the U.S. Army Corps of Engineers (Corps) proposes issuance of a permit under Section 404 of the Clean Water Act to the City of Springfield (City) for the construction of a water supply reservoir, hereafter called Hunter Lake; and,

**WHEREAS**, the U.S. Army Corps of Engineers, Rock Island District, (Corps) has determined that the Hunter Lake project may have an effect upon properties potentially eligible for inclusion in the National Register of Historic Places, and has consulted with the Advisory Council on Historic Preservation (Council) and the Illinois State Historic Preservation Officer (SHPO) pursuant to Section 800.13 of the regulations (36 CFR Part 800) implementing Section 106 of the National Historic Preservation Act; (16 U.S.C. 470f); and,

**WHEREAS**, the City of Springfield (City) participated in the consultation, may have responsibilities for certain activities, and has been invited to concur in this Programmatic Agreement (PA),

**NOW, THEREFORE**, the Corps, the Council, the SHPO and the City agree that subsequent to issuance of the Section 404 permit, the project shall be implemented in accordance with the following stipulations to satisfy the Corp's Section 106 responsibility for all individual aspects of the project.

**Stipulations**

The Corps shall ensure that the City implements the following stipulations.

1. Identification and Evaluation of Archeological Properties

1.1. A Phase I Cultural Resources inventory of most of the project area has been conducted by the City and the final report entitled Cultural Inventory of the Hunter Lake Area: A Proposed Reservoir Impoundment in Sangamon County, Illinois was submitted to the SHPO for review and comment.

1.2. Additional Phase I Requirements. Approximately 75 acres within the present Hunter Lake project area were not surveyed because landowners denied access to these tracts (Appendix A). As these tracts are acquired by the City, the City shall ensure a Phase I survey will be completed subsequent to the issuance of a Section 404 permit for the project. In addition to these tracts, any areas outside the present project boundary that are directly affected by ancillary project construction activities (such as utility corridor realignments, road relocations, borrow activities, additional land acquisition, etc.), will require a Phase I survey. Any additional sites found during Phase I survey shall be evaluated for their potential significance, using an evaluation method comparable to that used for the present Phase I study.

1.3. There are 117 sites that have been recommended for Phase II testing in the project area (Appendix B). The Phase I evaluation summarizes these recommendations. Sites were divided into impact zones; 1 (impoundment area), 2 (shoreline), and 3 (upland areas not impacted by the reservoir proper). Zone 1 sites (n=39), Zone 2 sites (n=50), including and any additional Zone 1 or Zone 2 sites identified under Part 1.2 above will be evaluated against the National Register Criteria (36 CFR Part 60.4) subsequent to Section 404 permit issuance. Zone 3 sites (n=28) will be managed in early succession or food crops subsequent to permit issuance in order to avoid tree root disturbance. Phase II evaluation of Zone 3 sites will not be conducted unless warranted by ancillary construction activities (see item 1.2 above) and/or unforeseen development impacts (see item 4 below). If the property will be sold or transferred, a preservation covenant shall be executed for each Zone 3 historic property that is eligible or potentially eligible for inclusion to the National Register of Historic Places (Appendix C). This covenant shall be a binding legal instrument tied to the deed to the property.

1.4. The Phase I and Phase II surveys will be conducted in a manner consistent with the approaches of the Secretary of the Interior's Standards and Guidelines for Identification (48FR 44720-23) and taking into account the National Park Service publication The Archaeological Survey: Methods and Uses (1978) and the Illinois State Historic Preservation Office Guidelines for Archaeological Reconnaissance Surveys/Reports. The Phase I and Phase II surveys will be implemented by the City and monitored by the SHPO subsequent to Section 404 permit issuance.

1.5. In consultation with the SHPO, the Corps shall evaluate properties identified through the Phase II intensive survey against the National Register criteria (36 CFR Part 60.4).

1.6. For those properties which the Corps and the SHPO agree are not eligible for inclusion in the National Register, no further archaeological investigations will be required, and the proposed project may proceed in those areas. Those properties identified in the survey, and agreed upon by the Corps and the SHPO to be eligible for the National Register shall be treated in accordance with Stipulation 2, below.

2. Archaeological Mitigation (Phase III)

2.1. Those sites which the Corps and the SHPO agree are considered eligible for listing on the NRHP shall be treated in the following manner:

2.1.1. If a site is determined eligible for the NRHP, and the project cannot be modified to avoid the historic property, and the property is not a mound, a grave or cemetery and is not likely to contain human remains, then the City in consultation with the Corps will develop a data recovery plan. The plan will be consistent with the Secretary of the Interior's Standards and Guidelines for Archeological Documentation (48 FR 44734-37) and take into account the Council'' publication, Treatment of Archeological Properties (Advisory Council on Historic Preservation, 1980), subject to any revisions the Council may make. It shall specify, at a minimum:

* the property, properties, or portions of properties where data recovery is to be carried out;

* any property, properties, or portions of properties that will be inundated or destroyed without data recovery;

* the research questions to be addressed through the data recovery, with an explanation of their relevance and importance (research questions have been identified in the Phase I and II reports);

* the field methods to be used, with an explanation of their relevance to the research questions;

* the laboratory methods to be used in the analysis of osteological, cultural, and biological data, as well as the management and dissemination of that data;

* the proposed schedule and methods for disseminating results of the work to the interested public.

2.1.2. The data recovery plan will be submitted by the City to the SHPO for 30 days review. Unless the SHPO objects within 30 days after receipt of the plan, the City will ensure that the plan is implemented. The SHPO shall monitor this implementation.

2.2. The City shall ensure that the data recovery plan is carried out by or under the direct supervision of an archaeologist who meets, at a minimum, the Secretary of the Interior's Professional Qualifications Standards (36 CFR 61).

2.3. The City shall ensure that an adequate program of site security from vandalism during data recovery is developed in consultation with the SHPO, and then implemented by the City.

2.4. The City will ensure that a final report resulting from the data recovery will be provided, within a time agreed upon by the City, the Corps, and the SHPO, to the Corps and SHPO for review. The report will be responsive to contemporary professional standards, and to the Department of the Interior's Format Standards for Final Reports of Data Recovery Program (42 FR 5377-79).

2.5. Cemeteries

2.5.1. As none of the project area is federal land, any project activities that affect burials shall comply with state and local burial and cemetery laws. The county coroner shall be notified of the discovery of any human remains within 48 hours (5ILCS 5/2 and 20 ILCS 3440). The City shall notify the SHPO in order to obtain the proper permit prior to removal of remains. Burials, grave markers, and burial artifacts will not be disturbed or removed without this authorization.

2.5.2. Burials in cemeteries registered with the state Comptroller's Office are subject to the Cemetery Care Act (760 ILCS 100). A number of state laws may apply to burials that are less than 100 years old but that are not in registered cemeteries. These laws include, but are not limited to, the Cemetery Protection Act (765 ILCS 835). The Public Graveyards Act (50 ILCS 610), and several laws applying to municipalities (see 65 ILCS 5/11-49 through 65 ILCS 5/11-52.2). Authorization for removal of burials shall be as required under the applicable statute.

2.5.3. Burials over 100 years old that are not in registered cemeteries are subject to the Human Skeletal Remains Protection Act (HSRPA) (20 ILCS 3440 and its rule 17 Ill. Adm. Code 4170). This agreement constitutes authorization under Section 16 of HSRPA for removal of any burials that will be affected by the project at locations the SHPO agrees cannot be easily avoided. However, review and approval of specific data recovery plans is still required under 17 Ill. Adm. Code 4170.300(d)(3).

2.5.4. Disposition of any discovered human skeletal remains, burial markers, burial artifacts, and documentation of the removal project shall be completed as required by the applicable statute.

2.5.5. The Phase I archeological survey identified one historic Euro-American cemetery that will be directly impacted by reservoir impoundment, and four other historic Euro-American cemeteries that may be impacted at or near the project boundary by shoreline erosion and wave run-up.

2.5.6. Cemetery investigations will include a combination of location, excavation, and documentary strategies designed to give maximum information on the age and location of graves. Proposed plans developed by the City, in compliance with the appropriate state and local statutes, shall be fully coordinated with the SHPO pursuant to 17 IAC 4170.

3. Curation and Dissemination of Information

3.1. The Illinois Archaeological and Paleontological Resources Protection Act (20 ILCS 3435, 17 Ill. Adm. Code 4190) requires that all artifacts and all original archaeological project documentation concerning sites on public land be curated at the Illinois State Museum in Springfield, Illinois. If human remains are recovered, the signatories to this Agreement shall consult as required under stipulation 2.5.4.

3.2. The Council and the SHPO may monitor activities carried out pursuant to the Agreement, and the Council will review such activities if so requested. The Corps will cooperate with the Council and the SHPO in carrying out their monitoring and review responsibilities.

3.3. The City shall ensure that all final archaeological reports resulting from actions pursuant to this agreement will be provided in a format acceptable to the SHPO and the National Park Service (NPS) for possible peer review and submission to the National Technical Information Service (NTIS). The Corps shall ensure that all such reports are responsive to contemporary standards, and to the Department of the Interior's Format Standards for Final Reports of Data Recovery Programs (42 FR 5377-79). Precise locational data may be provided only in a separate appendix. Release of this information is subject to Section 304 of the National Historic Preservation Act of 1966, as amended and 20 ILCS 3435 § 10 and 17 IAC 4190.303 as appropriate.

4. Provisions for Undetected Archaeological Resources Discovered During Implementation

4.1. In accordance with 36 CFR 800.11(a), if previously undetected archaeological resources are discovered during project activities, the

City will cease any activity having an effect on the resource and consult with the SHPO and Corps to determine if additional investigation is required. If further archaeological investigations are required any testing or data recovery will be performed in accordance with Part I Identification and Evaluation of Archaeological Resources or Stipulation 2 Archaeological Mitigation (Phase III) as determined through consultation between the Corps and SHPO, and Stipulation 3 Curation and Dissemination of Information of this agreement. If both the Corps and SHPO determine that further investigation is not necessary, activities may resume with no further action required. Any disagreement between the Corps, the City and the SHPO concerning the need for further investigations will be handled pursuant to stipulation 8 Dispute Resolution of the agreement.

5. Identification and Evaluation of Historic and Architectural Standing Structures and Buildings.

5.1. The City has conducted a Phase I survey of the historic and architectural standing structures and buildings.

5.2. As a result of the survey, it was decided that 5 buildings (11SG650, 11SG804, 11SG602, 11SG819, 11SG541) required additional assessment to determine if they are eligible for listing on the NRHP.

5.3. Subsequently the Brunk Farmstead (11-Sg-602) was determined to be eligible for the NRHP and transferred from City ownership with a preservation covenant attached to the deed.

5.4. If the project is modified, the City shall ensure that a survey of each structure within the proposed modification will be performed to identify and evaluate historic resources eligible for listing on the NRHP. The survey shall be conducted by qualified professionals meeting the *Secretary of the Interior's Professional Qualification Standards*.

5.5. The archaeological component of any standing structures will be addressed as specified in Stipulations 1-3.

6. Treatment of Historic and Architectural Standing Structures and Buildings.

6.1. Marketing Historic and Architectural Standing Structures and Buildings.

6.1.1. The City, in consultation with the SHPO, shall ensure that a plan is prepared for marketing any NRHP eligible property, hereafter referred to as property. The City shall ensure that the marketing plan includes the following elements:

6.1.1.1. An information package about the subject property, including but not limited to:

6.1.1.1.1. Photographs of the property;
6.1.1.1.2. A parcel map;
6.1.1.1.3. Information on the property's historic significance;
6.1.1.1.4. Information on the property's cost;
6.1.1.1.5. Information on tax benefits for rehabilitation of historic properties;
6.1.1.1.6. if applicable; Notification that the purchaser shall be required to move the property to a location acceptable to the City and subject to review and comment by the SHPO;

6.1.1.1.7. Notification that the purchaser shall be required to rehabilitate and maintain the property in accordance with the recommended approaches in the Secretary of the Interior's Standards for Rehabilitation and Illustrated Guidelines for Rehabilitating Historic Properties (U.S. Department of the Interior, National Park Service, 1992); and

6.1.1.1.8. Notification that a preservation covenant attached hereto as Appendix D shall be included in the documents transferring the property to the purchaser.

6.1.1.2. A distribution list of potential purchasers or transferees;

6.1.1.3. An advertising plan and schedule; and

6.1.1.4. A schedule for receiving and reviewing offers.

6.1.2. Upon SHPO's agreement with the marketing plan or after resolution of any disagreement in accordance with stipulation 8, the City shall implement the marketing plan.

6.1.3. In consultation with the SHPO, the City shall review each offer it receives in response to the marketing plan and select one that meets the following requirements:

6.1.3.1. The offer provides for relocation and rehabilitation of the property as stipulated in the marketing package;

6.1.3.2. The offerer has the financial and technical ability to carry out the terms of the offer; and

6.1.3.3. The offerer agrees to accept transfer of the property with the covenant attached hereto as Appendix D, subject to subparagraph 6.1.4 below.

6.1.4. If the City receives no offer that it determines conforms to the requirements of subparagraph 6.1.3 above, the City in consultation with the SHPO may modify the requirements and re-offer the property, or may demolish the property. Should the SHPO not agree with the City's decision regarding the property, the City shall implement Stipulation 8.

6.2. Moving Historic and Architectural Standing Structures and Buildings.

6.2.1. The City shall ensure that the property is moved in accordance with the approaches recommended in Moving Historic Buildings (John Obed Curtis, 1979, American Association for State and Local History), in consultation with the SHPO by a professional mover who has the capability to move historic structures properly.

6.2.2. The City shall ensure the new site for the property is appropriate to the character of the property, that the property is visually and otherwise compatible with the surrounding of its new site, and that relocation to the site does not adversely affect any archeological or other historic property occupying the proposed new site. The City shall ensure that the new site is selected in consultation with SHPO and shall take SHPO's comments on the new site into account in reaching a final decision about use of such site.

6.2.3. Before the property is moved, the City shall ensure that it is documented in its existing setting and context in accordance with Stipulation 6.3.

6.2.4. The city shall ensure that the property is properly secured and protected during the period it is unoccupied on its existing and new sites.

6.2.5. Prior to the property's relocation, the City shall execute a contract with the recipient of the property ensuring that after the property is relocated, the recipient of the property will accept title to the property subject to the preservation covenant referenced in Appendix D.

6.3. Prior to any relocation or demolition, the City will document standing structures and buildings in accordance with the Illinois Historic American Buildings Survey/Historic American Engineering Record (IL HABS/HAER) Standards.

6.3.1. An IL HABS/HAER number and level of recordation will be assigned by the SHPO.

6.3.2. The City will award the recordation undertaking to a consultant of its choice provided the consultant is qualified to perform the work and agrees to meet IL HABS/HAER Standards.

6.3.3. After SHPO acceptance, completed IL HABS/HAER documentation will be deposited within the archives section of the Illinois State Historical Library. The SHPO requires one standard and one microfilm copy of accepted documentation.

6.4. If the City and the SHPO agree through consultation that a structure cannot be moved from the floodplain, the structure may be demolished after acceptance of the IL HABS documentation.

7. No later than February 1 of each calendar year throughout the course of project development, the City will provide SHPO with a report documenting all activities carried out pursuant to this Agreement to determine if revisions to the Agreement are needed. The City will also provide the Council with informational copies of these reports. If revisions to the Agreement are needed, the Corps, the Council, the SHPO, and the City will consult in accordance with 36 CFR Section 800 to make such revisions.

8. Dispute Resolution

8.1. Should any party to this PA object in writing to the Corps regarding any action carried out or proposed with respect to the Hunter Lake project or implementation of this PA, the Corps shall consult with the objecting party to resolve the objection. If after initiating such consultation the Corps determines that the objection cannot be resolved through consultation, the Corps shall forward all documentation relevant to the objection to the Council, including the Corps' proposed response to the objection. Within 30 days after receipt of all pertinent documentation, the Council shall exercise one of the following options:

8.1.1. Advise the Corps that the Council concurs in the Corps' proposed response to the objection, whereupon the Corps will respond to the objection accordingly;

8.1.2. Provide the Corps with recommendations, which, the Corps shall take into account in reaching a final decision regarding its response to the objection; or

8.1.3. Notify the Corps that the objection will be referred for comment pursuant to 36 CFR 800.6(b), and proceed to refer the objection and comment. The resulting comment shall be taken into account by the Corps in accordance with 36 CFR 800.6(c)(2) and § 110(1) of NHPA.

8.2. Should the Council not exercise one of the above options within 30 days after receipt of all pertinent documentation, the Corps may assume the Council's concurrence in its proposed response to the objection.

8.3. The Corps shall take into account any Council recommendation or comment provided in accordance with this stipulation with reference only to the subject of the objection; the Corps' responsibility to carry out all actions under this PA hat are not the subjects of the objection shall remain unchanged.

9. Amendments

9.1. Any party to this PA may propose to the Corps that the PA be amended, whereupon the Corps shall consult with the other parties to this PA to consider such an amendment. 36 CFR 800.5(e) shall govern the execution of any such amendment.

9.2. The parties to this PA may amend its terms, and the provisions of any attachment hereto, by completing and signing the form provided as Appendix E.

9.3. Upon execution of the amendment, each party will attach a copy of the fully executed form to that party's copy of this agreement, and will enter the amendment number and date in the spaces provided on the form and on the upper-right-hand corner of the first page of this PA.

10. Termination

10.1. If the Corps determines that it cannot implement the terms of this PA, or it the Council or SHPO determines that the PA is not being properly implemented, the Corps or the Council or SHPO may propose to the other parties to this PA that it be terminated.

10.2. The party proposing to terminate this PA shall so notify all parties to this PA, explaining the reasons for termination and affording them at least 30 days to consult and seek alternatives to termination. The parties shall then consult.

10.3. Should such consultation fail, the Corps or the Council or SHPO may terminate the PA by so notifying all parties.

10.4. Should this PA be terminated, the Corps shall either:

10.4.1. Consult in accordance with 36 CFR 800.5(e) to develop a new PA; or

10.4.2. Request the comments of the Council pursuant to 36 CFR 800.5(e)(6).

Execution of this Programmatic Agreement and implementation of its terms evidence that the Corps has afforded the Council an opportunity to comment on the Hunter Lake Project and its effects on historic properties, and that the Corps has taken into account the effects of the undertaking on historic properties.

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: _____ Date: 12/2/99

Executive Director
Advisory Council on Historic Preservation

ROCK ISLAND DISTRICT, U.S. ARMY CORPS OF ENGINEERS

BY: _____ Date: 6 July 1999

District Engineer
U.S. Army Corps of Engineers

ILLINOIS STATE HISTORIC PRESERVATION OFFICER

BY: _____ Date: July 29, 1999

Illinois State Historic Preservation Officer
Illinois Historic Preservation Agency

Concur:

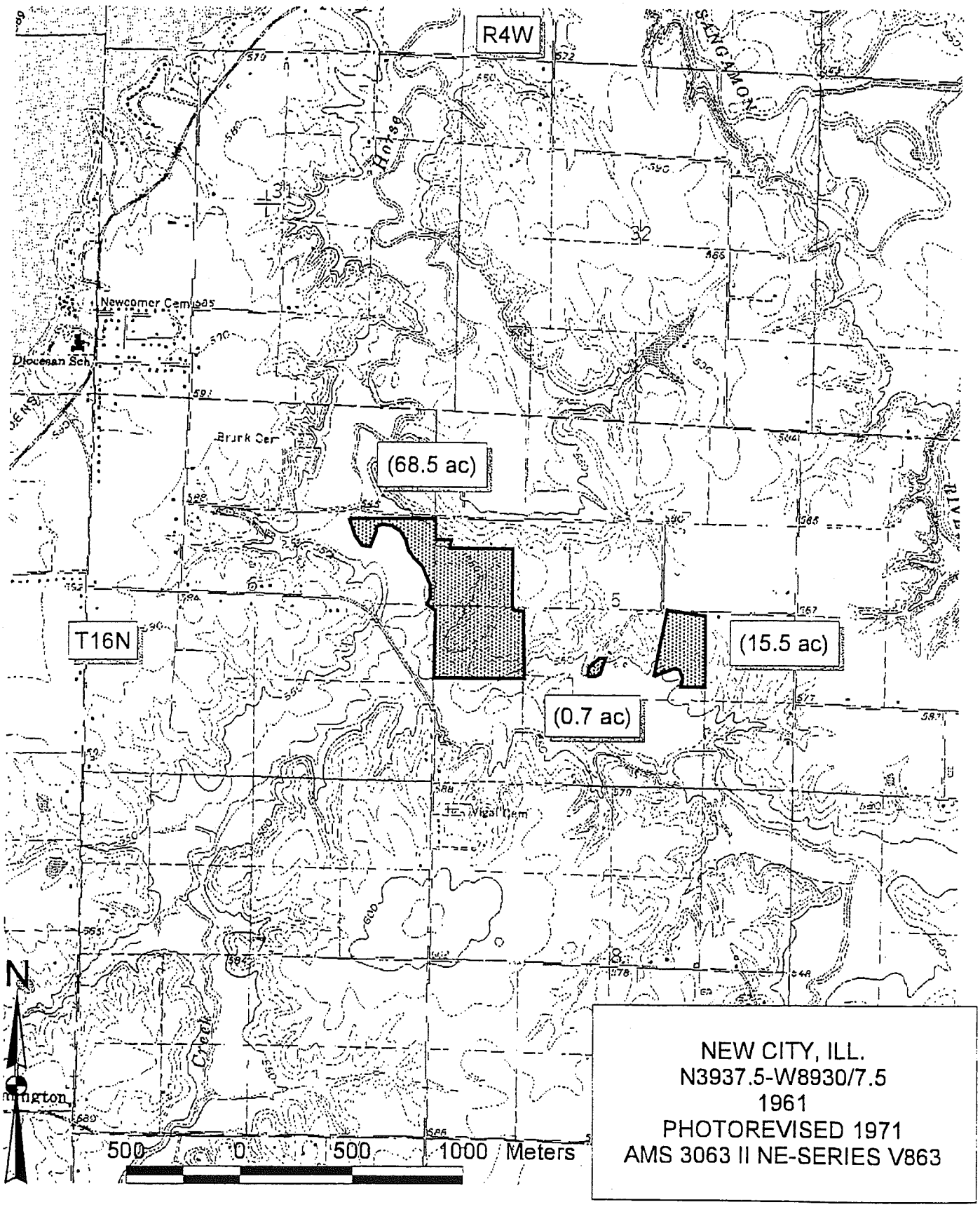
CITY OF SPRINGFIELD, ILLINOIS

BY: _____ Date: Sept. 8, 1999

Mayor

# APPENDIX A

## Additional Archeological Survey Requirements




APPENDIX A. Additional Archaeological Survey Requirements (Approximately 84.7 ac).

# APPENDIX B

## Historic Properties Recommended for Phase II Investigation

APPENDIX B. Historic Properties Recommended for Phase II Investigation Identified by Impacts, Offical IAS Site Designation, and Unofficial Field Designations Used in the Phase I Survey Report (Ahler et. al 1994).

| IMPACT | IAS NUMBER | ISM NUMBER | LOCUS | PHASE I RECOMMENDATION |
|---|---|---|---|---|
| 1 | 11SG1053 | Sg-552-A | 1010 | Phase II Archeological Testing |
| 1 | 11SG1056 | Sg-555-A | 1013 | Phase II Archeological Testing |
| 1 | 11SG1079 | Sg-531-A | 184 | Phase II Archeological Testing |
| 1 | 11SG1102 | Sg-508-A | 1045 | Phase II Archeological Testing |
| 1 | 11SG1127 | Sg-536-A | 1075 | Phase II Archeological Testing |
| 1 | 11SG179 | Sg-261-A | 25 | Phase II Archeological Testing |
| 1 | 11SG413 | Sg-479-A | 1017 | Phase II Archeological Testing |
| 1 | 11SG414 | Sg-480-A | 1018 | Phase II Archeological Testing |
| 1 | 11SG415 | Sg-482-A | 1020 | Phase II Archeological Testing |
| 1 | 11SG420 | Sg-487-A | 1025 | Phase II Archeological Testing |
| 1 | 11SG435 | Sg-503-A | 1054 | Phase II Archeological Testing |
| 1 | 11SG446 | Sg-888-A | 4000 | Phase II Archeological Testing |
| 1 | 11SG447 | Sg-915-A | 4001 | Phase II Archeological Testing |
| 1 | 11SG468 | Sg-466-A | 230 | Phase II Archeological Testing |
| 1 | 11SG523 | Sg-656-A | 35 | Phase II Archeological Testing |
| 1 | 11SG527 | Sg-663-A | 237 | Phase II Archeological Testing |
| 1 | 11SG528 | Sg-664-A | 238 | Phase II Archeological Testing |
| 1 | 11SG555 | Sg-920-A | 3007 | Phase II Archeological Testing |
| 1 | 11SG557 | Sg-1174-A | 3074 | Phase II Archeological Testing |
| 1 | 11SG659 | Sg-1182-A | 4002 | Phase II Archeological Testing |
| 1 | 11SG698 | Sg-676-A | 36 | Phase II Archeological Testing |
| 1 | 11SG702 | Sg-677-A | 38 | Phase II Archeological Testing |
| 1 | 11SG731 | Sg-801-S | SA9 | Phase II Archeological Testing |
| 1 | 11SG740 | Sg-692-A | 30 | Phase II Archeological Testing |
| 1 | 11SG742 | Sg-694-A | 48 | Phase II Archeological Testing |
| 1 | 11SG754 | Sg-706-A | 152 | Phase II Archeological Testing |
| 1 | 11SG764 | Sg-716-A | 1108 | Phase II Archeological Testing |
| 1 | 11SG792 | Sg-727-A | 113 | Phase II Archeological Testing |
| 1 | 11SG799 | Sg-734-A | 1051 | Phase II Archeological Testing |
| 1 | 11SG819 | Sg-819-S | SA29 | Architectural Evaluation and Phase II Archeological Testing |
| 1 | 11SG838 | Sg-1016-A | 1309 | Phase II Archeological Testing |
| 1 | 11SG860 | Sg-1183-A | 4003 | Phase II Archeological Testing |
| 1 | 11SG872 | Sg-1080-A | 433 | Phase II Archeological Testing |
| 1 | 11SG917 | Sg-588-A | 253 | Phase II Archeological Testing |
| 1 | 11SG942 | Sg-746-A | 88 | Phase II Archeological Testing |
| 1 | 11SG950 | Sg-754-A | 96 | Phase II Archeological Testing |
| 1 | 11SG953 | Sg-757-A | 1085 | Phase II Archeological Testing |
| 1 | 11SG959 | Sg-763-A | 1091 | Phase II Archeological Testing |
| 1 | 11SG984 | Sg-1041-A | 3064 | Phase II Archeological Testing |
| TOTAL ZONE 1 SITES | | | | 39 |
| 2 | 11SG1010 | Sg-770-A | 61 | Phase II Archeological Testing |
| 2 | 11SG1026 | Sg-786-A | 1068 | Phase II Archeological Testing |
| 2 | 11SG1041 | Sg-1068-A | 3066 | Phase II Archeological Testing |

KEY: IAS = Illinois Archaeological Survey; ISM = Illinois State Museum Society;
Impacts: 1 = Impoundment; 2 = Shoreline; 3 = Upland Areas not Impacted by the Reservoir Proper.

APPENDIX B. Historic Properties Recommended for Phase II Investigation Identified by Impacts, Offical IAS Site Designation, and Unofficial Field Designations Used in the Phase I Survey Report (Ahler et. al 1994).

| IMPACT | IAS NUMBER | ISM NUMBER | LOCUS | PHASE I RECOMMENDATION |
|---|---|---|---|---|
| 2 | 11SG1054 | Sg-553-A | 1011 | Phase II Archeological Testing |
| 2 | 11SG1099 | Sg-506-A | 80 | Phase II Archeological Testing |
| 2 | 11SG1105 | Sg-511-A | 1048 | Phase II Archeological Testing |
| 2 | 11SG1120 | Sg-1117-A | 362 | Phase II Archeological Testing |
| 2 | 11SG1129 | Sg-538-A | 1078 | Phase II Archeological Testing |
| 2 | 11SG1142 | Sg-516-A | 180 | Phase II Archeological Testing |
| 2 | 11SG1144 | Sg-518-A | 1061 | Phase II Archeological Testing |
| 2 | 11SG165 | Sg-248-A | 234 | Phase II Archeological Testing |
| 2 | 11SG206 | Sg-287-A | 1002 | Phase II Archeological Testing |
| 2 | 11SG417 | Sg-484-A | 1022 | Phase II Archeological Testing |
| 2 | 11SG452 | Sg-450-A | 6 | Phase II Archeological Testing |
| 2 | 11SG474 | Sg-890-A | 331 | Phase II Archeological Testing |
| 2 | 11SG518 | Sg-907-A | 3000 | Phase II Archeological Testing |
| 2 | 11SG530 | Sg-666-A | 300 | Phase II Archeological Testing |
| 2 | 11SG541 | Sg-839-S | SA50 | Architectural Evaluation and Phase II Archeological Testing |
| 2 | 11SG549 | Sg-912-A | 1211 | Phase II Archeological Testing |
| 2 | 11SG559 | Sg-643-A | 42 | Phase II Archeological Testing |
| 2 | 11SG560 | Sg-644-A | 43 | Phase II Archeological Testing |
| 2 | 11SG579 | Sg-639-A | 146 | Phase II Archeological Testing |
| 2 | 11SG597 | Sg-650-A | 20 | Phase II Archeological Testing |
| 2 | 11SG601 | Sg-641-A | 1001 | Phase II Archeological Testing |
| 2 | 11SG602 | Sg-818-S | SA28 | Architectural Evaluation and Phase II Archeological Testing |
| 2 | 11SG641 | Sg-921-A | 3008 | Phase II Archeological Testing |
| 2 | 11SG645 | Sg-934-A | 375 | Phase II Archeological Testing |
| 2 | 11SG648 | Sg-806-S | SA14 | Phase II Archeological Testing |
| 2 | 11SG650 | SG-808s | SA17 | Architectural Evaluation and Phase II Archeological Testing |
| 2 | 11SG684 | Sg-945-A | 3030 | Phase II Archeological Testing |
| 2 | 11SG715 | Sg-687-A | 1121 | Phase II Archeological Testing |
| 2 | 11SG750 | Sg-702-A | 57 | Phase II Archeological Testing |
| 2 | 11SG767 | Sg-821-S | SA31 | Phase II Archeological Testing |
| 2 | 11SG778 | Sg-983-A | 1260 | Phase II Archeological Testing |
| 2 | 11SG780 | Sg-985-A | 1273 | Phase II Archeological Testing |
| 2 | 11SG804 | Sg-812-S | SA22 | Architectural Evaluation and Phase II Archeological Testing |
| 2 | 11SG809 | Sg-987-A | 335 | Phase II Archeological Testing |
| 2 | 11SG845 | Sg-824-S | SA34 | Phase II Archeological Testing |
| 2 | 11SG854 | Sg-1019-A | 384 | Phase II Archeological Testing |
| 2 | 11SG880 | Sg-1088-A | 1251 | Phase II Archeological Testing |
| 2 | 11SG881 | Sg-1089-A | 1252 | Phase II Archeological Testing |
| 2 | 11SG903 | Sg-573-A | 188 | Phase II Archeological Testing |
| 2 | 11SG909 | Sg-579-A | 195 | Phase II Archeological Testing |

KEY: IAS = Illinois Archaeological Survey; ISM = Illinois State Museum Society;
Impacts: 1 = Impoundment; 2 = Shoreline; 3 = Upland Areas not Impacted by the Reservoir Proper.

APPENDIX B. Historic Properties Recommended for Phase II Investigation Identified by Impacts, Offical IAS Site Designation, and Unofficial Field Designations Used in the Phase I Survey Report (Ahler et. al 1994).

| IMPACT | IAS NUMBER | ISM NUMBER | LOCUS | PHASE I RECOMMENDATION |
|---|---|---|---|---|
| 2 | 11SG913 | Sg-583-A | 200 | Phase II Archeological Testing |
| 2 | 11SG914 | Sg-584-A | 201 | Phase II Archeological Testing |
| 2 | 11SG957 | Sg-761-A | 1089 | Phase II Archeological Testing |
| 2 | 11SG969 | Sg-1026-A | 307 | Phase II Archeological Testing |
| 2 | 11SG970 | Sg-1027-A | 308 | Phase II Archeological Testing |
| 2 | 11SG985 | Sg-767-A | 122 | Phase II Archeological Testing |
| 2 | 11SG999 | Sg-1049-A | 393 | Phase II Archeological Testing |
| TOTAL ZONE 2 SITES | | | | 50 |
| 3 | 11SG1033 | Sg-1060-A | 316 | Phase II Archeological Testing |
| 3 | 11SG1035 | Sg-1062-A | 318 | Phase II Archeological Testing |
| 3 | 11SG1057 | Sg-556-A | 1014 | Phase II Archeological Testing |
| 3 | 11SG1059 | Sg-558-A | 1016 | Phase II Archeological Testing |
| 3 | 11SG1112 | Sg-1109-A | 360 | Phase II Archeological Testing |
| 3 | 11SG1163 | Sg-1150-A | 1243 | Phase II Archeological Testing |
| 3 | 11SG178 | Sg-260-A | 302 | Phase II Archeological Testing |
| 3 | 11SG409 | Sg-474-A | 327 | Phase II Archeological Testing |
| 3 | 11SG453 | Sg-451-A | 8 | Phase II Archeological Testing |
| 3 | 11SG457 | Sg-455-A | 12 | Phase II Archeological Testing |
| 3 | 11SG477 | Sg-895-A | 3024 | Phase II Archeological Testing |
| 3 | 11SG480 | Sg-899-A | 3028 | Phase II Archeological Testing |
| 3 | 11SG551 | Sg-914-A | 1213 | Phase II Archeological Testing |
| 3 | 11SG585 | Sg-926-A | 374 | Phase II Archeological Testing |
| 3 | 11SG603 | Sg-638-A | 145 | Phase II Archeological Testing |
| 3 | 11SG661 | Sg-608-A | 1007 | Phase II Archeological Testing |
| 3 | 11SG662 | Sg-609-A | 1008 | Phase II Archeological Testing |
| 3 | 11SG681 | Sg-942-A | 438 | Phase II Archeological Testing |
| 3 | 11SG718 | Sg-684-A | 347 | Phase II Archeological Testing |
| 3 | 11SG723 | Sg-965-A | 1269 | Phase II Archeological Testing |
| 3 | 11SG773 | Sg-978-A | 1216 | Phase II Archeological Testing |
| 3 | 11SG813 | Sg-991-A | 337 | Phase II Archeological Testing |
| 3 | 11SG816 | Sg-994-A | 340 | Phase II Archeological Testing |
| 3 | 11SG842 | Sg-809-S | SA19 | Phase II Archeological Testing |
| 3 | 11SG852 | Sg-1017-A | 382 | Phase II Archeological Testing |
| 3 | 11SG858 | Sg-1023-A | 429 | Phase II Archeological Testing |
| 3 | 11SG892 | Sg-562-A | 202 | Phase II Archeological Testing |
| 3 | 11SG924 | Sg-1095-A | 418 | Phase II Archeological Testing |
| TOTAL ZONE 3 SITES | | | | 28 |
| TOTAL SITES | | | | 117 |

KEY: IAS = Illinois Archaeological Survey; ISM = Illinois State Museum Society;
Impacts: 1 = Impoundment; 2 = Shoreline; 3 = Upland Areas not Impacted by the Reservoir Proper.

# APPENDIX C

## Archaeological Preservation Covenant

Archaeological Preservation Covenant

In consideration of the conveyance of certain real property, hereinafter referred to as _____ [NAME OF PROPERTY], located in _____ County, Illinois, which is more fully described as:

[INSERT FULL LEGAL DESCRIPTION OF PROPERTY]

_____ [NAME OF PROPERTY OWNER/RECIPIENT] hereby covenants on behalf of itself, its heirs, successors, and assigns, at all times to the Illinois Historic Preservation Agency to maintain and preserve archaeological site(s) _____ [INSERT STATE SITE NUMBER(S)] as follows:

[INSERT FULL LEGAL DESCRIPTION OF SITE(S)]

1. _____ [NAME OF PROPERTY OWNER/RECIPIENT] shall preserve and maintain archaeological site(s) _____ _____ [INSERT STATE SITE NUMBER(S)] in their present condition in order to preserve and enhance those qualities that make these archaeological sites eligible or potentially eligible for inclusion in the National Register of Historic Places.

2. No construction, alteration, or disturbance of the ground surface shall be undertaken or permitted to be undertaken on archaeological site(s) _____ _____[INSERT STATE SITE NUMBER(S)] which would affect the integrity or the archaeological value of these sites without the express prior written permission of the Illinois Historic Preservation Agency signed by a fully authorized representative thereof.

3. The Illinois Historic Preservation Agency shall be permitted at all reasonable times to inspect these archaeological sites in order to ascertain if the above conditions are being observed.

4. In the event of a violation of this covenant, and in addition to any remedy now or hereafter provided by law, the Illinois Historic Preservation Agency may, following reasonable notice to _____ [NAME OF PROPERTY OWNER/RECIPIENT] institute a suit to enjoin said violation and/or to require the restoration of the archaeological site(s). The successful party shall be entitled to recover all costs or expenses incurred in connection with such a suit, including all court costs and attorney's fees.

5. _____ [NAME OF PROPERTY OWNER/RECIPIENT] agrees that the Illinois Historic Preservation Agency may at its discretion and without prior notice to the _____ [NAME OF PROPERTY OWNER/RECIPIENT],

convey and assign all or part of its rights and responsibilities contained herein to a third party.

6. This covenant is binding on _____ [NAME OF PROPERTY OWNER/RECIPIENT], its heirs, successors, and assigns in perpetuity. All restrictions, stipulations, and covenants contained herein shall be inserted by _____ [NAME OF PROPERTY OWNER/RECIPIENT] verbatim or by express reference in any deed or other legal instrument by which it divests itself of either the fee simple title or any other lesser estate in the _____ [NAME OF PROPERTY] or any part thereof.

7. The failure of the Illinois Historic Preservation Agency, to exercise any right or remedy granted under this instrument shall not have the effect of waiving or limiting the exercise of any other right or remedy or the use of such right or remedy at any other time.

This covenant shall be a binding servitude upon the _____ [NAME OF PROPERTY] and shall be deemed to run with the land. Execution of this covenant shall constitute conclusive evidence that _____ [NAME OF PROPERTY OWNER/RECIPIENT] agrees to be bound by the foregoing conditions and restrictions and to perform the obligations herein set forth.

[This instrument must be dated, contain the duly notarized signature of the owner/recipient, and show evidence of having been recorded in county real estate records.]

# APPENDIX D

## Architectural Covenant

## Architectural Covenant

In consideration of the conveyance of certain real property, hereinafter referred to as [name of property], located in the City of [name of city], County of [name of county], State of Illinois, which is more fully described as: [Insert legal description]

1. The grantee hereby covenants on behalf of itself, its heirs, successors, and assigns at all times to maintain and preserve [name of property] in accordance with the recommended approaches of the "Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings" (National Park Service, 1992) in order to preserve and enhance those qualities that make [name of property] eligible for listing on the National Register of Historic Places.

2. No construction, alteration or rehabilitation shall be undertaken or permitted to be undertaken on [name of property] which would affect the historic architectural features of [name of property] without consultation and the express prior written permission of the Illinois Historic Preservation Agency (IHPA) or a fully authorized representative thereof.

3. The IHPA shall be permitted at all reasonable times to inspect [name of property] in order to ascertain if the above conditions are being observed.

4. In the event of a violation of this covenant, an din addition to any remedy now or hereafter provided by law, the IHPA may, following reasonable notice to the grantee, institute suit to enjoin said violation or to require the restoration of [name of property.]

5. The grantee agrees that the IHPA may at its discretion, convey and assign all or part of its rights and responsibilities contained herein to a third party.

6. This covenant is binding on the grantee, its heirs, successors and assigns in perpetuity. Restrictions, stipulations and covenants contained herein shall be inserted by the grantee verbatim or by express reference in any deed or other legal instrument by which the grantee divests itself of the fee simple title or any other lesser estate in [name of property] or any part thereof.

7. The failure of the IHPA to exercise any right or remedy granted under this instrument shall not have the effect of waiving or limiting the exercise of any other right or remedy or use of such right or remedy at any other time.

8. The IHPA may, for good cause, modify or cancel any or all of the foregoing restrictions upon application of the grantee, its heirs, successors or assigns.

The covenant shall be binding servitude upon [name of property] and shall be deemed to run with the land. Execution of this covenant shall constitute conclusive evidence that the grantee agrees to be bound by the foregoing conditions and restrictions and to perform obligations herein set forth.

# APPENDIX E

## Amendment Form

AMENDMENT #
DATE:

**AMENDMENT TO THE PROGRAMMATIC AGREEMENT**
AMONG
THE ROCK ISLAND DISTRICT U.S. ARMY CORPS OF ENGINEERS
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
AND THE ILLINOIS STATE HISTORIC PRESERVATION OFFICE
REGARDING THE PROPOSED CONSTRUCTION OF
HUNTER LAKE IN SANGAMON COUNTY, ILLINOIS

1. Need for Amendment:

[Describe Briefly]

2. Amendment:

[Specify]

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: Date:

Chairman
Advisory Council on Historic Preservation

ROCK ISLAND DISTRICT, U.S. ARMY CORPS OF ENGINEERS

BY: Date:

District Engineer
U.S. Army Corps of Engineers

ILLINOIS STATE HISTORIC PRESERVATION OFFICER

BY: Date:

Illinois State Historic Preservation Officer
Illinois Historic Preservation Agency

Concur:

CITY OF SPRINGFIELD, ILLINOIS

BY: Date:

Mayor

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