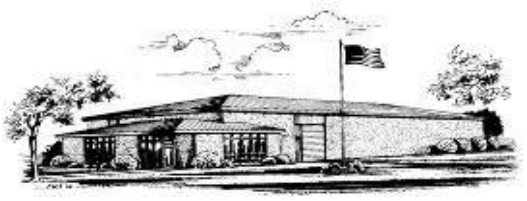


Ogle County Highway Department

Jeremy A. Ciesiel, P.E., County Engineer
1989 South IL Route 2
Oregon, IL 61061

REQUEST FOR QUALIFICATIONS FOR HYDRAULIC STUDY

LAKE MISTAKE DRAIN
CITY OF OREGON/OGLE COUNTY
AGREEMENT #FEMA-EMC-2021-BR-062-003

Lake Mistake Drain is the name given to a drainage area along the western municipal border of the City of Oregon in Ogle County, Illinois. During heavy rain events, the south end of this drainage basin will flood creating a temporary lake in the southwest portion of the City. The floods are exacerbated by backflow coming from Gale Creek located downstream of the Lake Mistake Drain. Runoff waters remain trapped in "Lake Mistake" until the water levels in the downstream Gale Creek lower sufficiently to allow flood waters to escape. After a series of floods in the 1970's, the City of Oregon requested that the US Army Corps of Engineers (USACE) study the area, and the attached Reconnaissance Report for Section 205 Flood Control – Gale Creek & Lake Mistake Drain dated January 1990 was produced. No cost effective solutions were produced by this investigation, no actions were taken and heavy rains continue to result in the flooding of the area.

Ogle County and the City of Oregon have received a project scoping grant from FEMA to update and supplement the USACE report from 1990 to help reduce potential losses to buildings and contents due to flooding, water backflows, and pooling at the confluence of the Lake Mistake Drain and Gale Creek. Ogle County therefore desires to retain the services of a qualified engineering firm to perform the following services:

1) Recreate and validate the original USACE HEC-1 study in a modern software package.
2) Add additional detail to the study such as the existing Pines Rd Culvert and the two railroad structures downstream of Lake Mistake.
3) Adjust the study to allow for modern computing power and methods as well as utilize updated climate models.
4) Assess the impact of the Pines Rd culvert and determine the most effectively sized replacement structure (more information below).
5) Use the study to propose future mitigation options.
6) Perform cost/benefit analysis on options/alternatives and evaluate facilities to identify future mitigation projects.

As mentioned above, the Lake Mistake Drain discharges into the Gale Creek. This primarily occurs through a concrete box culvert that passes beneath Pines Road just west of the City of Oregon (see attached maps). The Ogle County Highway Department desires to replace this culvert in the near future. Since it was identified during the 1990 study that flooding in Lake Mistake is exacerbated by backflow from the Gale Creek through the Pines Rd culvert, it is imperative that the replacement structure is properly sized and shaped.

In order to successfully complete the study, the FEMA grant requires the following deliverables related to the project:

1) Public Outreach
2) Topographical Surveys

3) Cultural & Environmental Reviews
4) Hydraulic Modeling & Report Preparation
5) IDNR-OWR Review

Firms who submit qualifications will be evaluated on the following criterion:

Technical Approach – 20%
Firm Experience – 20%
Staff Capabilities (Prime/Sub) – 20%
Past Performance on Similar Projects (Not necessarily with Ogle County) – 20%
Approach to planning, organizing and management – 20%

Attached to this Request, please find the following information for your use:

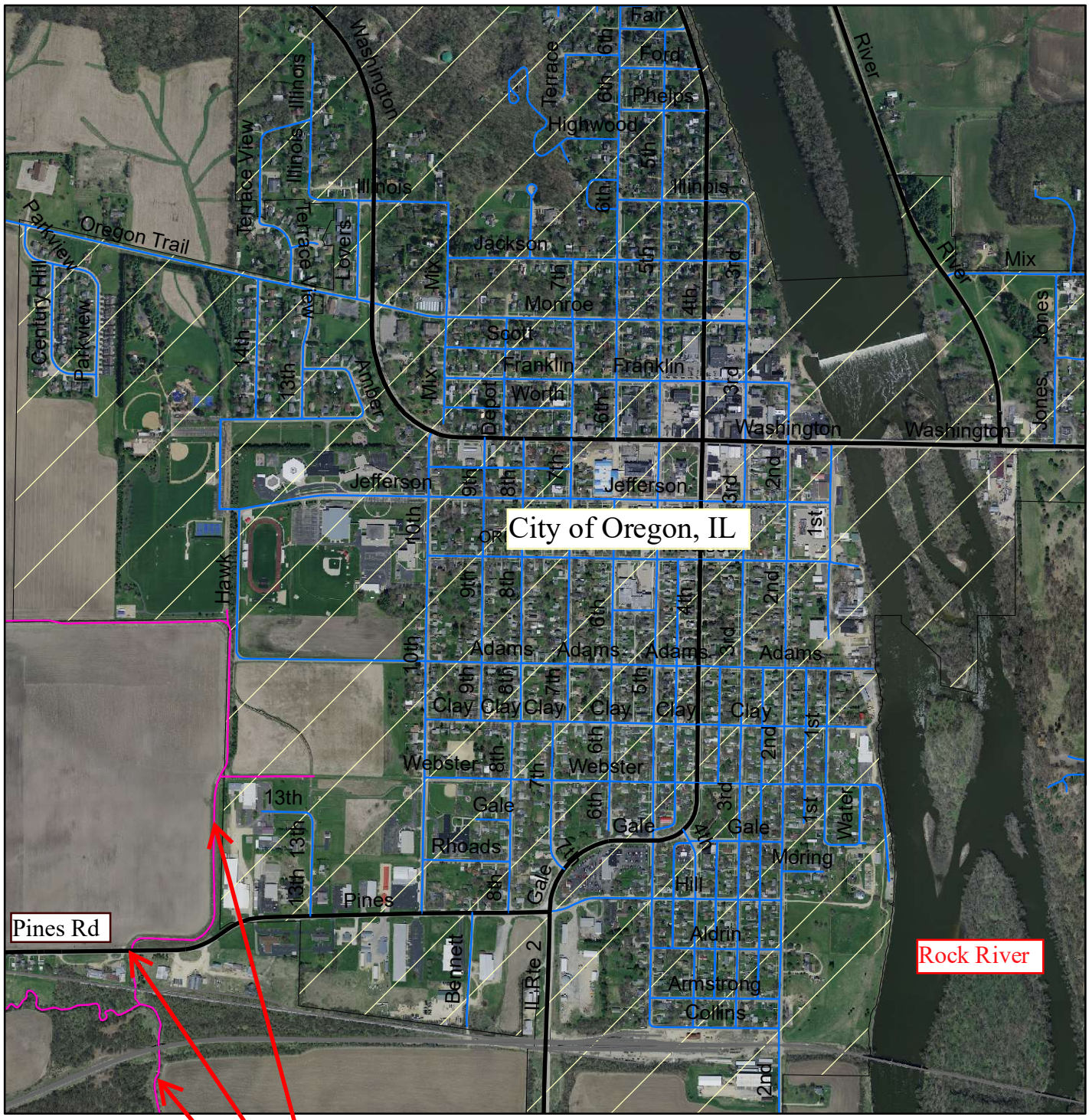
- Community Map
- Special Flood Hazard Area Map
- National Flood Hazard Layer FIRMette
- Photos of from 2017 Flood
- USACE Reconnaissance Report 1990

Interested firms shall submit three (3) copies of qualifications to the Ogle County Highway Department, in writing, no later than 3:00 P.M. on Friday September 1, 2023. Emailed submittals will also be accepted. Firms must also submit a disclosure statement with their qualifications. The disclosure statement form can be found at:
http://www.oglecounty.org/departments/highway_department/qbs.php

Responses and questions should be directed to:

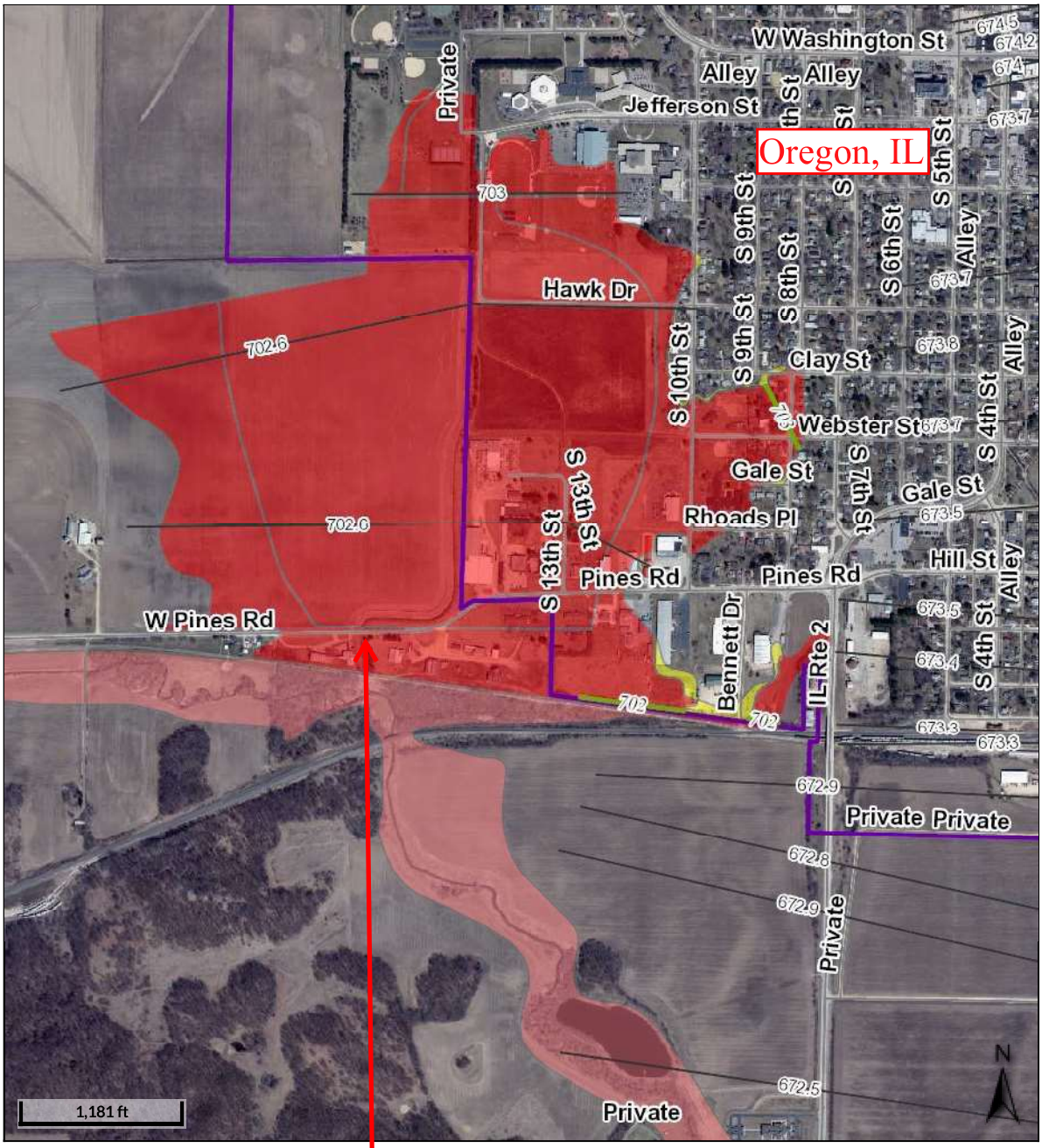
Mr. Jeremy A. Ciesiel, P.E.
Ogle County Engineer
1989 South IL Route 2
Oregon, IL 61061
Phone: (815) 732-2851
Email: highway@oglecountyil.gov

Project Scoping for Lake Mistake Drain Culvert
Location Map
Sections 4 & 9, Township 23N, Range 10 E of 4th P.M.
Ogle County, Illinois



Beacon™ Ogle County, IL

Special Flood Hazard Area

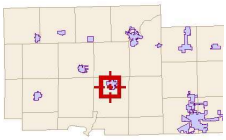


Location of culvert.

Date created: 3/10/2020
Last Data Uploaded: 3/10/2020 8:53:27 AM

Developed by Schneider GEOSPATIAL

Overview



Legend

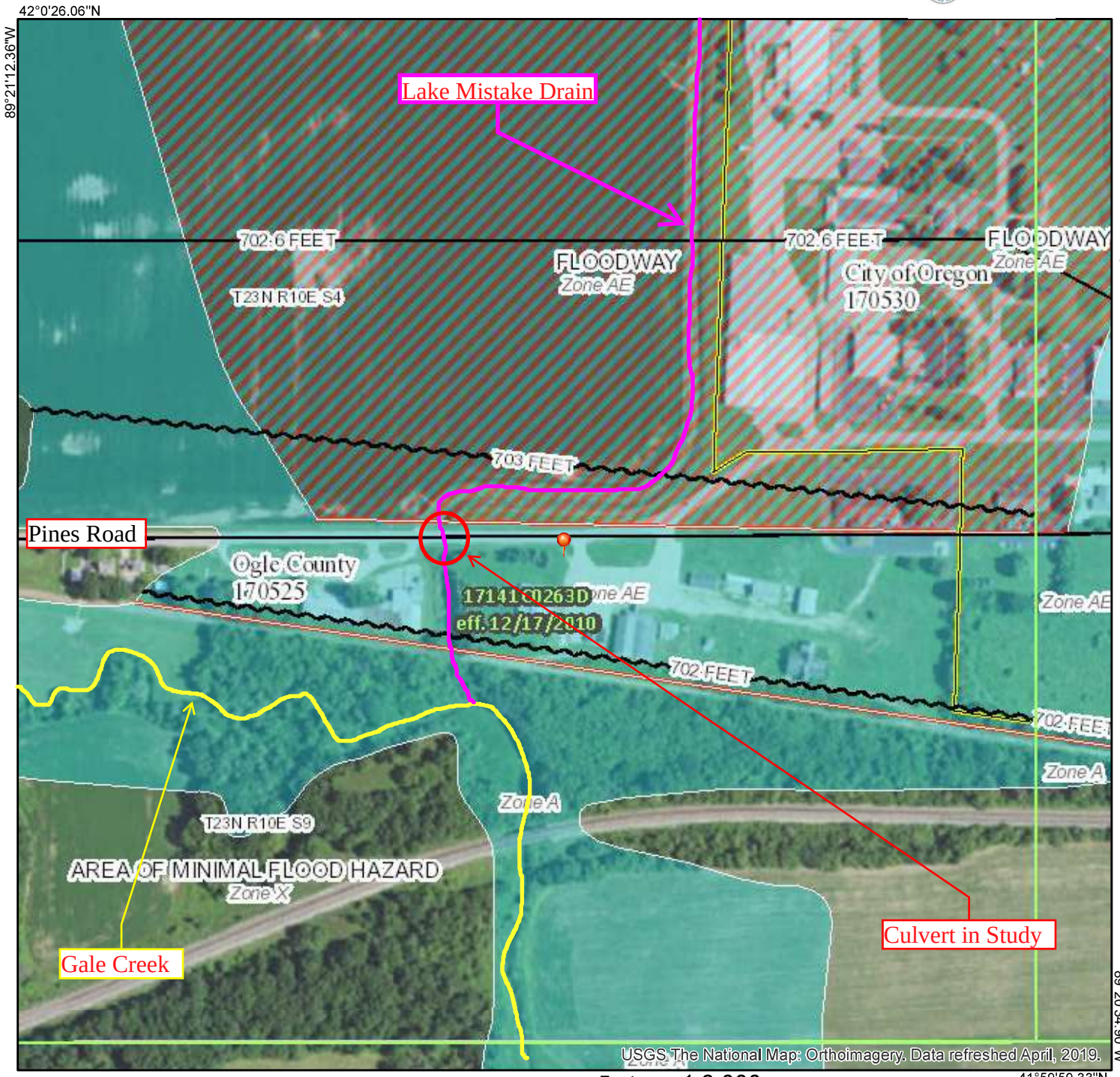
- Base Flood Elevati
- Water Surface Elevation (BFE)

Original FEMA Floodplain

- 0.2 PCT ANNUAL CHANCE FLOOD HAZARD
- A
- AE
- Municipalities
- Townships
- Roads

National Flood Hazard Layer FIRMette

FEMA



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/8/2020 at 12:42:21 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

FEMA Subapplication
Lake Mistake Drain Culvert
Ogle County Highway Department
Oregon, Illinois

Photos from the 2017 Flood (Pictures taken after weather cleared and flood waters receded.)

Village of Progress (Adult Developmental Disability Support Center)
Secretary of State Driver Services Facility
City of Oregon Well House

Village of Progress (Adult Developmental Disability Support Center)

Oregon Living & Rehabilitation Center on 10th Street (Nursing Home)

U.S. Department of Agriculture Service Center

RECONNAISSANCE REPORT
FOR
SECTION 205 FLOOD CONTROL

GALE CREEK AND
LAKE MISTAKE DRAIN
OREGON, ILLINOIS

JANUARY 1990

US Army Corps
of Engineers
Rock Island District

CENCD-PE-PD-PF (CENCR-PD-F/22 Oct 90) (1105) 1st End Mrs. Atilano/edp/312-353-1494
SUBJECT: Termination Reports for Sections 205, Oregon, Illinois, (CWIS No. 91745); Section 205, Illinois and Michigan Canal, LaSalle and Grundy Counties (CWIS No. 91544); and Section 14, Louisa County Road, Louisa County, Iowa (CWIS No. 92433)

Commander, North Central Division, U.S. Army Corps of Engineers, 536 South Clark Street, Chicago, Illinois 60605-1592

FOR Commander, HQUSACE(CECW-P), WASH D.C., 20314-1000

27 NOV 1990

1. Concur in Rock Island District's recommendation to terminate the following studies:

SECTION	NAME	CWIS
205	Oregon, Illinois	91745
205	Illinois and Michigan Canal, LaSalle and Grundy Counties	91544
14	Louisa County Road, Louisa County, Iowa	92433

2. No funds remain for reprogramming in the above studies.

FOR THE COMMANDER:

3 Encls
nc

ALFRED P. BEHM
Chief, Planning Division

CF (w/encls):
USACE(CECW-PC)
CENCR-PD-F (wo/encls)

PD ✓
PD-C
PD-E
PD-F ✓
PD-W
RUTH

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

REPLY TO
ATTENTION OF:

CENCR-PD-F (1105-2-10b)

2 OCT 1990

MEMORANDUM FOR Commander, U.S. Army Engineer Division, North Central, ATTN: CENCD-PD-PF, 536 South Clark Street, Chicago, Illinois 60605-1592

SUBJECT: Termination Reports for Section 205, Oregon, Illinois, (CWIS No. 91745); Section 205, Ilinois and Michigan Canal, La Salle and Grundy Counties (CWIS No. 91544); and Section 14, Louisa County Road, Louisa County, Iowa (CWIS No. 92433)

1. We hereby request withdrawal of subject projects approval. The reason for withdrawal is as stated in ER 1105-2-100, 15 December 1989, paragraph 3-17a.

2. The subject Termination Reports are enclosed for your information.

3. Please forward through the proper channels of higher authority.

FOR THE COMMANDER:

3 Encls

DUDLEY M. HANSON, P.E.
Chief, Planning Division

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MUCK/dmd/634

CENCR-PD-F (1105-2-10b)

22 OCT 1990

MEMORANDUM FOR Commander, U.S. Army Engineer Division, North Central, ATTN: CENCD-PD-PF, 536 South Clark Street, Chicago, Illinois 60605-1592

SUBJECT: Termination Reports for Section 205, Oregon, Illinois, (CWIS No. 91745); Section 205, Ilinois and Michigan Canal, La Salle and Grundy Counties (CWIS No. 91544); and Section 14, Louisa County Road, Louisa County, Iowa (CWIS No. 92433)

1. We hereby request withdrawal of subject projects approval. The reason for withdrawal is as stated in ER 1105-2-100, 15 December 1989, paragraph 3-17a.

2. The subject Termination Reports are enclosed for your information.

3. Please forward through the proper channels of higher authority.

FOR THE COMMANDER:

ORIGINAL SIGNED BY

DUDLEY M. HANSON, P.E.
Chief, Planning Division

3 Encls

CF (all w/encls):
Dist File (PD)
PD (Johnson)
PD-F

MUCK
PD-F 22 Oct 90

DUPREY
PD-F 10-19-90

FARNHAM
PD-F 10/22

JOHNSON
PD Absent

BURKE
PD 10/22

HANSON
PD 10/22

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District: Rock Island
Division: North Central

10 October 1990

TERMINATION REPORT

Reconnaissance Report, Oregon, Illinois, Gale Creek and Lake Mistake (CWIS No. 91745)

1. **Date Terminated**: 3 January 1990

2. **Classification**: The study was conducted under the authority of Section 205 of the 1948 Flood Control Act, as amended.

3. **Milestone Accomplishments**: In January 1988, the city of Oregon, Illinois, requested Section 205 assistance with flood damage reduction in the Lake Mistake Drain area.

In August 1988, Rock Island District received funds in the amount of $60,000 to initiate a reconnaissance study. The study addressed flood problems in the Lake Mistake Drain area on the southeast side of the city from overflow of Gale Creek and Lake Mistake Drain. The study identified several alternatives which were studied on a preliminary basis to determine if any plan would be economically feasible and warrant further study. These alternatives were evaluated and determined to be economically infeasible.

In October 1989, the study report was completed and submitted to North Central Division.

4. **Funding History**:

Fiscal Year	Funds Allocated	Cumulative Funds Expended
1988	60,000	60,000

5. **Narrative**: In a letter dated 7 January 1988, the city of Oregon, Illinois, requested that the Rock Island District, Corps of Engineers, investigate the flood problems in the Lake Mistake Drain area on the southeast side of the city.

On 22 September 1988, a site visit was conducted with Oregon city officials. A variety of alternative plans were evaluated as possible solutions to the flood problems. Alternatives considered were permanent evacuation of nine structures from the floodplain; channel improvement of Gale Creek; upstream detention structure on Gale Creek; bottom land excavated storage basin in the Lake Mistake area; and levees and floodwalls around a group of buildings and a nursing home. These alternatives were evaluated and determined to be economically infeasible.

Since no flood damage reduction alternative warranted further Federal participation, the study was terminated.

JOHN R. BROWN
Colonel, EN
Commanding

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

REPLY TO
ATTENTION OF:

CENCR-PD-F

RECONNAISSANCE REPORT
FOR
SECTION 205 FLOOD CONTROL

GALE CREEK AND LAKE MISTAKE DRAIN
OREGON, ILLINOIS

JANUARY 1990

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ACKNOWLEDGEMENT

Primary study team personnel who are familiar with the technical aspects of the study are listed below:

STUDY MANAGEMENT:	Fred Schwada
HYDRAULIC STUDIES:	George Staley
ECONOMIC STUDIES:	Dan Fetes
ENVIRONMENTAL STUDIES:	Ron Klump
CULTURAL RESOURCE STUDIES:	Ron Deiss
REAL ESTATE:	John George
GEOTECHNICAL:	Sibte Zaidi
DESIGN:	John Copeland

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SYLLABUS

In a letter dated January 7, 1988, the city of Oregon, Illinois, requested that the Rock Island District investigate the flooding problems in the Lake Mistake Drain area on the southeast side of the city. The study was completed under Section 205 of the 1948 flood Control Act, as amended. A variety of alternative plans were evaluated as possible solutions to the flood problems. These alternative plans were studied on a preliminary basis to determine if any plan would be economically feasible and warrant further study.

The alternatives considered were permanent evacuation of nine structures from the floodplain; channel improvement of Gale Creek; upstream detention structure on Gale Creek; bottom land excavated storage basin in Lake Mistake area; and levees and floodwalls around a group of buildings and the nursing home. These alternatives were evaluated and determined to be economically infeasible.

Since no flood damage reduction alternative warrants additional study, the study will be terminated.

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RECONNAISSANCE REPORT
FOR
SECTION 205 FLOOD CONTROL

GALE CREEK AND LAKE MISTAKE DRAIN
OREGON, ILLINOIS

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B - Economic Analysis
C - Pertinent Correspondence

DISTRIBUTION LIST

RECONNAISSANCE REPORT
FOR
SECTION 205 FLOOD CONTROL

GALE CREEK AND LAKE MISTAKE DRAIN
OREGON, ILLINOIS

SECTION 1 - INTRODUCTION

This report presents the results of an investigation of the flooding problems along Lake Mistake Drain on the southwest side of Oregon, Illinois. The city of Oregon requested the study in a letter to the Rock Island District dated January 7, 1988.

STUDY AUTHORITY

The Corps of Engineers has the authority to construct certain projects without the specific authorization of Congress. The authority for this report is Section 205 of the 1948 Flood Control Act, as amended.

STUDY PURPOSE AND SCOPE

The purpose of the reconnaissance study is to define the flooding problem, identify potential solutions, and determine whether there is a Federal interest in a flood damage reduction plan, based on a preliminary appraisal of costs, benefits, and environmental impacts. The reconnaissance study phase is also the appropriate time to assess the level of interest and support in the potential solution by non-Federal interests.

STUDY AREA

The study area is located in Ogle County in northwestern Illinois. The streams studied are on the west side of Oregon, Illinois, and consist of Gale Creek and its tributary, Lake Mistake Drain (plate 1). Gale Creek originates near Mount Morris, Illinois, with a total drainage area of 6.9 square miles at its junction with Lake Mistake Drain. Lake Mistake Drain has a total drainage area of approximately 2.6 square miles. The city of

Oregon is concerned about the flooding problems along the Lake Mistake Drain area and possible flooding, primarily along Sixth Street, due to overflow of the drainage divide along Eighth Street between Clay and Webster Streets.

STUDY DURATION

The study was conducted over a 12-month period.

TYPE, DEPTH, AND DETAIL OF INVESTIGATION

The following areas were emphasized in this reconnaissance phase study: hydrology and hydraulics, design and cost estimates, and economics (benefit analysis). A brief environmental review also was made. The study was conducted in sufficient detail to determine if there is a Federal interest in a flood reduction plan for the study area. Federal interest is determined by economic feasibility, environmental and social impacts, acceptability, and willingness of the local sponsor to cost-share further studies and construction.

RELATED STUDIES, REPORTS, AND EXISTING WATER PROJECTS

The U.S. Department of Agriculture, Soil Conservation Service, prepared a report entitled Flood Hazard Analysis. This report defined the flood characteristics of Gale Creek and Lake Mistake Drain to identify flood hazard potential to existing buildings and any future construction. The report was prepared for the guidance of local officials in planning the use and regulation of the city of Oregon, Ogle County, Illinois, floodplains. About 1.2 miles of Gale Creek and 1.1 miles of Lake Mistake Drain were studied in detail.

A Flood Insurance Study was prepared in 1981 to investigate the existence and severity of flood hazards in the city of Oregon and to aid in the administration of the National Flood Insurance Program in compliance with the National Flood Insurance Act of 1968 and Flood Disaster Protection Act of 1973.

An unpublished Preliminary Investigation Report, dated April 1981, was prepared by the Soil Conservation Service. This report identified and evaluated alternative solutions to the flood problems in the Lake Mistake Drain Area. Several possible solutions were found to be economically feasible.

SECTION 2 - PLAN FORMULATION

ASSESSMENT OF WATER AND LAND RESOURCE PROBLEMS AND OPPORTUNITIES

EXISTING CONDITIONS

General

The Lake Mistake Drain area, located on the southwest side of Oregon, receives the most significant flood damages from intense rainfall on the Gale Creek and Lake Mistake Drain watersheds.

The high discharges on Gale Creek can create a higher water surface elevation at its junction with Lake Mistake Drain than the discharges from Lake Mistake Drain. Therefore, flows from Gale Creek back into the Lake Mistake area, which then becomes a storage area for excess flows from both Gale Creek and Lake Mistake Drain. The top of the Gale Creek channel bank is at approximately elevation 700 feet NGVD (National Geodetic Vertical Datum), with an invert elevation of approximately 692 feet NGVD at its junction with the Lake Mistake Drain.

The low ground elevation of 696 feet NGVD in the Lake Mistake area is where flood damages begin, including crop damages up to about elevation 699 where damages start to occur to commercial and public service properties. A description of affected properties can be found in appendix B. The Lake Mistake area is poorly drained due to the flat channel grade from its junction with Gale Creek to the low areas in the Lake Mistake area.

The computed water surface elevations for the Lake Mistake Drain area used in this report are shown in table 1.

TABLE 1

Water Surface Elevations for the Lake Mistake Drain Area

Recurrence Interval (Years)	Elevation (NGVD)
5	698.7
10	699.4
50	701.1
100	701.9

These computed water surface elevations differ from the water surface elevations that were developed for the Soil Conservation Service's Flood Hazard Analysis report and subsequently used in the Flood Insurance Study.

Flood damages occur to croplands, utilities, parks, commercial buildings, and public service buildings. Table 2 lists buildings that receive first floor flood damages at the 50- and 100-year events. Plate 2 shows the location of these buildings.

TABLE 2

Buildings with First Floor Flood Damages

ID No.	Address and/or Name	Bldg. 1st Floor Elev. (NGVD)	50-Yr. Flood Elev. (NGVD)	50-Yr. Flood Depth (Feet)	100-Yr. Flood Elev. (NGVD)	100-Yr. Flood Depth (Feet)
20	Nursing Home	701.3	701.1	--	701.9	0.6
21	Village of Progress	699.8	701.1	1.3	701.9	2.1
22	Pines Plaza Retail Shop	701.4	701.1	--	701.9	0.5
23	Woods, Hestor Corp. Storage	701.8	701.1	--	701.9	0.1
24	Pines Plaza State Ofc. Bldg.	700.9	701.1	0.2	701.9	1.0
25	Vacant	699.8	701.1	1.3	701.9	2.1
26	Veterinarian Office	702.0	701.1	--	701.9	--
27	Hank's Shop	700.4	701.1	0.7	701.9	1.5
28	Ogle Co. Resource Ctr.	700.7	701.1	0.4	701.9	1.2
29	Ogle Co. Farm Bureau	701.8	701.1	--	701.9	0.1

Hydrology and Hydraulics

Basin Description

Gale Creek and its tributary, Lake Mistake Drain, have a total combined drainage area of 10.9 square miles at the mouth of Gale Creek, which is a tributary to the Rock River. At the junction of Lake Mistake Drain and Gale Creek, the drainage areas of the streams are 2.6 and 6.8 square miles, respectively.

The major portion of the Gale Creek and Lake Mistake drainage basin lies to the west and south of the city of Oregon. Land use in the basin is predominantly agricultural, although the city is growing in a westerly direction since it is bounded by the Rock River on the east (plate 1).

Climate

The study area's climate is subhumid continental. The climate data for Oregon in table 3 was observed at Dixon, Illinois, between January 1901 and December 1986. The annual yearly precipitation is 34.33 inches. Average temperature data were calculated by averaging minimum and maximum temperatures in degrees Fahrenheit (F). The annual yearly temperature is 50 degrees F.

TABLE 3

Climate Data for Oregon, Illinois

Month	Avg. Precip. (In.)	Avg. Temp. (F)	Month	Avg. Precip. (In.)	Avg. Temp. (F)
Jan	1.50	21	Jul	3.76	74
Feb	1.31	25	Aug	3.53	72
Mar	2.40	36	Sep	3.65	65
Apr	3.23	50	Oct	2.73	53
May	3.85	60	Nov	2.21	38
Jun	4.29	70	Dec	1.74	26

Available Data

There are no stream flow records for Gale Creek or Lake Mistake Drain because the basins are ungaged. A rainfall gage at the Oregon waterworks was operated between 1948 and 1956. However, since rainfall records at Dixon, Illinois, are available from 1901 on, those records were used in the formulation of this study. Other available data concerning the study area consists of a Flood Hazard Analysis prepared by the Soil Conservation Service in 1979 and a Flood Insurance Study for Oregon, Illinois, prepared in 1981.

Water Surface Profiles

Water surface elevations for Gale Creek and Lake Mistake Drain were determined using computer models HEC-1 and HEC-2. Gale Creek water surface elevations from the Gale Creek/Lake Mistake Drain confluence to the mouth were determined from step-backwater calculations using HEC-2 and appear on plate A-5 of appendix A. The crucial area for this study is upstream of the Burlington Northern Railroad bridge. Table 4 summarizes water surface elevations for this region.

TABLE 4

Water Surface Elevations Upstream of the
Burlington Northern Bridge at Oregon, Illinois

Recurrence Interval	WSEL (Ft)	Recurrence Interval	WSEL (Ft)
2-yr	697.7	25-yr	700.2
5-yr	698.7	50-yr	701.1
10-yr	699.4	100-yr	701.9

Natural Resources

Flooding occurs in the southern and western portions of Oregon. Gale Creek is a small, perennial stream which is 8.3 miles long with a 10.9-square-mile watershed. The part of the stream directly affected by the study is from its confluence with the Rock River to near Oregon Trail Road.

From its mouth to approximately 4,400 feet upstream, Gale Creek meanders through young to middle-aged bottom land forest. Major species include silver maple (Acer saccharinum), box elder (Acer negundo), green ash (Fraxinus pennsylvanica), honey locust (Gleditsia triacanthos), American elm (Ulmus americana), and hackberry (Celtis occidentalis). The rest of the creek within the study reach becomes more affected by agricultural and urban development. Most of this reach still retains a narrow, but somewhat varying, wooded corridor surrounded by cropland. Tree species include box elder, hackberry, honey locust, elm, cottonwood (Populus deltoides), black willow (Salix nigra), and wild black cherry (Prunus serotina). Smaller sections of the stream have mown grass shorelines or are row cropped to the edge of the streambanks. Gale Creek has recently been channelized from its confluence with the Lake Mistake Drain to 1,000 feet downstream.

The stream valley in Gale Creek narrows in the vicinity of the Oregon Trail Road. A narrow, woody corridor lines the sides of the creek. Tree species are similar to those previously mentioned. Land is row cropped where it is flat. Hillsides are pasture and oak-hickory forest.

Lake Mistake is a flat, low-lying area on the west side of Oregon. The land is now used for rowcrops, although it appears to have historically been a wetland that impounded local runoff. Patches of smartweed (Polygonum sp.) occur between the crop rows. Lake Mistake is drained by a number of ditches that lead into the Lake Mistake drainage. This drainage exists as a channelized ditch with mostly grassy banks and seasonal flows. The Lake Mistake Drain empties into Gale Creek along the southwestern end of Lake Mistake between two converging Burlington Northern Railroad tracks.

The woody riparian corridors provide habitat for a number of wildlife species such as the raccoon, rabbit, opossum, skunk, beaver, and various passerine birds. Larger mammals such as deer, fox, and coyote occur where there is greater cover, particularly along the Rock River and in the wooded upland slopes.

Fish such as minnows, chubs, and shiners are probably the most common fish in Gale Creek. The creek's small size limits the amount of game fish. The U.S. Fish and Wildlife Service (USFWS) Planning Aid Letter, dated February 21, 1989, lists those species likely to occur in Gale Creek (see Appendix C - Pertinent Correspondence).

Freshwater mussel shells were found along the shoreline of the Rock River, where the bypass channel from Gale Creek enters. Species found include the deer toe, fawn's foot, pink papershell, pimpleback, floater, and a spike (old shell). No heavy concentrations of mussels were noted.

Cultural Resources

Numerous archeological surveys and sites have been documented within and surrounding Oregon. About 30 historic properties are located within 3 miles of the general project area, as listed in the Illinois State Site Files. These significant properties are predominantly prehistoric surface scatters, representing aboriginal occupations. One and possibly two buildings within Oregon are in the process of being nominated to the National Register of Historic Places (NRHP) -- a residence and the city library. Although none of these historic properties have been determined to be directly impacted by any of the proposed construction alternatives, the potential for undocumented sites is high. The State Historic Preservation Office recommends a complete cultural resource survey of this project area before any work is initiated (see Appendix C - Pertinent Correspondence).

Threatened and Endangered Species

Three federally threatened or endangered species are likely to be found in Ogle County: the prairie bush-clover (Lespedeza leptostachya), the bald eagle (Haliaeetus leucocephalus), and the Indiana bat (Myotis sodalis). Suitable habitat for these species generally does not occur within the project area, although the bald eagle may occasionally use the Rock River during the winter. Those portions of the Rock River affected by the project, however, do not represent a significant amount of the potential habitat. Therefore, no significant impacts to federally listed threatened or endangered species should occur.

Kitten tails (Besseya bullii) occurs in the Devil's Backbone Natural Area, which is south of Oregon along the west side of Highway 2. This plant has been recommended for listing as an Illinois threatened species. Further studies would be needed to determine the impacts that channelization or flow diversion may have.

Human Resources, Development, and Economy

The city of Oregon, with a 1980 population of 3,600, is located on the right bank of the Rock River in north-central Illinois. State Highways 2 and 64 intersect at Oregon. The city lies in a predominantly agricultural area. The nearest industrial center is the Rockford, Illinois, metropolitan area (pop. 275,000) which is located about 25 miles to the northeast of Oregon.

The study area is located on Oregon's west side in the floodplain areas of Gale Creek and Lake Mistake Drain. The study area is predominantly commercial, with minor residential-use areas. The area is served by county and city roads, as well as railroad lines. Commercial businesses represented in the area include: veterinary services; small engine sales and repair; video rentals, craft shop; insurance agency; nursing home; machine parts assembly; storage facilities; insulation; and farm supply. Public properties in the study area include county and Federal service agency offices.

Employment in Oregon is concentrated in manufacturing, retail trade, and professional services. Household income averaged $22,400 in Oregon (1985) compared to $25,200 for the State of Illinois. Additional socio-economic information is reported in appendix B.

FUTURE CONDITIONS WITHOUT PROJECT

The Lake Mistake Drain area will continue to be subject to flooding. Oregon currently participates in the National Flood Insurance Program. The Flood Insurance Study for the City of Oregon, Illinois defined the floodways so that encroachment in the floodplain is limited to that which will cause only an insignificant increase in flood heights. Therefore, no new development is expected in the Lake Mistake Drain floodplain.

PROBLEMS, NEEDS, AND OPPORTUNITIES

The water resource problem defined in this study is the flooding of the Lake Mistake Drain area from high discharges from Lake Mistake Drain and

Gale Creek. During high discharges from Gale Creek and Lake Mistake Drain, the Lake Mistake area serves as a storage area for excess flows from both sources.

The most notable flood of record occurred on May 16 and 17, 1974. Other floods occurred on June 8 and 9, 1974; April 20 and 21, 1973; June 10, 1973; and February 1971. The city of Oregon's request for a study of the flood problem is contained in Appendix C - Pertinent Correspondence. A flood damage reduction study by the Corps of Engineers was initiated in October 1988.

An economic analysis of the flooding problem estimated average annual damages in the Lake Mistake area to be about $45,500. These are the total average annualized damages that are expected to occur from all possible flood events.

PLANNING OBJECTIVES

NATIONAL OBJECTIVE

The national objective of water and related land resources planning is to contribute to economic development consistent with protecting the Nation's environment. Contributions to National Economic Development (NED) are increases in the net value of the national output of goods and services, expressed in monetary units. Contributions to NED are the direct benefits and costs that accrue in the planning area and the rest of the Nation, and include increases in the net value of those goods and services that are marketed.

SPECIFIC OBJECTIVE

The specific planning objective for this study is to reduce economic losses associated with flooding of commercial, public services facilities, residential, and agricultural lands.

PLANNING CONSTRAINTS

The Section 205 authority provides for the construction of projects for flood control and related purposes. Each project is limited to a Federal investment of not more than $5 million, including all project-related costs for investigation, inspection, engineering, preparation of plans and specifications, supervision and administration, and construction. Water resources planning studies are bound by all State and Federal laws and Executive Orders.

In Illinois, the minimum standard to define the 100-year floodway is described in the Illinois Revised Statutes of 1973, 65f, Chapter 19. Under this standard, the encroachment in the floodplain is limited to that which will cause only an insignificant increase in flood heights. The Illinois Division of Water Resources has recommended that the floodway be determined using no more than a 0.1-foot surcharge. The floodway in the Lake Mistake area has been defined in the Flood Hazard Analysis report prepared by the Soil Conservation Service.

ALTERNATIVE PLANS

AVAILABLE MEASURES

The available measures used to alleviate flooding include both nonstructural and structural means. Nonstructural measures are defined as those which reduce or avoid flood damages, without significantly altering the nature or extent of flooding, by changing the use of floodplains, or accommodating existing uses to the flood hazard. Examples of nonstructural measures are floodproofing, permanent evacuation, and regulation of floodplain uses.

Structural measures include dams and reservoirs, levees, dikes, walls, diversion channels, bridge modifications, and channel alterations. All such measures reduce the frequency of damaging overflows.

FORMULATION CRITERIA

To assist in the preliminary evaluation of flood damage reduction features, costs were annualized and then compared to the total average annual damages. The total average annual damages are the calculated average annualized damages that are expected to occur from all possible flood events. Hence, in the preliminary evaluation of alternative plans, if annual costs exceeded the total average annual damages of $45,500, the alternative was deemed economically infeasible and dropped from further analysis.

DESCRIPTION OF PLANS

Floodproofing

Floodproofing is a combination of structural changes and adjustments to properties subject to flooding which is used primarily to reduce or

eliminate flood damage. This measure involves raising existing structures when flood heights are less than 3 feet or by providing panels that can be placed over building doors and windows. Floodproofing also can consist of the construction of ring levees around small groups of buildings.

Raising Existing Structures

In general, it would not be feasible to raise any of the nine buildings which receive first floor flood damages at the 100-year frequency flood event. Therefore, this alternative was not considered.

Flood Panels

Due to the flash flooding characteristics of both Gale Creek and Lake Mistake Drain, there would not be enough warning time to install flood panels over building doors and windows. This alternative was therefore not considered.

Ring Levees Around Buildings 21 Through 29 and Building 20

A ring levee around a group of buildings (Buildings 21 through 29) and around the nursing home (Building 20) was considered. This plan, shown on plate 3, consists of 5,500 feet of levee embankment around Buildings 21 through 29 and 1,220 feet of levee and floodwall around the nursing home (Building 20). For a 100-year flood event protection level plus freeboard, the levee embankment would be 10 feet wide, have 1 on 3 side slopes, and range from 3 feet to 9 feet high. Typical cross sections of the levees and floodwalls are shown on plate 5. Ramps over the levee would allow access to the buildings. A space between the buildings and the levee would allow access to the buildings for maintenance, police, and fire protection.

Table 5 summarizes the total first cost of the ring levee around Buildings 21 through 29 and Building 20.

TABLE 5

Summary of Estimated First Cost at the 100-Year Level of Protection

Location	Item Description	Amount ($)
Building 20	a. Right-of-way	7,400
	b. Levee and floodwall	106,400
	c. Interior drainage	37,500
Buildings 21 thru 29	a. Right-of-way	58,000
	b. Levee	249,700
	c. Interior drainage	25,200
Engineering and Design		33,500
Supervision and Inspection		25,100
TOTAL FIRST COST		542,800

Table 6 shows an economic analysis of the ring levee around Buildings 21 through 29 and Building 20.

TABLE 6

Economic Analysis of Ring Levee Around Buildings 21 Through 29 and Building 20

Degree of Protection (Frequency Years)	Total First Costs ($)	Total Annual Charges ($)	Annual Benefits ($)	BCR
100-year	543,000	52,400	16,400	0.31
50-year	460,000	44,600	12,400	0.28

NOTE: The nursing home (Building 20) has been included in the 50-year protection level even though the floor elevation is slightly higher than the computed 50-year flood elevation. This is due to required freeboard protection for unknown local hydraulic effect and wave action.

As shown on plate 3, the ring levee around Buildings 21 through 29 extends within the encroachment limits as defined in the Flood Insurance Study. The calculated impact of this plan is 0.2 foot, which may require mitigation measures. This cost is not included in the estimated total first costs.

Ring Levee Around Buildings 22 Through 25, Buildings 28 and 29, and Ring Levees Around Individual Buildings 20, 21, and 27

This plan, shown on plate 4, consists of about 6,300 feet of levee embankment and 1,240 feet of floodwall. Table 7 shows the costs and benefits of this alternative.

TABLE 7

Economic Analysis, Ring Levee Around Buildings 22 Through 25, Buildings 28 and 29, and Ring Levees Around Individual Buildings 20, 21, and 27

Degree of Protection (Frequency Years)	Total First Costs ($)	Total Annual Charges ($)	Annual Benefits ($)	BCR
100-year	863,000	82,500	13,400	0.16

Since this plan removes a minimum area from the floodway, it is not expected to exceed the 0.1-foot surcharge as defined in the planning constraints.

Evacuation

Evacuation of homes or businesses is usually considered where floodwaters exceed a 3-foot depth. This measure involves acquiring the homes or businesses and relocating the occupants and their possessions to homes or buildings located outside of the floodplain that are of similar worth and in decent, safe, and sanitary condition.

Evacuation of the buildings at the 100-year flood level would require acquiring and relocating about nine structures at an estimated cost of $5,399,000. The average annual costs are $486,100, which far exceed the total average annual damages of $45,500. Therefore, this alterative was dropped from further consideration.

Relocation

Relocation of homes or businesses involves physically lifting the structure off its present foundation, moving it, and then lowering it on to a suitable foundation outside of the floodplain. Relocation is considered where it is structurally feasible and less costly than evacuation. Some structures, e.g., brick and steel structures, are infeasible to relocate due to structural limitations.

Generally, buildings that receive first floor damages at the 100-year frequency flood event are considered to be infeasible to relocate. This alternative was therefore not considered.

Gale Creek Channel Improvement

Channel improvement of Gale Creek from the junction of Lake Mistake Drain to the Rock River was considered. This alternative would require the enlargement of the channel from an estimated 10-foot to an estimated 70-foot bottom width to confine the 100-year frequency flows within its channel. Gale Creek overbank flows would be prevented from flowing into the Lake Mistake area and would allow Lake Mistake Drain flows to leave the area. The 100-year peak discharge on Gale Creek would be contained below elevation 699.0 NGVD, thus limiting Lake Mistake to elevation 699.7 NGVD.

This plan requires a concrete-lined channel under the mainline bridge of the Burlington Northern Railroad and about 2.5 miles of channel improvement (see plate 6). The total estimated construction first cost of this plan is $984,000. This cost does not include any bridge modifications that may be required at private entrances. Average annual costs are $92,800.

Channel improvements beyond the 1,000 feet below the Burlington Northern Railroad bridge could result in significant adverse impacts to the fish and wildlife resources associated with Gale Creek.

Due to potential significant environmental impacts and the fact that average annual costs of the project would far exceed total average annual damages, this alternative was dropped from further consideration.

Gale Creek Channel Improvement Bypass Channel

This plan consists of improving the Gale Creek channel to a 70-foot width from its junction with Lake Mistake Drain from approximately 0.4 mile downstream to a 4,970-foot bypass channel that would carry overbank flows to the Rock River. This plan is shown on plate 7.

At the 100-year frequency design level, the bypass channel would have a 27-foot bottom width and would require a concrete baffled spillway drop structure to drop flows from the bypass channel into the Rock River. The total construction first cost of this plan is $1,082,000, and the average annual cost is $101,700.

The bypass channel would result in some environmental impacts in the area where it drops down to the Rock River bottoms. Operation of the bypass channel may have long-term impacts by increasing siltation and channel aggradation within the Gale Creek channel. Because of potential adverse

effects to the Gale Creek channel and average annual costs which far exceed the total average annual damages, this alternative was not considered further.

Upstream Detention Structure

A preliminary investigation was made of the effectiveness of an upstream detention structure above the Lake Mistake Drain on Gale Creek. Due to the Burlington Northern spur line which parallels the Gale Creek floodplain and the road network above the junction of Lake Mistake Drain, a site was selected on Gale Creek just below the Oregon Trail Road. Hydraulic studies were conducted at this site to determine the detention structure's effectiveness for the 25-, 50-, and 100-year recurrence intervals.

If all of the runoff upstream of the detention structure were stored, the calculated water surface elevations for the 25-, 50-, and 100-year recurrence intervals would be 699.0, 699.8, and 700.4 feet NGVD, respectively. Since property damage starts at elevation 699, not all flood damages would be eliminated by the detention structure for the 50- and 100-year events.

The total estimated construction first cost of a detention structure would be about $1,126,000. This cost does not include the required Oregon Trail Road relocation or raise and bridge modifications.

The average annual cost of the upstream detention structure is $105,900. Since the total average annual costs far exceed the total average annual damages of $45,500, this alternative is not feasible.

Bottom Land Excavated Storage Basin

A bottom land excavated storage basin in the Lake Mistake area also was considered. The storage basin would provide an additional 475 acre/feet of flood water storage area to prevent flood damages in the Lake Mistake area above elevation 699.7 NGVD for the 100-year flood event. This alternative would require excavating and removing about 766,000 cubic yards of material from the floodplain. Assuming an excavated depth of 8 feet, the basin area would require about 59 acres of land. This acreage does not include a volume for storing sediment produced from the upland drainage area (see plate 9).

A total construction first cost of $3,421,000 is estimated to purchase the right-of-way, excavate and remove material from the floodplain, and seed the area.

A means of evacuating the storm water from the storage basin would be needed, which would involve a storm sewer outlet to the Rock River or a

pumping station to move the stored water back into the Lake Mistake Drain. The costs of an outlet or a pumping station are not included in the total first cost. Average annual cost of the excavated storage basin is $486,100. This excavated area would remove from potential use about 59 acres as parks or agricultural uses in the Lake Mistake area. A large area would have to be provided outside the floodplain for disposing of excavated material.

Due to the high average annual costs compared with the total average annual damages, this alternative was not considered further.

EVALUATION OF ALTERNATIVE PLANS

A preliminary screening of the seven alternatives was made based on completeness, effectiveness, efficiency, and acceptability. None of the alternatives would eliminate all of the damages since crop damage starts at elevation 696.0 feet NGVD.

Relocation and evacuation of the affected properties was considered infeasible due to the type of buildings and the costs involved in purchasing the property, demolishing the buildings, and paying relocation costs.

Channel improvement of Gale Creek would reduce damages in the Lake Mistake Drain but would require a 70-foot-wide channel to prevent damages above elevation 699.7 NGVD for a 100-year protection level. Enlarging and lining the Gale Creek channel with concrete will increase the flow capacity under the Burlington Northern mainline bridge. However, without replacing the bridge, it is highly probable that brush will hang up on the four piers located in the channel. Channel improvement has a potential to significantly adversely impact upon the natural resources of the channel corridor. These possible adverse impacts and the high construction costs make this alternative economically infeasible and unacceptable.

A detention structure was considered upstream of the Lake Mistake Drain and on Gale Creek. This alternative carries high construction costs and would impact on existing transportation facilities upstream of the dam. In addition, this alternative would have a potential to significantly adversely impact on the natural resources and would not significantly reduce the damages in the Lake Mistake Drain area at the 100-year level of protection.

A large excavated floodwater storage basin was considered to eliminate the flood damages to the nine buildings in the Lake Mistake area. Due to the large construction costs and significant loss of farmland, this alternative was dropped from further consideration.

The preliminary analysis determined that the least costly alternative was the ring levee around the nursing home (Building 20) and a ring levee

around Buildings 21 through 29. Preliminary analysis of the hydraulic impacts of the ring levee around Buildings 21 through 29 indicated a 0.2-foot increase in the flood heights at the 100-year flood frequency. To comply with the planning constraints identified previously in this report, mitigation measures may be required to offset the additional 0.1-foot increase in flood heights at the 100-year flood frequency.

A plan was considered to reduce the hydraulic impacts on flood heights. This plan consists of ring levees around groups of buildings (22 through 25 and 28 and 29) and around individual Buildings 20, 21, and 27. At the 100-year level of protection, this plan would cost considerably more and would provide less flood protection to existing structures. At the 100-year level of protection, a preliminary economic analysis indicated a more favorable benefit-to-cost ratio for the ring levees around Building 20 and around Buildings 21 through 29. This, however, does not take into account any costs for mitigation measures that may be required. An economic analysis of this alternative shows a benefit-to-cost ratio far below 1. Therefore, this alternative is considered to be infeasible.

The probable impacts of all of the alternatives are shown in table 8. Table 9 presents a summary of the economic evaluation for each alternative considered.

TABLE 8

Probable Impacts of the Alternatives

		Gale Creek Channel Improvement	Gale Creek Channel Improvement & Bypass Channel	Upstream Detention Structures	Levee & Floodwalls, Bldg. 20, Bldgs. 21-29	Levees & Floodwalls, Bldgs. 22-25, Bldgs. 28, 29 Individual Bldgs. 20, 21 & 27	Excavated Floodwater Storage Basin	No Action
1.	Natural Resources	-1 to -2	-1	-1 to -2	0 to -1	-1	-1	0
2.	Cultural Resources	-1	-1 to -2	-1 to -2	0 to -1	0 to -1	-1	0
3.	Man-Made Resources	-1	-1	-2	0	0	-1	0
4.	Water Quality	0 to -1	-1	-1 to -2	0 to -1	-1	-2	0
5.	Air Quality	0 to -1	0 to -1	0 to -1	0 to -1	0 to -1	0 to -1	0
6.	Endangered Species	0 to -2	0	0	0	0	0	0
7.	Community-Regional Growth	0 to +1	0 to +1	0 to +1	0	0	0 to +1	0
8.	Displacement of People	0	0	0	0	0	0	0
9.	Community Cohesion	+1	+1	+1	+1	0	0	0
10.	Property Values	+1	+1	+1	+1	+1	+1	0 to -1
11.	Tax Revenues	+1	+1	+1	+1	+1	-1	0 to -1
12.	Public Facilities & Services	+1	+1	+1	0 to +1	0 to +1	0 to +1	0 to -1
13.	Life, Health & Safety	+1	+1	+1	0 to +1	0 to +1	0 to +1	-1
14.	Employment & Labor Force	0 to +1	0 to +1	0 to +1	0	0	0 to +1	0 to -1
15.	Business & Industrial Dev.	0 to +1	0 to +1	0 to +1	0	0	0 to +1	0 to -1
16.	Farm Displacement	0	-1	-2	0	-1	-2	0
17.	Noise Level	0 to -1	0 to -1	0 to -1	0 to -1	0 to -1	0 to -1	0
18.	Aesthetics	-1 to -2	-1	-1	-1	-1	-1	0

+2 = Significant Positive Effects
+1 = Minor Positive Effects
0 = No Effects
-1 = Minor Adverse Effects
-2 = Significant Adverse Effects

TABLE 9

Summary Comparison of Alternatives

	Design Level	Estimated Total First Costs ($)	Total Costs ($)	Annual Costs ($)	Total Annual Charges ($)	Annual Benefits ($)	Benefit-to-Cost Ratio
Evacuation of Area	100 Yr.	5,170,000	5,399,000	486,100	1/	-	-
Levee & Floodwalls - Building 20 and Buildings 21 through 29	100 Yr.	543,000	567,000	51,000	52,400	16,400	0.31
	50 Yr.	460,000	480,000	43,200	44,600	12,400	0.28
Levee & Floodwalls - Buildings 22 through 25; 28 and 29; Individual Buildings 20, 21, and 27	100 Yr.	863,000	901,000	81,100	82,500	13,400	0.16
Upstream Detention Structure	100 Yr.	1,126,000	1,176,000	105,900	1/	-	-
Gale Creek Channel Improvement	100 Yr.	984,000	1,031,000	92,800	1/	-	-
Gale Creek Channel Improvement and Bypass Channel	100 Yr.	1,082,000	1,130,000	101,700	1/	-	-
Excavation of Floodwater Storage Basin	100 Yr.	3,421,000	3,573,000	321,700	1/	-	-

1/ Total average annual damages for the study area are $45,500.

CONCLUSION

This study identified seven possible solutions to the flooding problems of the Lake Mistake Drain area. In the analyzing these alternatives, it was determined that Corps of Engineers participation in the small projects program was not justified on the basis of economic and environmental benefits.

SECTION 3 - RECOMMENDATION

Based on the findings of this reconnaissance report, I recommend that the Section 205 study of flood damage reduction measures for the Lake Mistake area in Ogle County, Illinois, be terminated.

Dudley M. Hanson, P.E.
Chief, Planning Division

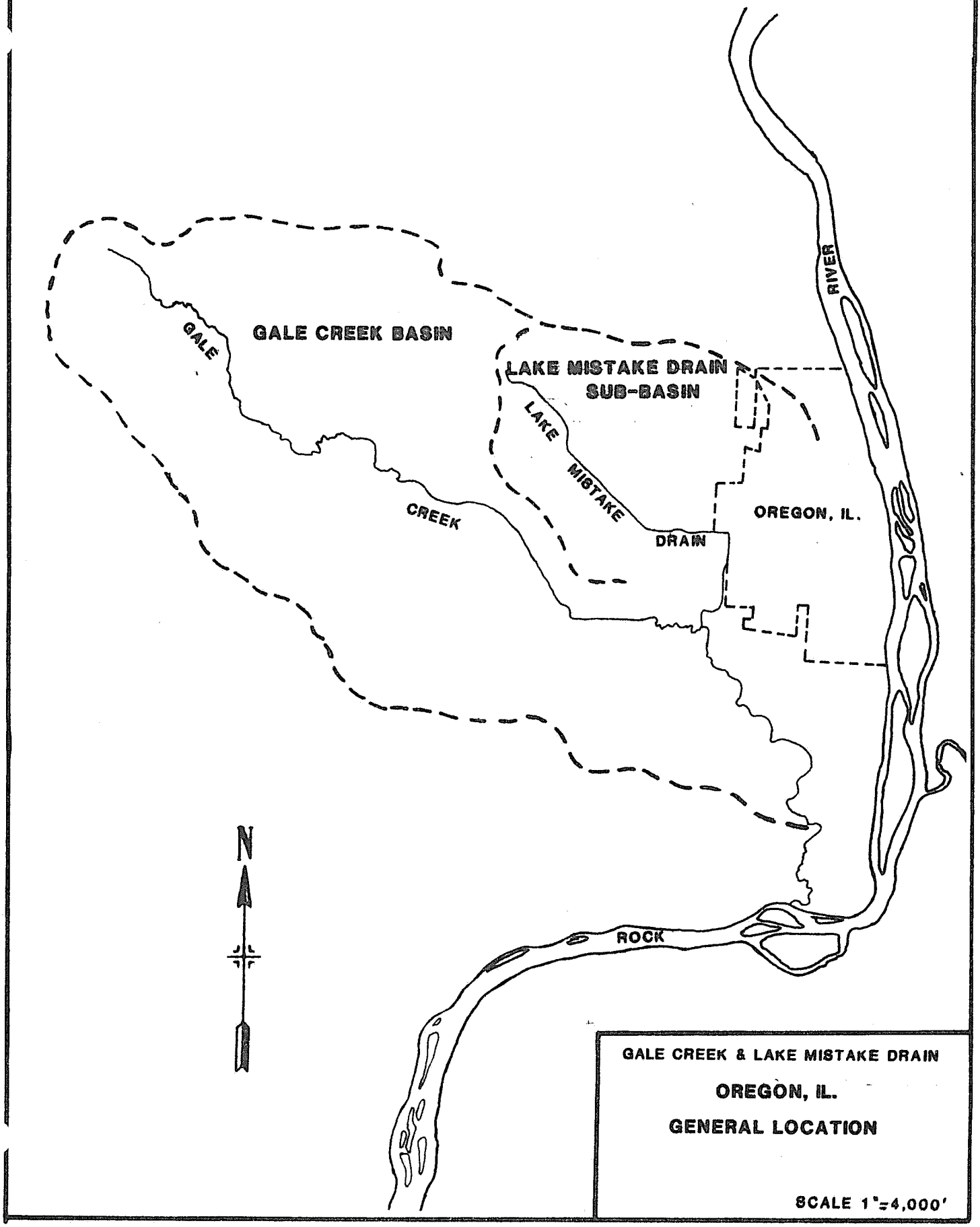
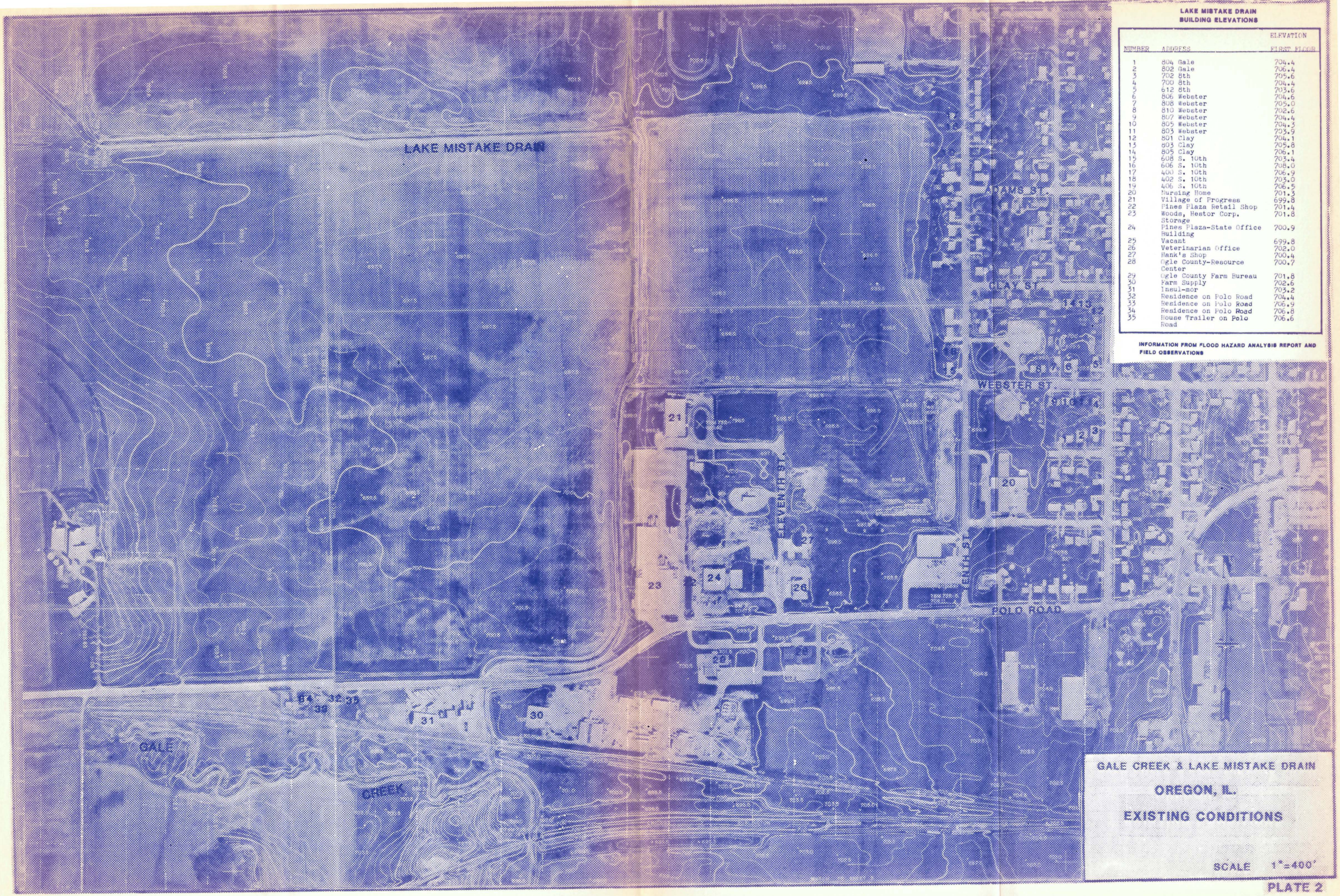

GALE CREEK BASIN
GALE
CREEK
LAKE MISTAKE DRAIN
SUB-BASIN
LAKE
MISTAKE
DRAIN
OREGON, IL.
RIVER
ROCK
N
GALE CREEK & LAKE MISTAKE DRAIN
OREGON, IL.
GENERAL LOCATION
SCALE 1"=4,000'

PLATE 1



LAKE MISTAKE DRAIN
BUILDING ELEVATIONS

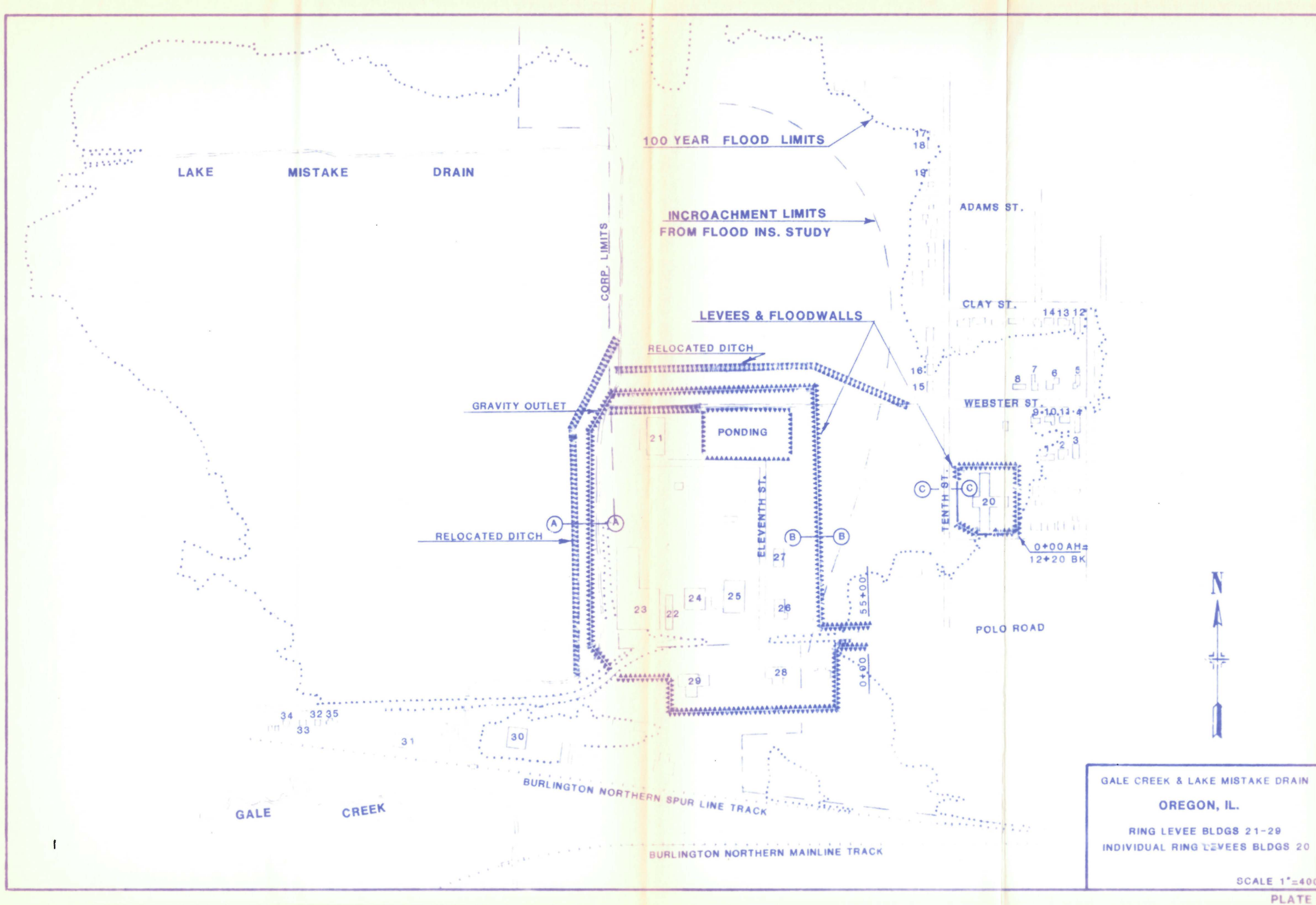
NUMBER	ADDRESS	ELEVATION FIRST FLOOR
1	804 Gale	704.4
2	802 Gale	706.4
3	702 8th	705.6
4	700 8th	704.4
5	612 8th	703.6
6	806 Webster	704.6
7	808 Webster	705.0
8	810 Webster	702.6
9	807 Webster	704.4
10	805 Webster	704.3
11	803 Webster	703.9
12	801 Clay	704.1
13	803 Clay	705.8
14	805 Clay	706.1
15	608 S. 10th	703.4
16	606 S. 10th	708.0
17	400 S. 10th	706.9
18	402 S. 10th	703.0
19	406 S. 10th	706.5
20	Nursing Home	701.3
21	Village of Progress	699.8
22	Pines Plaza Retail Shop	701.4
23	Woods, Hestor Corp. Storage	701.8
24	Pines Plaza-State Office Building	700.9
25	Vacant	699.8
26	Veterinarian Office	702.0
27	Hank's Shop	700.4
28	Ogle County-Resource Center	700.7
29	Ogle County Farm Bureau	701.8
30	Farm Supply	702.6
31	Insul-mor	703.2
32	Residence on Polo Road	704.4
33	Residence on Polo Road	706.9
34	Residence on Polo Road	706.8
35	House Trailer on Polo Road	706.6

INFORMATION FROM FLOOD HAZARD ANALYSIS REPORT AND FIELD OBSERVATIONS

GALE CREEK & LAKE MISTAKE DRAIN
OREGON, IL.
EXISTING CONDITIONS

SCALE 1"=400'

PLATE 2



GALE CREEK & LAKE MISTAKE DRAIN

OREGON, IL.

RING LEVEE BLDGS 21-29

INDIVIDUAL RING LEVEES BLDGS 20

SCALE 1"=400'

PLATE 3

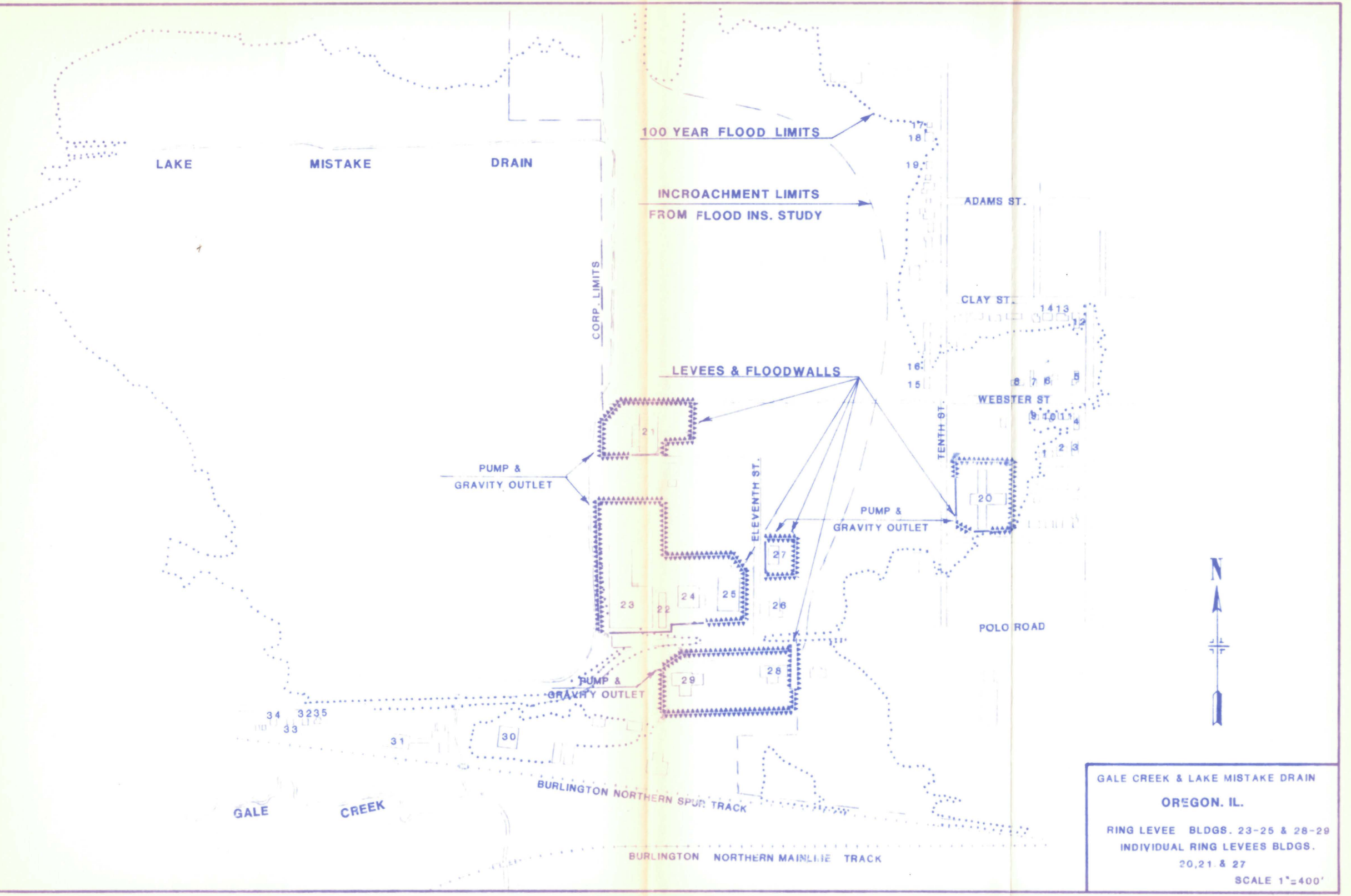
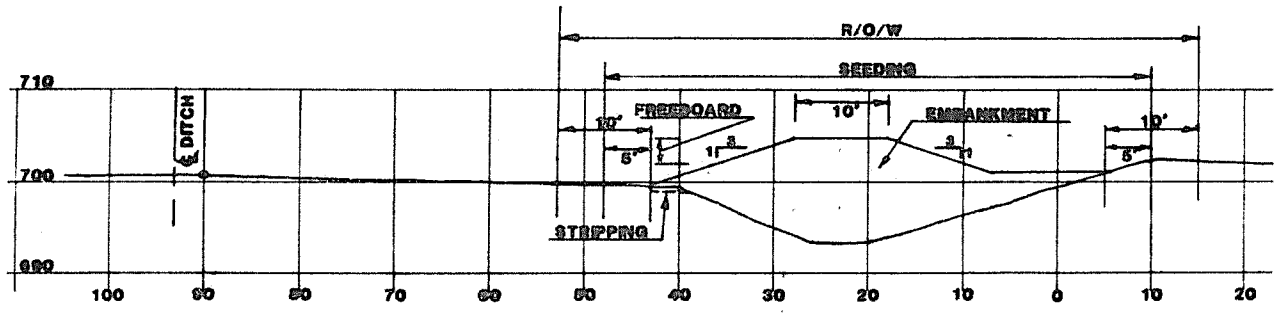
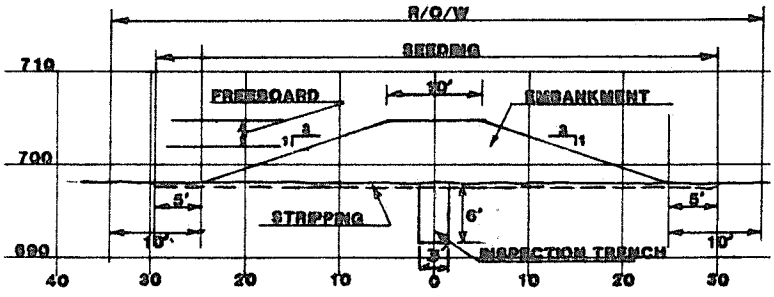

LAKE
MISTAKE
DRAIN
100 YEAR FLOOD LIMITS
INCROACHMENT LIMITS
FROM FLOOD INS. STUDY
CORP. LIMITS
LEVEES & FLOODWALLS
ADAMS ST.
CLAY ST.
WEBSTER ST
TENTH ST.
ELEVENTH ST.
PUMP &
GRAVITY OUTLET
PUMP &
GRAVITY OUTLET
PUMP &
GRAVITY OUTLET
POLO ROAD
BURLINGTON NORTHERN SPUR TRACK
BURLINGTON NORTHERN MAINLINE TRACK
GALE
CREEK
N
GALE CREEK & LAKE MISTAKE DRAIN
OREGON. IL.
RING LEVEE BLDGS. 23-25 & 28-29
INDIVIDUAL RING LEVEES BLDGS.
20,21 & 27
SCALE 1"=400'

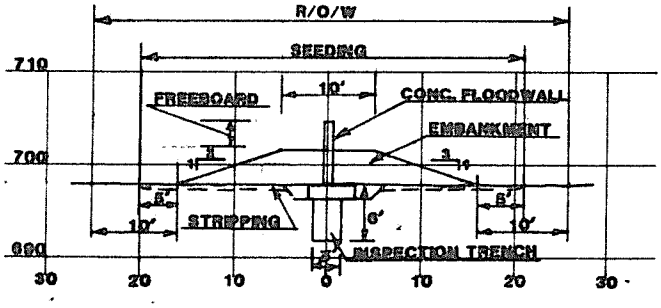
PLATE 4



SECTION A-A



SECTION B-B



SECTION C-C

GALE CREEK & LAKE MISTAKE DRAIN

OREGON, IL.

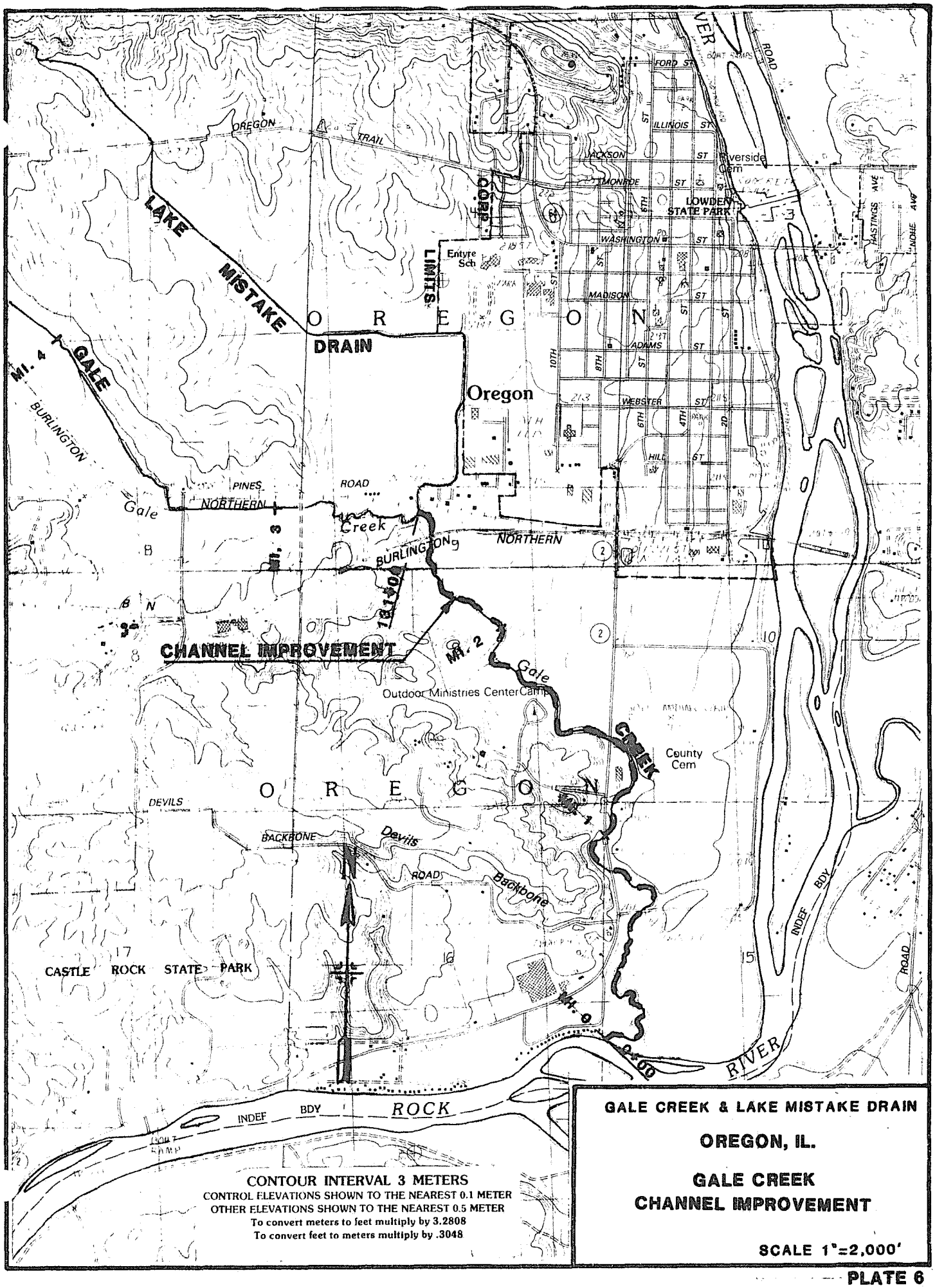
RING LEVEE BLDGS. 21-29

INDIVIDUAL RING LEVEE BLDG. 20

TYPICAL SECTION

100-YEAR DESIGN

PLATE 5



CONTOUR INTERVAL 3 METERS

CONTROL ELEVATIONS SHOWN TO THE NEAREST 0.1 METER

OTHER ELEVATIONS SHOWN TO THE NEAREST 0.5 METER

To convert meters to feet multiply by 3.2808

To convert feet to meters multiply by .3048

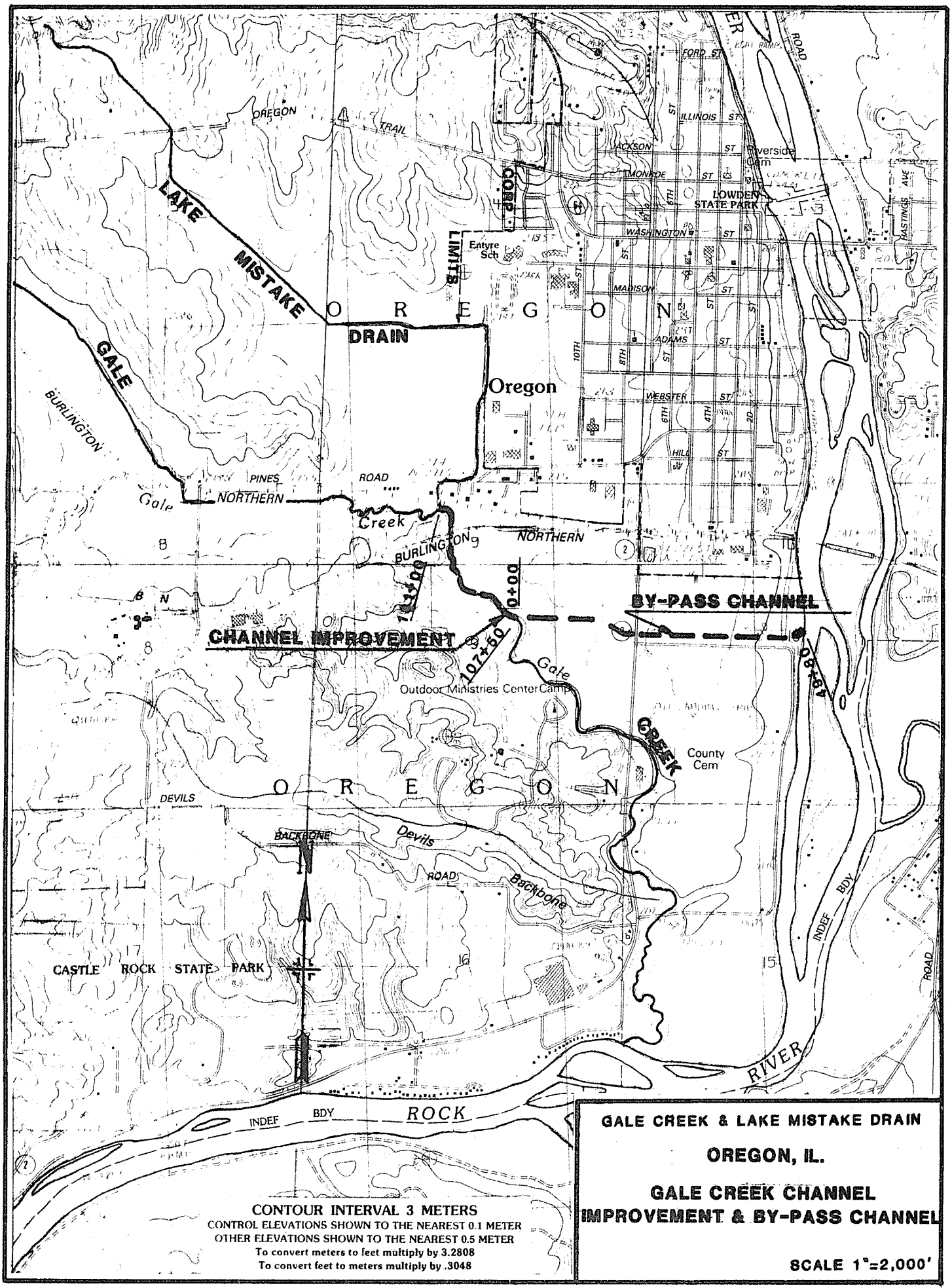
GALE CREEK & LAKE MISTAKE DRAIN

OREGON, IL.

GALE CREEK CHANNEL IMPROVEMENT

SCALE 1"=2,000'

PLATE 6



CONTOUR INTERVAL 3 METERS
CONTROL ELEVATIONS SHOWN TO THE NEAREST 0.1 METER
OTHER ELEVATIONS SHOWN TO THE NEAREST 0.5 METER
To convert meters to feet multiply by 3.2808
To convert feet to meters multiply by .3048

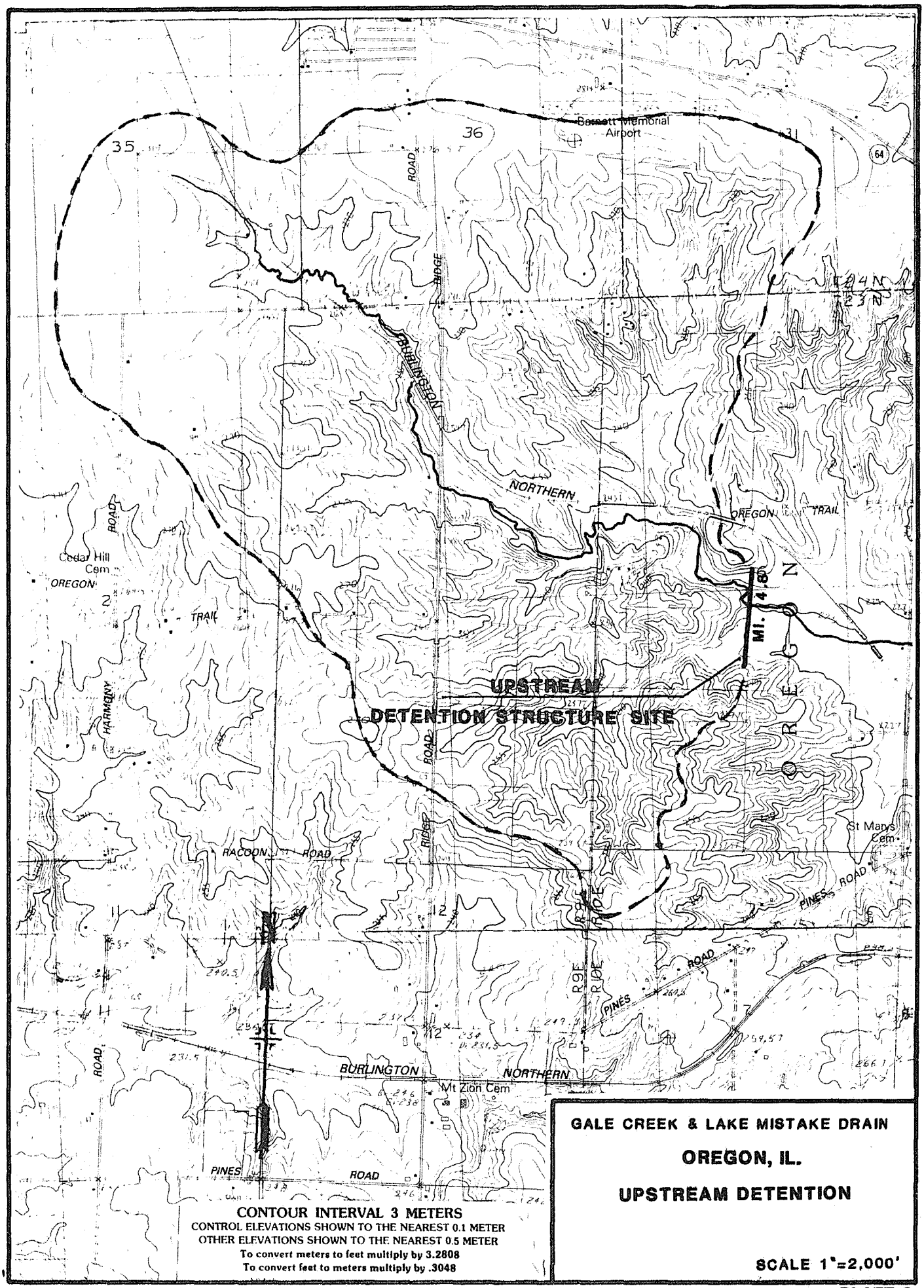
GALE CREEK & LAKE MISTAKE DRAIN

OREGON, IL.

GALE CREEK CHANNEL IMPROVEMENT & BY-PASS CHANNEL

SCALE 1"=2,000'

PLATE 7



CONTOUR INTERVAL 3 METERS

CONTROL ELEVATIONS SHOWN TO THE NEAREST 0.1 METER

OTHER ELEVATIONS SHOWN TO THE NEAREST 0.5 METER

To convert meters to feet multiply by 3.2808

To convert feet to meters multiply by .3048

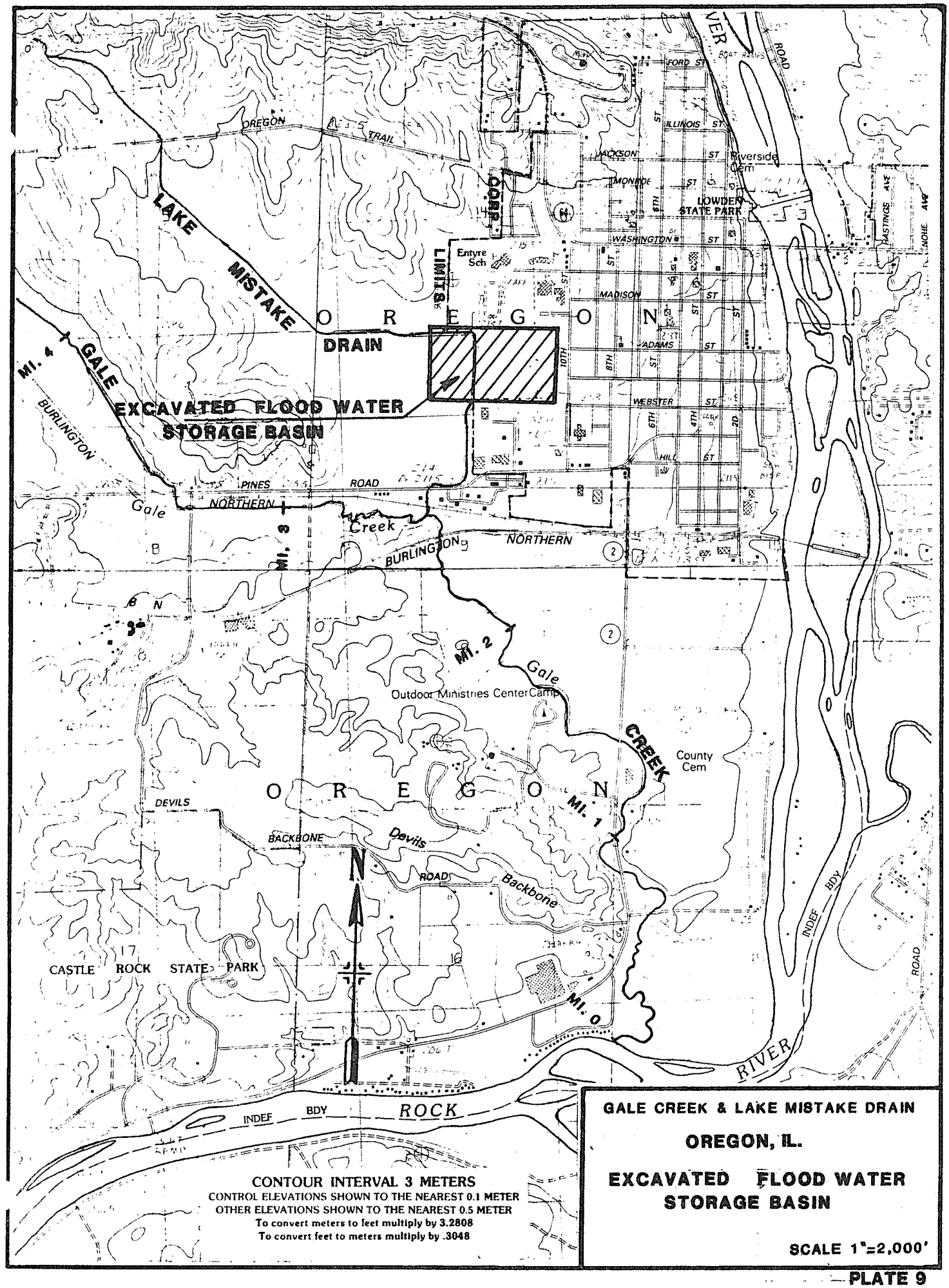
GALE CREEK & LAKE MISTAKE DRAIN

OREGON, IL.

UPSTREAM DETENTION

SCALE 1"=2,000'

PLATE 8



CONTOUR INTERVAL 3 METERS
CONTROL ELEVATIONS SHOWN TO THE NEAREST 0.1 METER
OTHER ELEVATIONS SHOWN TO THE NEAREST 0.5 METER
To convert meters to feet multiply by 3.2808
To convert feet to meters multiply by .3048

GALE CREEK & LAKE MISTAKE DRAIN

OREGON, IL.

EXCAVATED FLOOD WATER STORAGE BASIN

SCALE 1"=2,000'

PLATE 9

APPENDIX A

HYDROLOGY AND HYDRAULICS

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RECONNAISSANCE REPORT
FOR
SECTION 205 FLOOD CONTROL

GALE CREEK AND LAKE MISTAKE DRAIN
OREGON ILLINOIS

APPENDIX A
HYDROLOGY AND HYDRAULICS

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RECONNAISSANCE REPORT
FOR
SECTION 205 FLOOD CONTROL

GALE CREEK AND LAKE MISTAKE DRAIN
OREGON ILLINOIS

APPENDIX A
HYDROLOGY AND HYDRAULICS

BASIN DESCRIPTION

Gale Creek is a tributary of the Rock River. Gale Creek and its tributary, Lake Mistake Drain, have a total combined drainage area of 10.9 square miles at the mouth of Gale Creek. At the junction of Lake Mistake Drain and Gale Creek, the drainage areas of the streams are 2.6 and 6.8 square miles, respectively.

Gale Creek has an average slope of 25 feet per mile, while Lake Mistake Drain has a slope of 55 feet per mile. However, the slope of Lake Mistake Drain is only 3.5 feet per mile along the damage reach.

Land use in the basin is predominantly agricultural. A basin map appears on plate A-2. The major portion of the Gale Creek and Lake Mistake drainage basin lies to the west and south of the city of Oregon. Oregon is bounded by the Rock River on the east and is growing toward the west into the Lake Mistake Drain basin. High ground between Lake Mistake Drain and the city of Oregon is about elevation 701 feet National Geodetic Vertical Datum (NGVD).

CLIMATE

The climate of the study area is subhumid midcontinental. Climate data for Oregon appears in table A-1. These data were observed at Dixon, Illinois, between January 1901 and December 1986. The annual yearly precipitation is 34.33 inches. Average temperature data were calculated by averaging minimum and maximum temperatures in degrees Fahrenheit (F). The annual yearly temperature is 50 degrees F.

TABLE A-1

Climate Data for Oregon, Illinois

Month	Avg. Precip (In.)	Avg. Temp (F)	Month	Avg. Precip (In.)	Avg. Temp (F)
Jan	1.50	21	Jul	3.76	74
Feb	1.31	25	Aug	3.53	72
Mar	2.40	36	Sep	3.65	65
Apr	3.23	50	Oct	2.73	53
May	3.85	60	Nov	2.21	38
Jun	4.29	70	Dec	1.74	26

HISTORICAL FLOODS AND AVAILABLE DATA

The most notable flooding in the Gale Creek and Lake Mistake drainage basin occurred May 16 and 17, 1974. Other floods occurred June 8 and 9, 1974; April 20 and 21, 1973; June 16, 1973; and February 1971. Smaller floods have occurred annually which have caused agricultural damage, although water did not enter any buildings.

There are no stream flow records for Gale Creek or Lake Mistake Drain because the basins are ungaged. A rainfall gage at the Oregon waterworks was operated between 1948 and 1956. However, since rainfall records at Dixon, Illinois, are available from 1901 on, those records were used in the formulation of this study. Other available data concerning the study area consist of a Flood Hazard Analysis prepared by the Soil Conservation Service (SCS) in 1979 and a Flood Insurance Study for Oregon, Illinois, prepared in 1981.

DISCHARGE DETERMINATION

Discharge values were computed for various frequencies using the HEC-1 Flood Hydrograph Package computer program. This model was selected so that diversions and overbank storage could be taken into account in the determination of discharge values as well as the modelling of various alternative solutions. Model parameters were taken from SCS and U.S. Geological Survey (USGS) topographic maps and field survey data.

RAINFALL

Rainfall values used in this study were taken from Bulletin 70 (Huff 1988). A 6-hour storm period was used. Rainfall was distributed using a second quartile time distribution (Huff 1988). The reasons for these decisions are discussed in the following paragraphs.

Bulletin 70 is the standard used by the Illinois Division of Water Resources (IDWR) for regulatory and permit work. This document supersedes Technical Letter 13 and incorporates more current and specific observations in Illinois than T.P. 40. The study area is only 16 miles from Dixon, Illinois. For this reason, rainfall values for Dixon (Huff 1988: App. A, page 154) were used instead of general values for the northwest region. Values for Dixon were 0.1 inch greater than regional values. See table A-2 for rainfall values used in this study. Point rainfall values were not adjusted for area.

TABLE A-2

Maximum 6-Hour Rainfall Frequency Distributions at Oregon, Illinois

Recurrence Interval	Depth (In)	Recurrence Interval	Depth (In)
2-yr	2.4	25-yr	4.2
5-yr	3.0	50-yr	5.0
10-yr	3.5	100-yr	5.8

The amount of time for water to travel from the basin divide to the mouth of Gale Creek is about 5 hours. Peak discharges for a stream are most accurately calculated using a storm period equal to the basin travel time; for the study area a period of 6 hours was selected. It was observed that peak stages in the study area were related more to runoff volume than to peak discharge. A sensitivity analysis was made to determine if a storm period of 24 hours would produce significantly higher peak stages. For the second quartile time distribution used in this study, peak stages were not increased. Therefore, the 6-hour storm period was retained.

Huff divides storm distribution patterns into 4 groups (quartiles). He writes that first and second quartile storms occurred most frequently. He also mentions that short duration storms were most common in the first and second quartile groups (Huff 1967:1018). In several telephone conversations, IDWR engineers stated that they routinely use first-quartile or second-quartile distribution patterns. For this reason, a second-quartile distribution pattern was used (Huff 1988:130, table 7-2).

Sensitivity runs were made with all four quartile patterns. For storms with recurrence intervals of 10, 50, and 100 years, the peak discharges for specific quartiles varied by 15 to 30 percent of the average value of all four quartiles. First-quartile peaks were smallest, while fourth-quartile peaks were largest. However, when the routings that determined stage at project site were compared, the lowest and highest peak stages varied by less than 0.3 foot.

HEC-1 SUBBASIN PARAMETERS

Synthetic unit hydrograph parameters -- time of concentration (TC) and storage coefficient (R) -- were estimated for each subbasin using regression equations (Graf 1982). This technique was developed by the USGS from data for 98 gaged basins in Illinois. Regional values of R/(TC + R) are used with (TC + R) values estimated from regression equations relating stream length and channel slope to compute estimated TC and R values. These values are shown in table A-3.

Loss rates for the 2-, 5-, 10-, 25- , 50-, 100-, and 200-year events were developed using the SCS curve number method (McCuen 1982). The curve number values are based on SCS hydrologic soil group classification, percent impervious area, land use, and land cover type. The dominant hydrologic soil group in the basin is class "B." Parameters selected are shown in table A-3.

TABLE A-3

Gale Creek and Lake Mistake Drain Subbasin Parameters

Basin I.D.	Drainage Area (Sq. Mi.)	Tc (Hrs)	R (Hrs)	CSC Runoff Curve #	Subbasin Slope (Ft/Mi)
GC-1	4.0	1.4	1.4	71	48.5
GC-2	1.7	1.1	1.1	71	56.6
GC-3	1.1	1.4	1.4	60	33.0
GC-4	0.9	1.4	1.4	71	31.7
GC-5	0.6	2.7	2.7	71	13.4
LM-1	1.9	1.2	1.2	71	45.3
LM-2	0.	0.9	0.9	80	64.4

HEC-1 MODEL DESCRIPTION AND RESULTS

A map of the seven subbasins in the HEC-1 model appears on plate A-1. Subbasin parameters are listed on table A-3. The two subbasins making up Lake Mistake Drain are added at node 15 (drainage area 2.6 square miles). The three subbasins on Gale Creek upstream of the entrance of Lake Mistake Drain are totaled at node 20 (drainage area 6.8 square miles). Discharges from Gale Creek and Lake Mistake Drain join just upstream of the Burlington Northern Railroad bridge and are combined at node "USBN" (drainage area 9.4 square miles).

Earlier work by the SCS and results of HEC-2 backwater runs indicated that the constriction at the Burlington Northern Railroad bridge combined with available storage upstream of the bridge would reduce discharges downstream of the bridge. This situation was modeled with a modified-Puls storage routing in the HEC-1 model. As Gale Creek rises, water stored behind the Burlington Northern Railroad bridge on Gale Creek backs up into the Lake Mistake Drain subbasin. Water enters the Lake Mistake floodplain in a reverse flow direction through two 7- by 7-foot box culverts at Polo Road in addition to water coming down Lake Mistake Drain. As a result, storage routing combining storage areas and runoff volumes of Gale Creek and Lake Mistake Drain was considered to be the most appropriate method in determining water levels in that reach.

Storage areas used in the routing were planimetered from 2-foot contour maps (scale 1 inch = 200 feet) provided by the SCS. The rating curve was obtained from HEC-2 runs. The Burlington Northern Railroad bridge was modeled as a normal bridge. The details of the bridge were taken from a drawing supplied by Burlington Northern and verified by field inspection (see plate A-3). The bridge is constructed in a manner that will probably collect debris during floods; for this reason, backwater runs were made assuming that 20 percent of the bridge cross section was blocked by debris.

Discharge results of the HEC-1 analysis are shown in table A-4 and plate A-4. These results are for the without-project case for existing conditions. A future conditions run was not made for the reconnaissance phase.

TABLE A-4

Without-Project Discharges (cfs)
at Various Points near Oregon, Illinois

HEC-1 Node Point	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
	----------Recurrence Interval in Years----------					
50	443	617	789	1,018	1,249	1,495
40	423	587	750	957	1,172	1,404
DSBN	407	565	723	920	1,128	1,352
USBN	682	1,161	1,618	2,326	3,205	4,141
20	477	822	1,153	1,664	2,306	2,991
15	266	435	594	829	1,125	1,438

Point	Sq Mi	Location or Comments
50	10.9	Gale Creek (GC) at Mouth on Rock River
40	10.3	Between Mouth and Burlington Northern
DSBN	9.4	Downstream of Burlington Northern
USBN	9.4	GC plus Lake Mistake Drain (LMD) (unrouted)
20	6.8	GC before Junction with LMD (unrouted)
15	2.6	LMD before Junction with GC (unrouted)

As a check, discharges also were computed at two locations using regression equations (Curtis 1987). Table A-5 compares results using HEC-1 and the Illinois regression equations. Locations were chosen where discharges would not be reduced by the routing. HEC-1 discharges were slightly lower for more frequent events but in good agreement for less frequent events.

TABLE A-5

Comparison of HEC-1 and Regression Equation
Discharges at Two Points Within Study Area

Recurrence Interval (yrs)	--Node USBN-- HEC-1 (cfs)	Reg Eq (cfs)	--Node 15-- HEC-1 (cfs)	Reg Eq (cfs)
2	582	644	266	343
5	970	1,127	435	619
10	1,388	1,469	594	820
25	2,113	1,910	829	1,082
50	3,013	2,244	1,125	1,285
100	4,029	2,568	1,438	1,484

WATER SURFACE PROFILES

Water surface elevations for Gale Creek and Lake Mistake Drain were determined using computer models HEC-1 and HEC-2. Water surface elevations for Gale Creek appear on plate A-5, while profile plots for Lake Mistake Drain appear on plate A-6. The crucial area for this study is upstream of the Burlington Northern Railroad bridge. Table A-6 summarizes water surface elevations for this region.

TABLE A-6

Water Surface Elevations Upstream of the Burlington Northern Bridge at Oregon, Illinois

Recurrence Interval	WSEL (Ft)	Recurrence Interval	WSEL (Ft)
2-yr	697.7	25-yr	700.2
5-yr	698.7	50-yr	701.1
10-yr	699.4	100-yr	701.9

DISCUSSION OF ALTERNATIVES

LEVEES

Several alternatives involved building earth levees. One plan involved building a ring levee to protect several buildings east of Lake Mistake Drain. This ring levee would protect and remove about 30 acres from the floodplain. This levee would reduce the volume of available flood storage and alter flow characteristics of the overbank of Lake Mistake Drain. The influence of this change was evaluated by adjusting the routing table of the existing case HEC-1 run to reflect reduced storage area. Water surface elevations upstream of the Burlington Northern Railroad bridge for the events with recurrence intervals of 25, 50, and 100 years were 700.3, 701.2, and 702.1, respectively. This represented increases of 0.0, 0.1, and 0.2 foot over the existing case.

This exceeds State of Illinois criteria which limit the increase for the 100-year event to 0.1 foot. These criteria pertain to elimination of available storage and to restrictions to flow. The project is not a restriction to flow, but it does impact on available storage. In addition, the ring levee would encroach into the identified floodway.

CHANNEL IMPROVEMENT

Channelization of Gale Creek from the mouth of Gale Creek upstream to the confluence with Lake Mistake Drain was considered as a possible means of reducing flood heights in the Lake Mistake basin. By lowering flood profiles on Gale Creek, the Lake Mistake area could drain more rapidly, thus reducing peak flood elevations. Channel size and slope were determined using the Manning equation and selected so that the 100-year peak discharge of 3,095 cfs on Gale Creek could be contained below elevation 699.0, thus limiting Lake Mistake to elevation 699.7. A channel with a bottom width of 70 feet, an average depth of 6 feet with 3 on 1 side slopes, and an average grade of 0.00213 feet per foot, would be required in order to meet the above constraints.

BYPASS CHANNEL

As an alternative to channelizing Gale Creek along the entire reach from its mouth at the Rock River to its confluence with Lake Mistake, a channel bypass was considered. Gale Creek would be channelized from downstream of the Burlington Northern Railroad to upstream of its confluence with Lake Mistake, carrying a design discharge of 3,095 cfs. A diversion structure would be constructed below the Burlington Northern Railroad which would carry flood discharges above 1,500 cfs to the Rock River via the bypass channel. The bypass channel during a 100-year event therefore would be designed to carry 1,605 cfs. This would require a channel 17 feet wide, 6 feet deep with 3 on 1 side slopes, at a grade of 0.0018 feet per foot.

RESERVOIR

The only reservoir sites in the basin are near the intersection of Oregon Trail Road and Gale Creek. This location, near the downstream-most point of subbasin G1, has the storage and topography suitable for a reservoir. The site's potential was examined by modifying the existing case without-project HEC-1 model. A routing simulating a reservoir was placed downstream of subbasin G1 (drainage area: 4 square miles). All runoff upstream of the reservoir was stored. This idealistic modeling still resulted in water surface levels in Oregon (upstream of Burlington Northern Railroad at the intersection of Lake Mistake Drain with Gale Creek) in excess of 699 feet. For the 25-, 50-, and 100-year recurrence intervals, the calculated water surface elevations were 699.0, 699.8, and 700.4 feet, respectively. Since property damage starts at elevation 699, constructing a reservoir would not be an effective way to reduce flood damages.

LAKE MISTAKE POND STORAGE

A ponding area within Lake Mistake also was considered as a possible means of lowering flood heights. A detention basin with a capacity of 475 acre-feet of storage would be needed in order to lower the 100-year peak stage from 701.9 to 699.7.

FLOOD WARNING

The following paragraphs outline a possible flood-warning plan. The limitations of such a plan also are discussed. Warning systems serve two functions: to reduce loss of life and to reduce damage to property. They do not, however, eliminate or reduce flooding.

The most significant opportunities in mitigation at Oregon require a strong local floodplain management program. The most effective way to prevent flood damage along Lake Mistake Drain is to prohibit new construction.

The threat from flooding at Oregon is not persistent, and the potential losses are rather small. The potential warning time is less than 5 hours, and the actual warning time will be even less. This would be especially true for a storm occurring between midnight and 8 a.m.

The community structure would suggest a manual flood forecast system. This could be a flash flood coordinator who would obtain storm forecasts from the National Weather Service (NWS) and distribute the message to appropriate officials and media. The flood coordinator's purpose would be to help the community respond in an appropriate manner.

Part of the flood-warning plan would include creating a community response network and preparing a community response plan. Loss of life is not a major problem since flooding is shallow and velocities are low. There is the potential to reduce property damage and personal inconvenience. The response time is short. Most savings would come from formulating a simple, straight-forward plan. An evacuation plan for nursing homes and residences could prevent accidents caused by impulsive flood victims or rescuers. The plan also would outline flood clean-up activities and priorities, with emphasis on maintaining public health and restoring city services and streets.

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4. Huff, Floyd A., 1988. Frequency Distribution and Hydroclimatic Characteristics of Heavy Rainstorms in Illinois. Bulletin 70, Illinois Department of Energy and Natural Resources.

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8. Soil Conservation Service, 1979. Flood Hazard Analysis of City of Oregon in Ogle County, Illinois.

GALE CREEK AND LAKE MISTAKE DRAIN HEC-1 SUBBASIN MAP

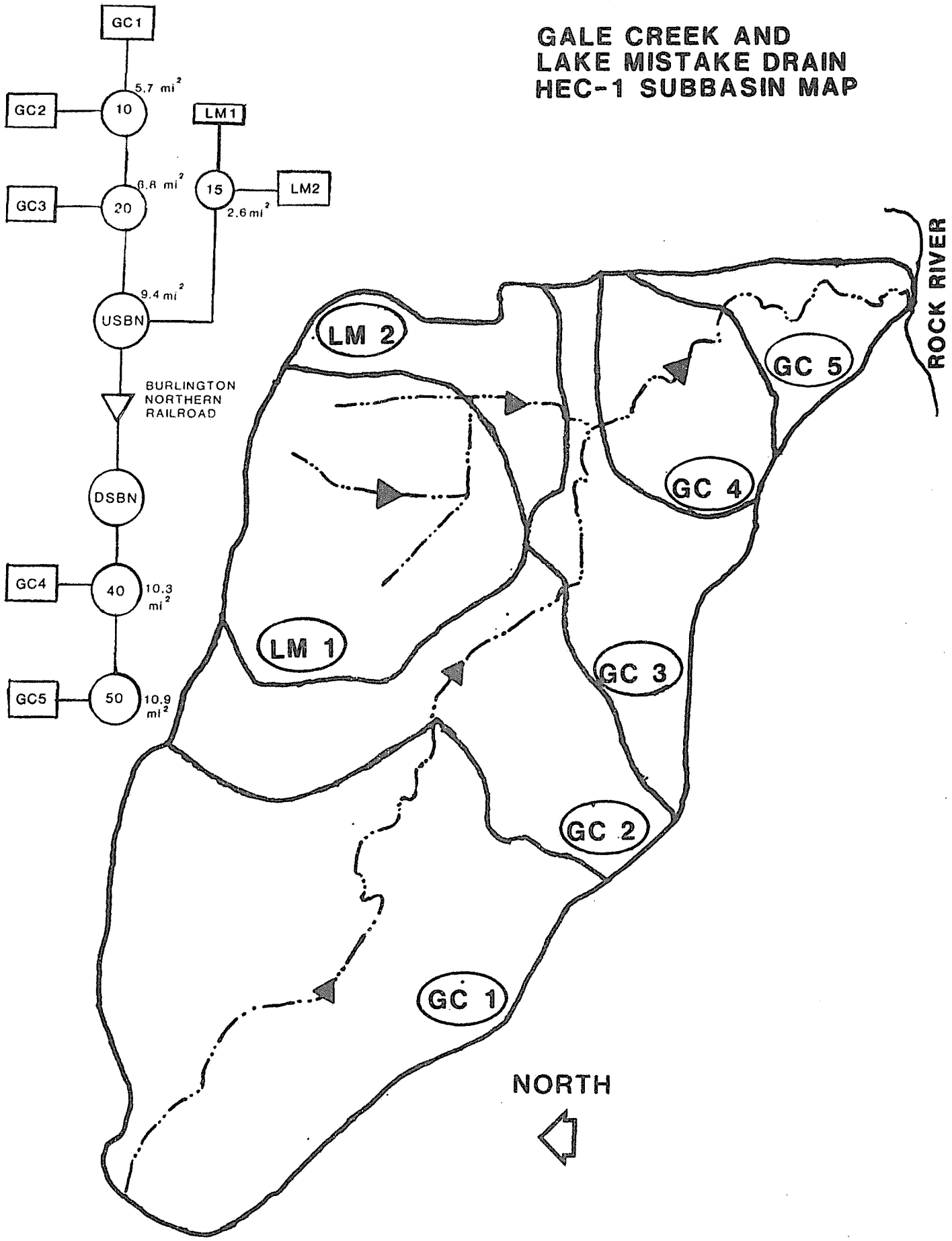
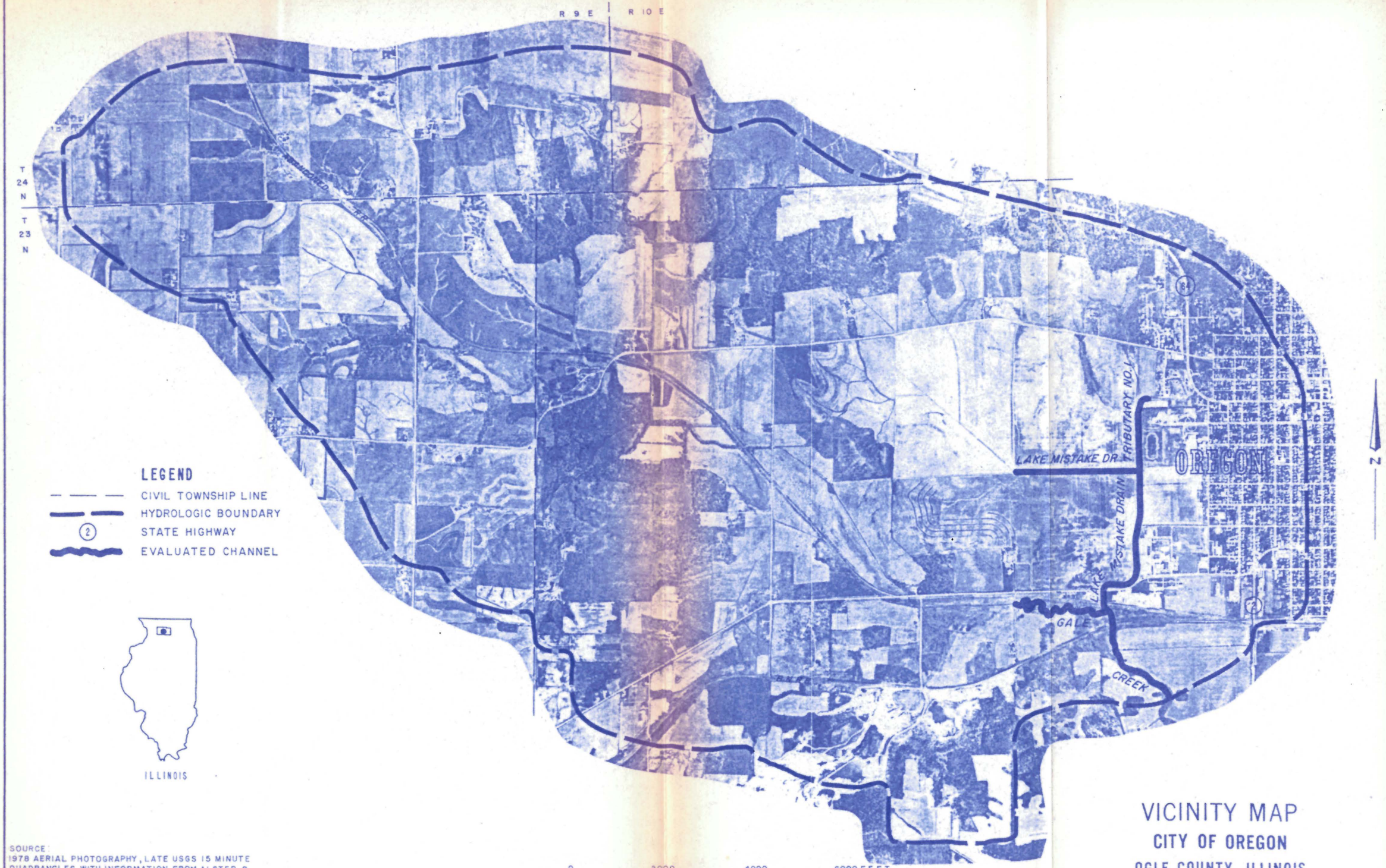


PLATE A-1



LEGEND

- CIVIL TOWNSHIP LINE
- HYDROLOGIC BOUNDARY
- (2) STATE HIGHWAY
- EVALUATED CHANNEL

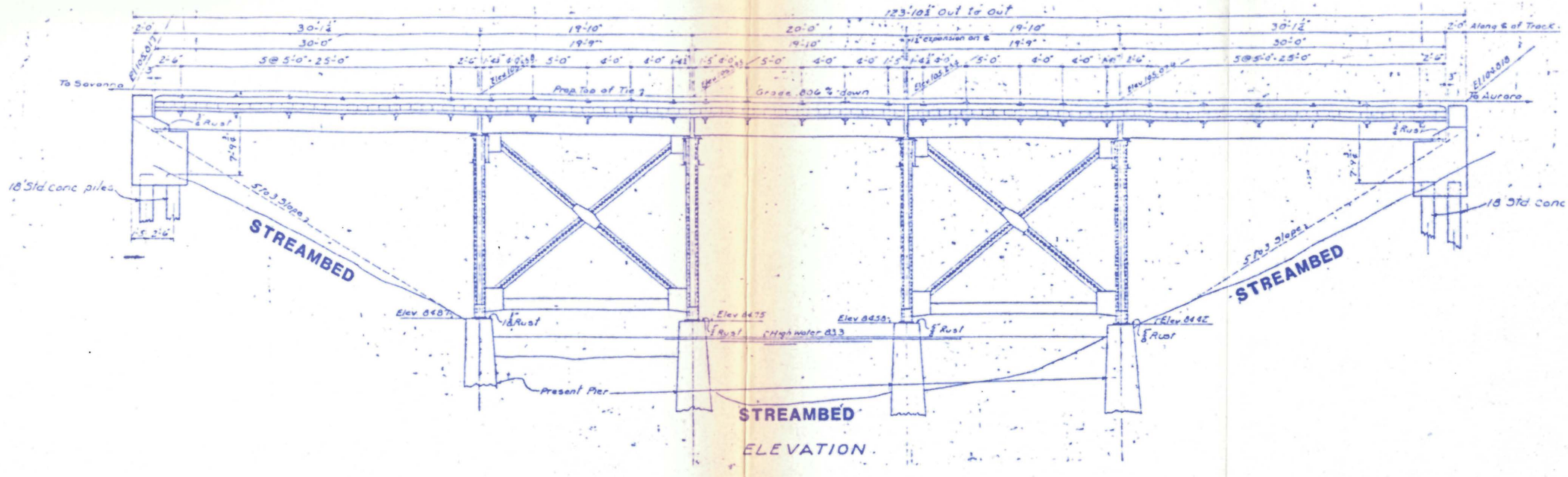
ILLINOIS

SOURCE:
1978 AERIAL PHOTOGRAPHY, LATE USGS 15 MINUTE QUADRANGLES, WITH INFORMATION FROM ALSTER & ASSOCIATES INC. AND SCS FIELD PERSONNEL
DUE TO INHERENT AERIAL PHOTOGRAPHIC DISPLACEMENT THE PHOTOGRAPHIC IMAGE MAY VARY FROM TRUE GROUND LOCATION.

SCALE 0 2000 4000 6000 FEET
0 800 1600 METERS
APPROXIMATE

VICINITY MAP
CITY OF OREGON
OGLE COUNTY, ILLINOIS

PLATE A-2



ELEVATION.

BURLINGTON NORTHERN RAILROAD BRIDGE

BURLINGTON NORTHERN RAILROAD BRIDGE OVER GALE CREEK OREGON, ILLINOIS

PLATE A-3

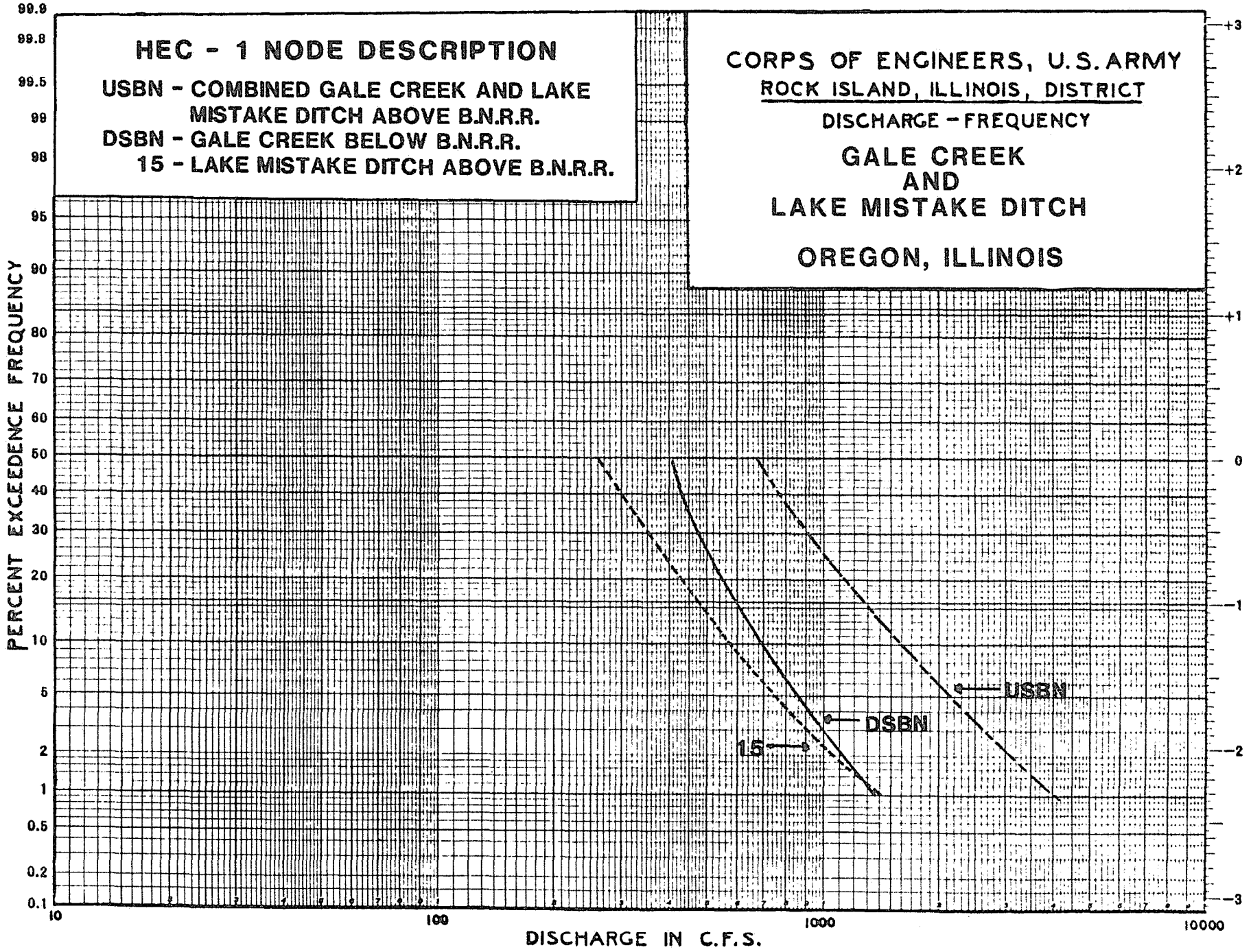

HEC - 1 NODE DESCRIPTION
USBN - COMBINED GALE CREEK AND LAKE MISTAKE DITCH ABOVE B.N.R.R.
DSBN - GALE CREEK BELOW B.N.R.R.
15 - LAKE MISTAKE DITCH ABOVE B.N.R.R.
CORPS OF ENGINEERS, U.S. ARMY
ROCK ISLAND, ILLINOIS, DISTRICT
DISCHARGE - FREQUENCY
GALE CREEK
AND
LAKE MISTAKE DITCH
OREGON, ILLINOIS
PERCENT EXCEEDENCE FREQUENCY
99.9
99.8
99.5
99
98
95
90
80
70
60
50
40
30
20
10
5
2
1
0.5
0.2
0.1
+3
+2
+1
0
-1
-2
-3
USBN
DSBN
15
10
100
1000
10000
DISCHARGE IN C.F.S.

PLATE A-4

GALE CREEK

EXISTING WATER SURFACE PRØFILES

ELEVATIØN IN FEET (NGVD)

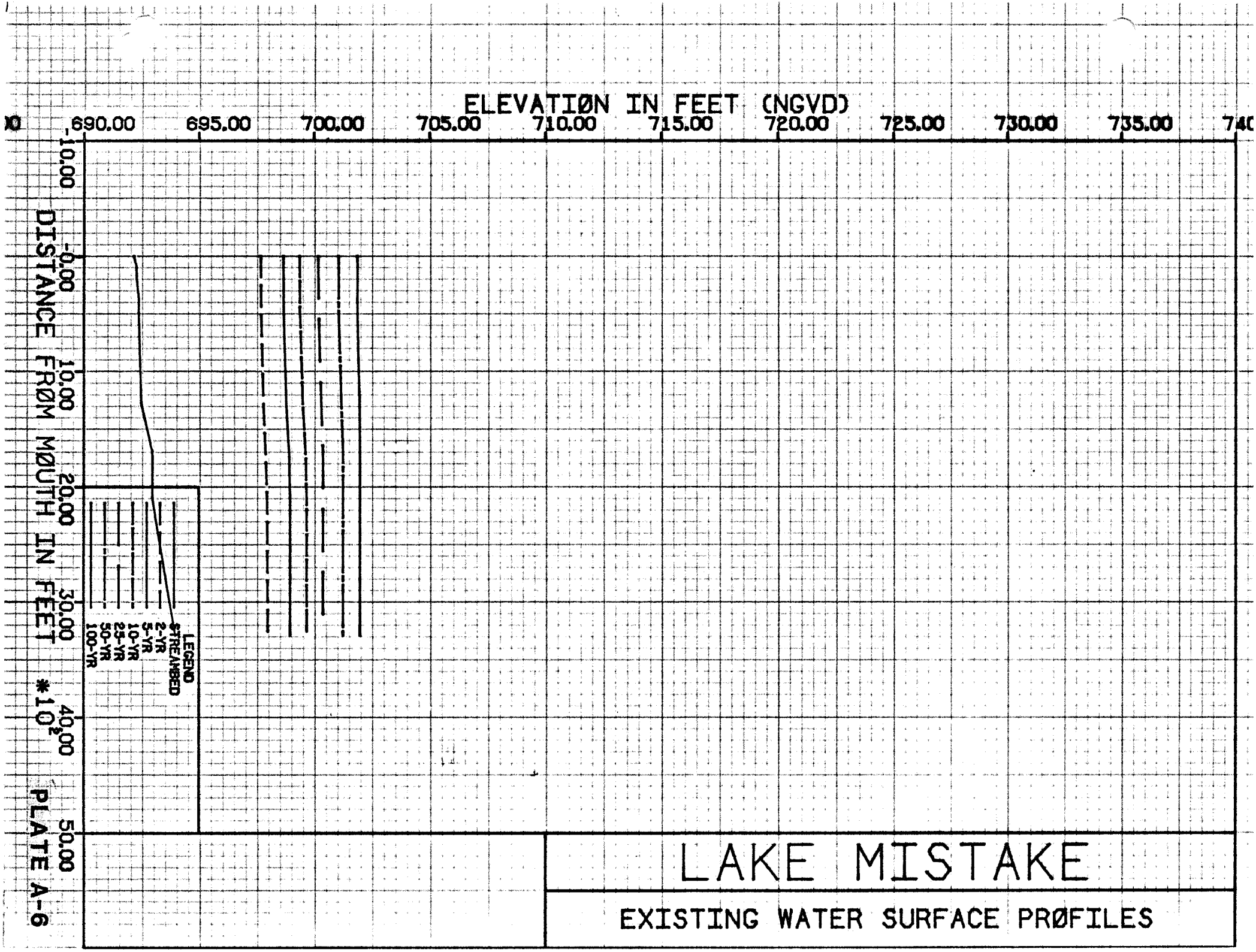
660.00
665.00
670.00
675.00
680.00
685.00
690.00
695.00
700.00
705.00
710.00

0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00

DISTANCE FRØM MØUTH IN FEET *10^2

LEGEND
- STREAMBED
- 2-YR
- 5-YR
- 10-YR
- 25-YR
- 50-YR
- 100-YR

PLATE A-5


ELEVATIØN IN FEET (NGVD)
690.00
695.00
700.00
705.00
710.00
715.00
720.00
725.00
730.00
735.00
-10.00
-0.00
10.00
20.00
30.00
40.00
50.00
DISTANCE FRØM MØUTH IN FEET *10²
LEGEND
STREAMBED
2-YR
5-YR
10-YR
25-YR
50-YR
100-YR
LAKE MISTAKE
EXISTING WATER SURFACE PRØFILES
PLATE A-6

APPENDIX B

ECONOMIC ANALYSIS

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RECONNAISSANCE REPORT
FOR
SECTION 205 FLOOD CONTROL
GALE CREEK AND LAKE MISTAKE DRAIN
OREGON, ILLINOIS

APPENDIX B
ECONOMIC ANALYSIS

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RECONNAISSANCE REPORT
FOR
SECTION 205 FLOOD CONTROL
GALE CREEK AND LAKE MISTAKE DRAIN
OREGON, ILLINOIS

APPENDIX B
ECONOMIC ANALYSIS

DEVELOPMENT AND ECONOMY

GENERAL

The city of Oregon, with a 1980 population of 3,600, is located on the right bank of the Rock River in north-central Illinois. State Highways 2 and 64 intersect at Oregon. Lowden State Park is located just east of Oregon, on the Rock River. The city lies in a predominantly agricultural area. The nearest industrial center is the Rockford, Illinois, metropolitan area (pop. 275,000) which is located about 25 miles to the northeast of Oregon.

STUDY AREA

As shown on plate 1 of the main report, the study area is located on Oregon's west side in the floodplain areas of Gale Creek and Lake Mistake Drain. The study area is predominantly commercial, with minor agricultural residential-use areas. The area is served by county and city roads, as well as railroad lines. Commercial businesses represented in the area include: veterinary services; small engine sales and repair; video rentals; craft shop; insurance agency; nursing home; machine parts assembly; storage facilities, insulation; and farm supply. Public properties in the study area include county and Federal service agency offices.

SOCIO-ECONOMIC CONDITIONS

As indicated by table B-1, employment in Oregon is concentrated in manufacturing, retail trade, and professional services. Household income averaged $22,400 in Oregon (1985) compared to $25,200 for the State of Illinois. Comparative population trends are shown in table B-2.

TABLE B-1

Labor Force Data-1985
Oregon, Illinois

Employment Category	Percent Distribution
Manufacturing	33.0
Wholesale and Retail Trade	19.9
Professional and Related Services	18.1
Governmental Employment	5.2
Agriculture	5.6
Transportation and Personal Services	7.7
All Other	10.5

TABLE B-2

Population Trends

	Pop. 1970	Pop. 1980	Pop. Proj. 1990	Percent 1970-1985	Percent 1985-1990
Oregon	3,540	3,560	3,520	+0.6	-1.2
Ogle County	42,930	46,340	45,840	+8.1	-1.1
State of Ill.	11,115,300	11,426,500	11,712,000	+2.8	+2.5

SOURCES:

Claritas Corporation, REZIDE.1985, The National Encyclopedia of Residential Zip Code Demography.

State of Illinois, Bureau of the Budget, Illinois Population Trends 1980 to 2025.

HISTORICAL FLOODING

The most notable flood in the study area occurred in May 1974. This event is estimated to be 20-year (5% probability) flood. Recurrence of this flood would cause an estimated $120,000 in damage (1989 prices). Other floods were reported in February 1971, April and June 1973, and June 1974. The Lake Mistake area does not drain well, resulting in stagnant ponded water with attendant insect and odor problems.

METHODOLOGY

The project area is located in the 100-year floodplain of Lake Mistake Drain and Gale Creek. The study area has been analyzed as a single-reach project.

Value and depth-damage estimates were collected for all structures in the project area. For the study-area residential structures, ground and first floor elevations, structure type, and estimated market value ($47,600 average) were determined from field survey. Using this information and the standard residential depth-damage computer program, elevation-damage relationships were determined for the properties. For commercial and public properties, representative on-site interviews were used to determine damage curves for affected properties (including structure, contents, and cleanup costs). Table B-3 lists damages, by category, for various elevations. An estimated 200 acres of cropped land are included in the study area. Damages were projected using gross cash yield under normalized prices, with cropping patterns at 50 percent each, corn and beans.

TABLE B-3

Existing Damages By Category ($1,000's)

(NGVD) Elevation	(%) Frequency	Residential	Commercial	Public	Agricultural
696	.6				0
697	.48				7
698	.32			0	14
699	.15		0	7	25
700	.05		37	20	38
701	.02	0	173	77	42
702	.008	2	504	178	44
703	.005	43	1,108	255	46

Note: "Public" includes damage to building, parks, roads, and sewers.

AVERAGE ANNUAL DAMAGES

EXISTING DAMAGES

Average annual damages are the expected value of flood losses for any given year. To calculate existing condition average annual damages, depth-damage curves for study area properties were combined with elevation-frequency relationships. Table B-4 summarizes average annual damage by residential, commercial, agricultural, and public categories.

TABLE B-4

Average Annual Damages ($)

Category	Existing Condition Damages
Residential	650
Commercial	20,400
Public	13,200
Agricultural Crop	11,300
Total	45,550

FUTURE DAMAGES

Future damages within the study area are not a significant consideration. Consistent expansion of commercial facilities and damageable property in the floodplain area is not evident. Also, floodplain building restrictions will prohibit potential damageable property expansion under existing conditions. Future damage increases to study area residential contents (affluence factor) are considered insignificant, since nearly all ground elevations (and all floor elevations) are well above the 100-year flood elevation.

AVERAGE ANNUAL BENEFITS

In this report, benefit categories consist of existing flood damage reduction and flood insurance savings.

FLOOD DAMAGE REDUCTION

Benefits accruing to the reduction of flood damages are computed as the difference between "with-project" and "without-project" average annual damages. Table B-5 presents a summary of the benefits and "with-project" damages (residual damages) for the 100-year levee alternative. The summary includes benefits in the freeboard range, which are calculated as one-half the area under the damage-frequency curve between the design level (100-year level of protection) and the largest flood which might be carried within the freeboard.

TABLE B-5

Average Annual Benefits
Flood Control, 100-Year Levee Design ($)

Category	Existing Benefits 1990	Residual Damage	Average Annual Damage
Agricultural Crop	--	11,300	11,300
Residential	--	650	650
Commercial/Industrial	12,300	8,100	20,400
Public	3,200	10,000	13,200
Totals	15,500	30,050	45,550

FLOOD INSURANCE SAVINGS

The administration of the Flood Insurance Program is a national cost. Savings of this administrative cost can be credited to a project as a National Economic Development benefit if the project protects an area located in the 100-year (1% exceedence frequency) floodplain. It is assumed that all properties in the 100-year floodplain participate in the Flood Insurance Program and that coverage would be eliminated if flood protection were provided. Current annual administrative costs are estimated to be $77 per policy. With a total of 12 properties in the 100-year levee alternative floodplain, $900 in insurance cost savings would accrue annually to the 100-year levee alternative.

ECONOMIC SUMMARY

During this study, several flood damage reduction measures were investigated. Table B-6 presents a summary economic analysis for the various project alternatives considered in this reconnaissance report. More detailed descriptions of these alternatives are given in the main section of this report. As indicated by this table, the alternatives studied are not economically feasible. As a Federal interest has not been determined, no analysis of financial impact to local sponsors is included.

Tables B-7 and B-8 illustrate calculations for interest during construction and annual charges, respectively. The 100-year ring levee alternative is used for illustration purposes. Computations employ a discount rate of 8-7/8 percent, as mandated for Federal water resource projects, and a 50-year period of analysis. Price levels are September 1989.

The main report contains a summarized social impact assessment.

TABLE B-6

Summary of Benefits and Costs for Various Project Alternatives
(50-Year Evaluation, 8-7/8%, September 1989 Prices, $ Thousands)

Alternative	Ring Levees[1]		Ring[2] Levees	Detention Reservoir	Channel Improvement	Channel & Bypass	Excavated Basin	Area Evacuation
Design Level	100-Year	50-Year	100-Year	100-Year	100-Year	100-Year	100-Year	100-Year
Total Annual Benefits -				[3]	[3]	[3]	[3]	
Existing Flood Control	16.4	12.4	13.4					[3]
Residential	(0)	(0)	(0)					
Commercial	(12.3)	(10.0)	(9.5)					
Public	(3.2)	(2.4)	(3.2)					
Agricultural	(0)	(0)	(0)					
Flood Insurance Saving	(.9)	(0)	(.7)					
Cost Estimates								
Federal Construction	407.0	345.0	647.0	845.0	738.0	812.0	2,566.0	3,878.0
Non-Federal Constr.	136.0	115.0	216.0	281.0	246.0	270.0	855.0	1,292.0
Interest During Constr.	24.0	20.0	38.0	50.0	43.0	48.0	152.0	229.0
Total Annual Charges	52.4	44.6	82.5	105.9	92.8	101.7	321.7	486.1
Interest & Amortization	(51.0)	(43.2)	(81.1)	(105.9)	(92.8)	(101.7)	(321.7)	(486.1)
Operation & Maintenance	(1.4)	(1.4)	(1.4)	(NA)	(NA)	(NA)	(NA)	(NA)
Net Annual Benefits	-36.0	-32.2	-69.1					
Benefit-to-Cost Ratio	.31	.28	.16	[3]	[3]	[3]	[3]	[3]

[1] Ring Levees around building 21 through 29, and 20

[2] Ring Levees around buildings 22 through 25, building, 28 and 29; and 20, 21, and 27 individually.

[3] Since average annual damages for entire study area total $45,500, and annual costs for these alternative far exceed maximum potential benefits (damages prevented), no further analysis was undertaken.

TABLE B-7

Interest During Construction ($1,000's)
(100-Year Levee Alternative)
September 1989 Prices
8-7/8% Discount Rate

	Year	Construction Cost($)	Time to Base Year	Periods	Interest Factor of $1.00 Deposited	Accumulated Interest($)
Federal	*	407.0	0.5	(1)	.04437	18.0
Non-Federal	*	136.0	0.5	(1)	.04437	6.0
Totals		543.0				24.0

* 1-year construction period.

TABLE B-8

Summary of Annual Charges
100-Year Levee Alternative
(8-7/8 Percent, September 1989 Prices, 50-Year Life)

Description	Amount ($) Federal	Non-Federal
Estimated Project Cost	407,000	136,000
Interest During Construction	18,000	6,000
Total First Costs	425,000	142,000
Capital Recovery Factor (.09003)	38,300	12,700
Operation and Maintenance	0	1,400
Total Annual Charges	38,300	14,100

Total Federal and Non-Federal Annual Charges $52,400

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APPENDIX C

PERTINENT CORRESPONDENCE

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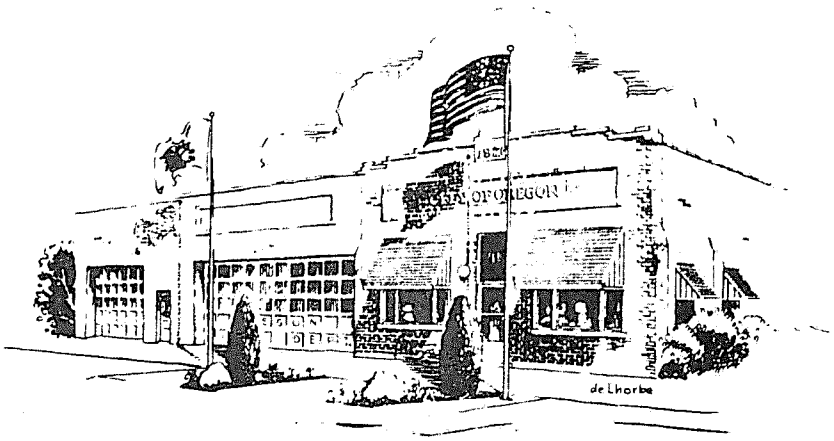
CITY OF OREGON

JAMES L. BARNES
Mayor

JULIENNE R. CROWLEY
City Clerk

DAVID A. SMITH
City Attorney



115 N. Third Street, Oregon, Illinois 61061
Phone - 815-732-6321

January 7, 1988

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Planning Division
Clock Tower Bldg. P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Sir:

In accordance with the provisions of Section 205 of the Flood Control Act of 1948, as amended, which authorizes the federal government to initiate investigations and studies to be made in the interest of flood control, the City of Oregon hereby makes formal application for a study of Gale Creek and Lake Mistake Drain in the City of Oregon.

The investigations will be conducted in two phases; the first phase is the reconnaissance study which will be funded by the Corps of Engineers.

The City of Oregon can provide 50 percent of the cost of the second phase, the feasibility study, and one-half of our share may consist of in-kind service. The City of Oregon can provide the following local cooperation and participation.

1. Provide without cost to the United States all land, easements and rights-of-way necessary for the construction of the project.

2. Provide without cost to the United States all necessary relocations and alterations of buildings, utilities, highways, bridges, sewers and related and special facilities.

3. Hold and save the United States free from damages due to the construction and subsequent maintenance of the project, except damages due to the fault or negligence of the United States or its contractors.

4. Maintain and operate the project works after completion without cost to the United States in accordance with regulations prescribed by the Secretary of the Army.

5. Prevent future encroachment which might interfere with proper functioning of the project for flood control.

6. Assume responsibility for all costs in excess of federal cost limitation of $5 million.

7. Provide guidance and leadership in preventing unwise future development of the flood plain by use of appropriate flood plain management techniques to reduce flood loss.

8. Provide a minimum cash contribution of 5 percent of the project cost.

9. If the value of the sponsor's contribution above does not exceed 25 percent of the project cost, provide a cash contribution to make the sponsor's total contributions equal to 25 percent.

Sincerely,

CITY OF OREGON

James L. Barnes

James L. Barnes
Mayor

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
Atlanta GA 30333

October 21, 1988

District Engineer
U.S. Army Engineer District
Rock Island
ATTN: Planning Division
Clock Tower Building
P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Sir:

We have learned that your office is developing documentation under the National Environmental Protection Act (NEPA) entitled "Reconnaissance Study for Flood Damage Reduction Gale Creek and Lake Mistake Drain, Oregon, Illinois." While we have no specific comments to offer on your project at this time we are writing to urge your consideration of any perceived safety and health impacts posed by this project. As a guide, we have enclosed a list of potential health impacts for your review. We hope these suggestions may be helpful in developing a comprehensive analysis of potential environmental impacts associated with your proposed project.

Please insure that we are included on your mailing list for further documents which are developed under the National Environmental Policy Act (NEPA).

Sincerely yours,

DE Clapp

David E. Clapp, Ph.D., P.E.
Environmental Health Scientist
Special Programs Group
Center for Environmental Health
and Injury Control

Enclosure

I. AIR QUALITY:

A. Dust control measures during construction.

B. Open burning.

C. Indoor Air Quality.

D. Compliance with air quality standards.

II. WATER QUALITY:

A. Potable water (chemical, microbiological, and radiological quality).

B. Body contact recreation.

C. Compliance with waste water treatment standards.

III. NON-HAZARDOUS SOLID WASTE:

A. Any unusual or suspected health effects associated with solid waste disposal.

B. Effects of littering and provisions for cleanup, particularly conditions which might lead to vector harborage.

IV. NOISE:

A. Ambient noise levels during construction, implementation, etc.

B. Effectiveness of any proposed noise reduction measures following construction, implementation, etc.

V. RADIATION:

A. Exposures to ionizing and non-ionizing radiation which may adversely affect human health.

VI. HAZARDOUS WASTES:

A. Solid, liquid, or gaseous wastes which because of their physical, chemical or infectious characteristics pose a substantial threat to human health.

VII. WETLANDS AND FLOODPLAINS:

A. Contamination of the food chain.

B. Construction in floodplain which may endanger human health.

VIII. OCCUPATIONAL HEALTH AND SAFETY:

A. Evaluation of the occupational and public health hazards associated with the construction and operation of the proposed project.

B. Evaluation of any occupational and public health hazards associated with the operation of a proposed program (e.g., pesticide application, disposal of toxic chemicals, etc.).

C. General worker safety/injury control provisions.

VIIII. LAND USE AND HOUSING:

A. The provision of adequate ventilation, heating, insulation and lighting.

B. Vector control provisions.

C. Impacts of a project upon the displacement and/or relocation of persons.

Illinois Historic Preservation Agency

Old State Capitol • Springfield, Illinois 62701 • (217) 782-4836

217/785-4512

OGLE COUNTY
100 Year Flood Protection
Proposed Undertaking
Oregon

February 6, 1989

Mr. Dudley M. Hanson, P.E.
Chief, Planning Division
District Engineer
U.S. Army Engineer District, Rock Island
Attention: Planning Division
Clock Tower Building - Post Office Box 2004
Rock Island, Illinois 61204-2004

Dear Sir:

Thank you for requesting comments from our office concerning the possible effects of the project referenced above on cultural resources. Our comments are required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties".

The project is located in an area of potential National Register of Historic Places sites. The Village of Oregon is in the process of nominating at least one possibly two properties to the National Register. A map showing the archaeological sites in the project area that are in our files has been sent to Mr. Ron Deiss in your office. It should be understood that the sites are by no means the only ones in the project area. They are only an indication of the potential of archaeological resources. The magnitude of the flood protection project, along with the propensity for archaeological sites, deems it necessary to do a complete cultural resource survey of the project area before work is initiated.

If you have any further questions, please contact Ms. Joyce A. Williams, Staff Archaeologist, Illinois Historic Preservation Agency, Old State Capitol, Springfield, Illinois 62701, 217/785-4997.

Sincerely,

Theodore Hild

Theodore W. Hild
Deputy State Historic
Preservation Officer

TWH:JAW:bv

cc: Ron Deiss, CoE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
ROCK ISLAND FIELD OFFICE (ES)
1830 Second Avenue, Second Floor
Rock Island, Illinois 61201

IN REPLY REFER TO:
COM: 309/793-5800
FTS: 386-5800

February 21, 1989

Colonel Neil A. Smart
District Engineer
U.S. Army Engineer District
Rock Island
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Smart:

This constitutes our planning aid letter for the Oregon, Illinois, Local Flood Protection Reconnaissance Study. The study is being carried out under the authority of Section 205 of the Flood Control Act of 1948. The authority for this report is Section 2 of the Fish and Wildlife Coordination Act of 1958.

Description of the Project

Oregon, Illinois, experiences flooding during high runoff periods due to insufficient conveyance capacity within Gale Creek and Lake Mistake drainage. This study will investigate the feasibility of increasing the level of protection to those residences and businesses within the flooding areas through a number of alternatives. These alternatives include levying portions of Gale Creek, Lake Mistake drainage, or groups of buildings; channel improvement along all or a portion of Gale Creek downstream of the Lake Mistake drainage; constructing a ponding area within the Lake Mistake drainage and associated by-pass/diversion outlets; and constructing a flood control reservoir near the headwaters; alone and in various combinations.

Description of the Study Area

The study areas for this project (map attached) include both banks of Gale Creek, from its confluence with the Rock River, approximately one and one half miles south of Oregon, to approximately one quarter mile upstream of the confluence of Lake Mistake drainage, on the southwest side of Oregon. It also includes that portion of Gale Creek and its associated headwaters north and west of the Oregon Trail Road, at the site of a potential flood control reservoir. Also included are the lands on the west side of Oregon at the site of a potential flood water ponding area and levee system, and the lands along three potential by-pass/outlet channels.

Fish and Wildlife Resources

We investigated the fish and wildlife resources of the study areas in January of this year, and the following information summarizes our findings.

Our information indicates there are no Federally listed threatened or endangered species residing in the project area. It is possible that bald eagles could occasionally use the Rock River in this area during the winter, however, those portions of the project area located near the river do not represent a significant amount of potential habitat.

Gale Creek varies in its appearance and values to fish and wildlife, from its confluence with the Rock River, upstream to the potential flood control reservoir site. In the immediate vicinity of its confluence with the Rock River, Gale Creek meanders through a relatively undisturbed block of medium age bottomland hardwoods. This woodland is comprised primarily of ash, silver maple, boxelder, honeylocust, hackberry, and elm. The area is actively used by beaver, deer, raccoon, rabbit and several species of passerine birds.

As the creek rises out of the Rock River floodplain land use intensifies, and along most of its reach Gale Creek consists of the stream itself, and a narrow riparian corridor surrounded by cropland. From where Gale Creek rises out of the floodplain, upstream almost to the Burlington Northern Railroad bridge, the creek is bordered on both sides by a wooded riparian corridor, varying in width from less than 50 feet in some locations to 150 feet along the inside of some meanders (with the exception of a few developed parcels immediately downstream of Illinois Highway 2 and a stretch on the east bank upstream from the Outdoor Ministries Center Camp). The corridor is comprised primarily of medium aged to mature boxelder, willow, cottonwood, honeylocust, cherry, hackberry, and elm. This reach is actively utilized by several species of passerine birds, rabbit, deer, raccoon, and beaver. An active beaver dam exists within the stream channel in the area of the Outdoor Ministries Camp. A small rock impoundment also exists within the channel in the camp, which serves to maintain water levels necessary to supply water to a 3 to 5 acre pond, located adjacent to Gale Creek.

The City of Oregon has cleaned out Gale Creek from about 1000 feet below the Burlington Northern Railroad bridge, upstream to just above where Lake Mistake drainage enters the creek. Within this short reach, all riparian and aquatic habitats have been severely impacted. Upstream from this reach to the upstream boundary of proposed channel improvement activities, Gale Creek is bordered by a very narrow, intermittently wooded, riparian corridor and residential/ commercial lots. Because of the level

of development along this reach, wildlife habitat values are somewhat reduced. This area still provides values, however, to species such as some passerine birds, squirrels and others that are adaptable to urban areas.

The site of the potential flood control reservoir is near the headwaters of Gale Creek, approximately 2 miles west of Oregon. In this area Gale Creek and its associated tributaries run along the bottom of fairly narrow valleys, the flatter portions of which are cropped, and are bordered by steep sloping mature oak/hickory woodlands. The streams are bordered by narrow wooded riparian corridors ranging from 10 to 25 feet in width. This area would also support wildlife similar to those occurring along the reach of the stream between Highway 2 and the railroad bridge.

No fisheries data are available for Gale Creek. A review of Illinois Department of Conservation data for similar streams nearby in the Rock River drainage indicates that Gale Creek is likely to support several species of fish. Species commonly occurring in those similar streams include common shiner, johnny darter, green sunfish, blacknose dace, stoneroller, hornyhead chub, bluntnose minnow, fathead minnow, white sucker, brook stickleback, bigmouth shiner, and creek chub. Northern pike, grass pickerel, bluegill, and several other species also occur in those streams, however, are less common.

The Lake Mistake drainage joins Gale Creek just upstream from the Burlington Northern Railroad bridge. This drainage runs from the north, where it drains a large low area on the immediate west end of Oregon. This area was historically a wetland, until it was drained and converted to cropland. As Oregon grew it encroached upon this low area and several businesses and some residences are now also located within its area of influence. Portions of this area still retain some wetland characteristics. The portion of this area immediately south of the Oregon High School still remains wet enough to support substantial stands of smartweeds even though the field was cultivated and produced a small grain crop in 1988. While intensively farmed, portions of this area may still provide at least seasonal benefits to wildlife.

The diversion/outlet channels proposed in association with the ponding area in the Lake Mistake drainage are intended to outlet waters from the ponding area, bypassing the current confluence with Gale creek. They are intended to relieve flood water conveyance needs within Gale Creek in the immediate vicinity of Oregon. One alinement would outlet the ponding area through a buried pipeline down the middle of Webster Street, directly into the Rock River. Webster Street runs through a residential area down to the upper bank of the river, about 50 feet from shore. There are scattered mature ash or elm trees located along Webster Street, and a few mature black locust trees along the upper bank

at the site where the outlet channel would enter the river. This area is principally urban, and would provide benefits only to those wildlife species, such as some passerine birds, squirrels, and others that are adaptable to urban existence.

The other alignement would outlet the ponding area to the south, by-passing the existing confluence of the Lake Mistake drainage, allowing the water to re-enter Gale Creek approximately one half mile south of the existing confluence. This alignement runs through the south end of Oregon, which is primarily developed as commercial property, and then through intensively farmed cropland. It would also cross the Burlington Northern Railroad right-of-way and a single row shelterbelt located in the farmed area.

A third potential by-pass channel alinement would convey high flow waters from Gale Creek to the Rock River, by-passing the lower two thirds of the creek. It would begin at a point on Gale Creek approximately one half mile south of Oregon, and would run east through intensively farmed cropland to the Rock River bluff. At this point it would drop down to the bottoms through a medium age woodland comprised of hackberry, cherry, elm, and boxelder. It would then run through a wet hay field about 300 feet wide and through a narrow buffer along the river, comprised of mature honey locust, silver maple and willow. The area from the bluff down to the river provides habitat for rabbit, deer, raccoon, passerine birds and other similar species. An inspection of the river bank in the immediate vicinity of the outlet was also made. Several mussel shells were collected. Species collected include deer toe, fawns foot, pink papershell, pimpleback, spike, and one of the floaters.

Projected Project Impacts

Any alternative which involves channel improvement on a portion or all of Gale Creek, beyond that which has already been completed by the City of Oregon, has the potential to result in significant adverse impacts to the fish and wildlife resources associated with this area. Likewise, any alternative which includes the construction of the proposed flood control reservoir has the potential to significantly impact those resources within the reservoir area, and also those associated with Gale Creek downstream of the reservoir.

The proposed by-pass channel located south of Oregon, which would carry high flows east to the Rock River by-passing the lower two thirds of Gale Creek, would be located primarily in intensive agricultural land. Its construction would result in some impacts in the area where it drops down to the Rock River bottoms. With proper planning, however, these impacts can be minimized. Its operation, however, has greater potential to result in adverse long-term impacts to the creek. The operation of this proposed by-pass channel has the potential to result in increased siltation and channel aggradation within Gale Creek. By

diverting high flows out of the lower two thirds of the creek channel the potential exists to reduce the capability of the remaining flows to scour and maintain the current stream channel capacity. This may result in degradation of the habitat values for some aquatic species in this reach of Gale Creek.

The remaining proposed activities would be located primarily within agricultural and urban areas. They have the potential to result in some adverse impacts to the fish and wildlife resources in those areas. With proper planning, however, any adverse impacts resulting from those activities can be minimized.

The proposed ponding area is located in intensively farmed cropland. This area remains wet enough, currently, to support stands of hydrophytic vegetation and may provide some seasonal wildlife benefits. The proposed ponding area could provide, depending on management, improved wetland wildlife habitat values in the area, as well as other wetland functional values. It could be used as mitigation for adverse project impacts, if managed for these values.

Conclusions

As a result of these field investigations, we have concluded that there are several fish and wildlife resources within the Oregon, Illinois, Local Flood Protection study area which need to be considered. Several of the proposed alternatives involving Gale Creek have the potential to result in significant adverse impacts to the fish and wildlife resources within the study areas. If a feasibility study of this project is initiated we recommend that a more detailed habitat evaluation of the riparian and aquatic habitats within the study areas be completed. This would provide the basis for determining aquatic and terrestrial habitat losses, and mitigation requirements should impacts be determined to be significant.

If you have any questions regarding this report please contact Mr. Jack Arnold of my staff.

Sincerely,

for Richard C. Nelson
Field Supervisor

cc: IDOC (Bertrand, Lutz)

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

REPLY TO
ATTENTION OF:

February 27, 1989

Planning Division

Dr. Michael Wiant
Illinois State Museum
Illinois State Museum Society
Spring and Edwards Streets
Springfield, Illinois 62706

Dear Dr. Wiant:

Rock Island District, Corps of Engineers, archeologist Ron Deiss requires site information surrounding the village of Oregon in Ogel County, Illinois, to provide 100-year flood protection. With the information provided, the Corps will attempt to (1) avoid disturbance of sites eligible to or listed on the National Register of Historic Places, (2) assess the area for its archeological potential, and (3) produce a documentary data base attuned to the physiography of the project areas.

Since this project is in its very early stages, no preferred alternative exists at this time. On February 6, 1989, the Illinois State Historic Preservation Officer (SHPO) provided us with the enclosed topographic map showing site locations.

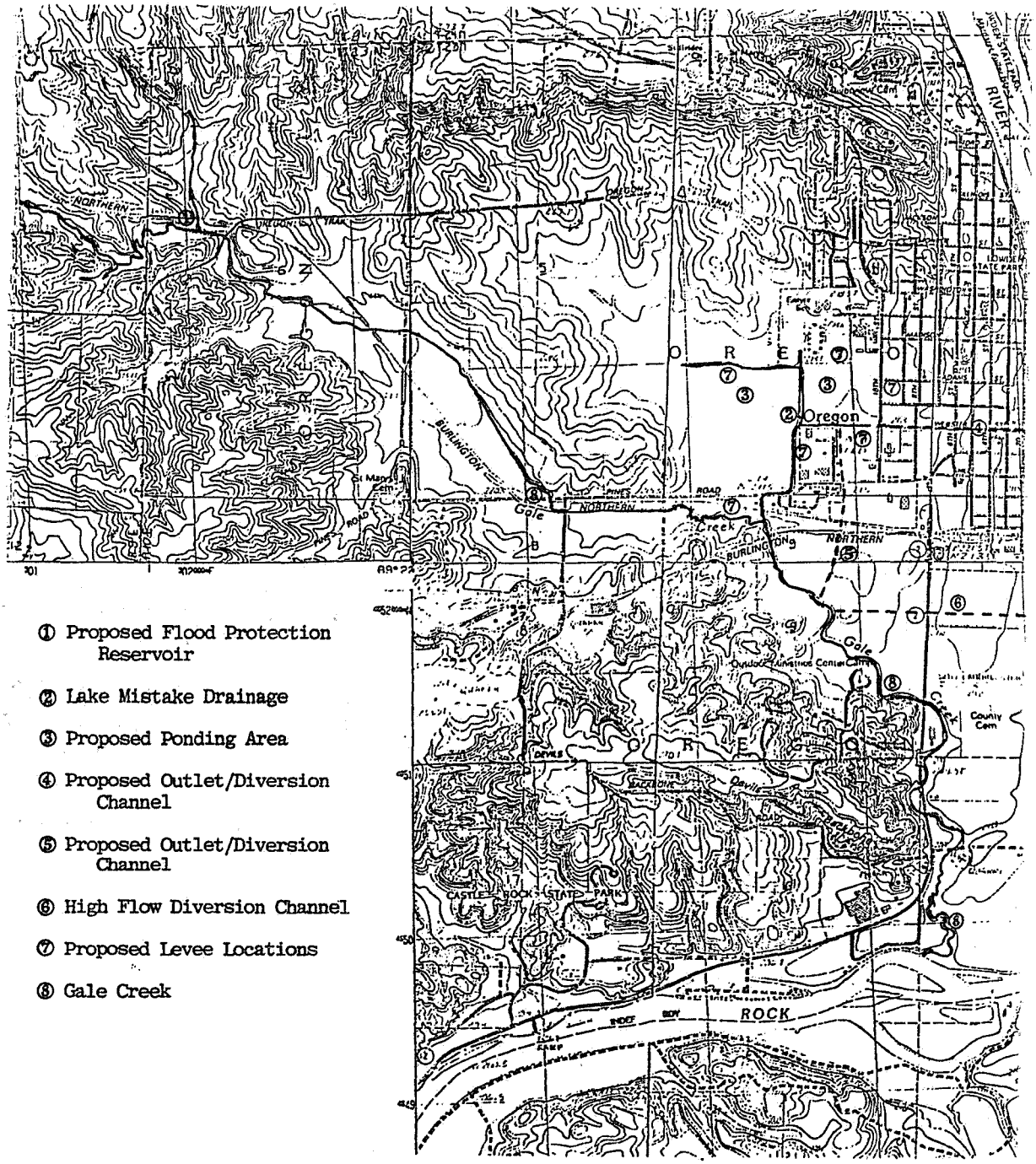
Any cultural, temporal, or locational information on these sites would be appreciated. If you have any questions, please call Mr. Deiss at 309/788-6361, Ext. 349, or you may write to the following address:

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Planning Division
Clock Tower Building - P.O. Box 2004
Rock Island, Illinois 61204-2004

Sincerely,

ORIGINAL SIGNED BY
Cockerill
for Dudley M. Hanson, P.E.
Chief, Planning Division

Enclosure



Oregon, Illinois Local Flood Protection Project
Study Area

Illinois Department of Conservation
life and land together

LINCOLN TOWER PLAZA • 524 SOUTH SECOND STREET • SPRINGFIELD 62701-1787
CHICAGO OFFICE • ROOM 4-300 • 100 WEST RANDOLPH 60601
MARK FRECH, DIRECTOR

March 28, 1989

Mr. Richard C. Nelson
Field Supervisor
USDI-FWS
Rock Island Field Office (ES)
1830 Second Avenue, Second Floor
Rock Island, Illinois 61201

Dear Mr. Nelson:

Department staff were given an opportunity to review your February 21, 1989 planning aid letter for the Oregon, Illinois, Local Flood Protection Reconnaissance Study. Generally, the report describes the existing resources in the area quite well.

Information on the Devil's Backbone Natural Area, which was not discussed in your letter, has been provided by the Endangered Species Board Coordinator. Please use this information in future reports.

Thank you for the opportunity to review and comment on your planning aid letter.

Sincerely,

Richard W. Lutz

Richard W. Lutz, Supervisor
Impact Analysis Section
Division of Planning

RWL:gb
Attachment: March 20, 1989 memo from Glen Kruse

cc: Glen Kruse

ILLINOIS ENDANGERED SPECIES PROTECTION BOARD

memorandum

to: Dick Lutz

from: Glen Kruse

date: March 20, 1989

subject: Oregon, Illinois Local Flood Protection Reconnaissance Study planning aid letter

There is one piece of possibly important information missing from the USFWS letter on this project. An inventoried natural area, Devil's Backbone Natural Area, is located along Gale Creek. This area is owned by the Natural Lands Institute.

Kitten tails, *Besseya bullii*, occurs in this natural area. This plant has been recommended for listing as threatened in Illinois and is a Category 2 federal candidate for listing.

Devil's Backbone Natural Area is highlighted in yellow on the enclosed map. The kitten tails location is in the southeast corner of the natural area.

Any alternative for flood control on Gale Creek which involves channel modification would have direct impacts on this natural area. Indirect effects could also result from the alternative of diverting flows at a location upstream of Devil's Backbone.

Please make USFWS aware of the presence of Devil's Backbone and its inclusion of a federal candidate plant species.

Thank you for the opportunity to review this planning aid letter.

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for
Flood Damage Reduction
Gale Creek and Lake Mistake Drain
Oregon, Illinois

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