

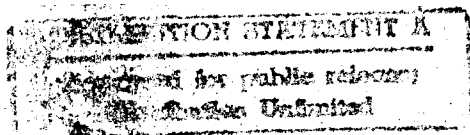
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RECONNAISSANCE REPORT

SECTION 205 FLOOD DAMAGE REDUCTION STUDY

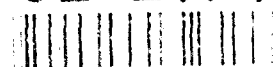
BEAVER CREEK, NEW HARTFORD, IOWA

SEPTEMBER 1991



US Army Corps
of Engineers
Rock Island District

92-24712



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DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT, CORPS OF ENGINEERS
CLOCK TOWER BUILDING-P O. BOX 2004
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September 20, 1991

Planning Division

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Enclosed is the Reconnaissance Report, Section 205 Flood Damage Reduction Study, Beaver Creek, New Hartford, Iowa.

The Rock Island District of the U.S. Army Corps of Engineers (Corps) initiated a flood damage reduction reconnaissance study in June 1990. The Corps investigated several alternative plans, including levees, channelization, floodproofing, floodplain evacuation, flood warning system, and reservoirs.

None of the alternatives were found to be economically feasible, and the study has been terminated.

Any questions or concerns may be directed 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,

A handwritten signature in cursive script, reading "Dudley M. Hanson", is written over a horizontal line.

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

Enclosure



REPLY TO
ATTENTION OF

CENCR-PD-F

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

RECONNAISSANCE REPORT
SECTION 205 FLOOD DAMAGE REDUCTION STUDY
BEAVER CREEK, NEW HARTFORD, IOWA

SEPTEMBER 1991

ACKNOWLEDGMENT

This report was prepared by a Rock Island District, Corps of Engineers, multi-disciplinary study team. Individuals familiar with the technical aspects of the study are listed below:

STUDY MANAGEMENT & PLAN FORMULATION	George Gitter, AICP
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EXECUTIVE SUMMARY

In a letter dated February 7, 1990, the city of New Hartford, Iowa, requested assistance to investigate flooding problems from Beaver Creek under the authority of Section 205 of the 1948 Flood Control Act, as amended.

In December of 1963, the Rock Island District, U.S. Army Corps of Engineers, completed a Detailed Project Study of flood protection for New Hartford and recommended a 15,000-foot levee system. The study was terminated at that stage due to lack of local support.

Recent flooding has triggered renewed interest in a flood damage reduction project for New Hartford. This report documents a multi-disciplinary investigation into potential solutions to reduce flood damages. Some of the alternatives investigated include levees, channelization, flood-proofing, floodplain evacuation, flood-warning system, and reservoirs.

None of the alternatives were found to be economically feasible, and the study has been terminated.

RECONNAISSANCE REPORT
SECTION 205 FLOOD DAMAGE REDUCTION STUDY
BEAVER CREEK, NEW HARTFORD, IOWA

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DISTRIBUTION LIST

RECONNAISSANCE REPORT
SECTION 205 FLOOD DAMAGE REDUCTION STUDY
BEAVER CREEK, NEW HARTFORD, IOWA

SECTION 1 - INTRODUCTION

STUDY AUTHORITY

The Corps of Engineers has the authority to construct small flood control projects under certain conditions without specific authorization of Congress. The authority for this study is Section 205 of the 1948 Flood Control Act, as amended, which is presented as follows:

The Secretary of the Army is authorized to allot from any appropriations heretofore or hereafter made for flood control, not to exceed \$40,000,000 for any one fiscal year, for the construction of small projects for flood control and related purposes not specifically authorized by Congress, which come within the provisions of Section 1 of the Flood Control Act of June 22, 1936, when in the opinion of the Chief of Engineers such work is advisable. The amount allotted for a project shall be sufficient to complete Federal participation in the project. Not more than \$5,000,000 shall be allotted under this section for a project at any single locality. The provisions of local cooperation specified in Section 3 of the Flood Control Act of June 22, 1936, as amended, and in P.L. 99-662 (Water Resources Act of 1986) shall apply. The work shall be complete in itself and not commit the United States to any additional improvement to ensure its successful operation, except as may result from the normal procedure applying to projects authorized after submission of preliminary examination and survey reports.

STUDY PURPOSE AND SCOPE

The purpose of the reconnaissance phase is to conduct a study and produce a report to accomplish the following:

- a. Describe the identified problems and needs of the area;
- b. Determine whether there is Federal interest in participating in a solution to the identified problem(s);
- c. Identify at least one likely solution suitable for Corps of Engineers implementation under current policy; and

d. Produce a study cost-sharing agreement with the sponsor to share feasibility phase costs, if warranted.

The study area includes the city of New Hartford and the surrounding area (see plate 1).

RELATED STUDIES, REPORTS, AND EXISTING WATER PROJECTS

Detailed Project Report for Flood Control at New Hartford, Iowa, U.S. Army Engineer District, Rock Island, December 31, 1963. This report describes an economically feasible 15,000-foot levee.

Flood Insurance Study, City of New Hartford, Iowa, Federal Emergency Management Agency, September 29, 1986. The flood insurance study investigates the existence and severity of flood hazards in the city of New Hartford and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 (see plates 2 and 3).

SECTION 2 - PLAN FORMULATION

ASSESSMENT OF PROBLEMS AND OPPORTUNITIES

PROBLEMS AND OPPORTUNITIES

The city of New Hartford, Iowa, is subject to overbank flooding from Beaver Creek. Most of the city would be inundated by the 1-percent (100-year) flood (see plate 3). There is the opportunity to reduce flood damages due to overbank flooding from Beaver Creek at the city of New Hartford.

EXISTING CONDITIONS

General

New Hartford is located in Butler County in northeastern Iowa about 15 miles west of Waterloo, Iowa. The city has a population of approximately 700 and is located along Beaver Creek, a tributary of the Cedar River.

Geology and Soils

The physiographic region known as the Central Lowlands encompasses the entire state of Iowa. The uplands are characterized by gently rolling terrain. The project lies within a glaciated area. A thin cover of loess overlies the glacial till. The glacial till is identified as the Iowan surface of the Kansan drift. The underlying bedrock is of the Middle Devonian system. A water well log indicates that bedrock is about 60 feet below the ground surface.

Borings were taken in the area to determine subsoil conditions. In general, the surface soils are lean clays or clayey sands about 4 feet thick underlain by about 4 feet of coarse to fine sands.

Hydrology and Hydraulics

Climate

The climate of New Hartford is subhumid midcontinental. The average annual precipitation is 33 inches. An average of 70 percent of the annual precipitation occurs from April through September. The annual temperature range is broad, which is typical of a midcontinental climate. January, the coldest month, averages 15 degrees Fahrenheit (F), and July, the warmest month, averages 73 degrees F. The average annual temperature is 47 degrees F.

Watershed Characteristics

Beaver Creek drains 347 square miles at New Hartford. The creek flows easterly from its head near Bradford, Iowa, to its mouth about 8 miles downstream from New Hartford at the confluence with the Cedar River. The land use within the basin is predominantly agricultural. Floodplain development within the New Hartford corporate limits is primarily residential with some businesses also present.

Floods of Record

A U.S. Geological Survey (USGS) gage, station number 05463000, is located on Beaver Creek just north of New Hartford on Broadway Street. The gage is 8 miles upstream from the confluence with the Cedar River. The period of record for the gage is from 1945 to the present. Major floods that have occurred at New Hartford since establishment of the gage are listed below.

TABLE 1

Floods of Record
Beaver Creek, New Hartford, Iowa

<u>Date</u>	<u>Discharge</u> <u>(cfs)</u>
June 13, 1947	18,000
July 9, 1969	14,900
March 29, 1951	11,600
March 30, 1960	11,200
June 10, 1974	10,500

Discharge Frequency

Flood events of a magnitude that are expected to be equalled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for this study. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equalled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study.

Peak discharges for the 10-, 50-, 100-, and 500-year floods were determined for Beaver Creek at the New Hartford gage in accordance with procedures recommended by the USGS (Interagency Advisory Committee on Water Data, Bulletin No. 17B, *Guidelines for Determining Flood Flow Frequency*, 1981) and are listed in table 2.

TABLE 2

Discharge-Frequency Relationship
Beaver Creek, New Hartford, Iowa

<u>Recurrence Interval (years)</u>	<u>Chance of Annual Exceedence (percent)</u>	<u>Peak Discharge (cfs)</u>
10	10	12,300
50	2	21,300
100	1	24,300
500	0.2	34,100

General Hydraulics

Water-surface profiles for the 10-, 50-, 100-, and 500-year recurrence-interval floods were computed for the study reach using the U.S. Army Corps of Engineers' computer program HEC-2. The program uses the backwater computational procedure generally known as the standard step method to calculate the water-surface profiles. The profiles were used to estimate the existing flood problems and to analyze the proposed alternatives.

The HEC-2 hydraulic analysis for the study area was based on unobstructed flow. Obstructions due to floating debris or ice at man-made structures, such as bridges and dams, can result in higher-than-normal water-surface elevations. The hydraulic analysis of this study does not consider ice or debris effects since they have not been a problem at this site. Thus, the developed water-surface profiles presented in this report are considered valid only if the hydraulic structures remain unobstructed, operate properly, and do not fail.

Water-surface profiles for Beaver Creek at New Hartford are shown on plates 4 and 5.

Cross sections for the Beaver Creek channel and floodplain were surveyed in 1984. Bridge elevations and structural geometry for the Broadway Street bridge crossing Beaver Creek were obtained from project plans and drawings.

Channel and floodplain roughness coefficients used in the hydraulic computations were assigned on the basis of field inspection, photographs, and professional experience. The estimated roughness coefficients (Manning's n-values) in the study reach ranged from 0.055 in the channel to 0.10 in the floodplain.

Social and Economic

The study area is an approximate 200-acre site located on the right descending bank of Beaver Creek. The study area is dominated by residential neighborhoods, with a business district concentration of commercial buildings. Churches, a school, and other public structures also are located in the study area. On-site interviews and residential assessments were conducted to compile an inventory of floodplain properties. Topographic mapping was used to estimate ground and floor elevations. Table 3 identifies area properties by type and estimated value.

TABLE 3

Property List
New Hartford, Iowa

<u>Type</u>	<u>Number of Properties</u>	<u>Estimated Value (\$)</u>
Residential	235	8,660,000
Commercial	27	2,330,000
Public (incl churches)	10	2,520,000

The flood of record occurred in June 1947, with study area flood depths of 2 to 3 feet. Other damaging flood events occurred in 1944, 1950, 1951, 1961, 1969, and 1990. In 1991, flooding occurred in both May and June, with surface depths of up to 2 feet. Information gathered from the city of New Hartford and the Red Cross indicate that 60 to 70 homes and several businesses were affected by the floodwaters. Most damage was to basements and basement contents, with first floor flooding limited to a few structures. Total damages for each of these 1991 events is estimated to be in the \$300,000 to \$400,000 range. The 1991 storm events were of the 5- to 10-percent frequency magnitude. These damage estimates fit well within our study-constructed frequency/damage curve (see table 4).

TABLE 4

Frequency/Damage Relationship
New Hartford, Iowa
(\$1,000's)

<u>Frequency</u>	<u>Recurrence Interval</u>	<u>Residential \$ Damage</u>	<u>Commercial \$ Damage</u>	<u>Public \$ Damage</u>	<u>Total \$ Damage</u>
0.50	2-year	0	0	0	0
0.20	5-year	61.4	9.0	3.0	73.4
0.10	10-year	124.0	68.0	45.0	237.0
0.05	20-year	381.8	223.0	66.0	670.8
0.02	50-year	907.8	484.0	158.0	1,549.8
0.01	100-year	1,533.4	680.0	246.0	2,459.4
0.002	500-year	3,172.6	1,205.0	521.0	4,898.6

Biological

The study area is generally agricultural in character. Beaver Creek is the primary aquatic resource in the New Hartford area. The creek features a natural meandering channel with associated side channels and cutoff bends or oxbow remnants. A well-developed riparian corridor of bottomland hardwood forest is present along both sides of the stream. Field investigations indicated that most of the woody vegetation is secondary growth, with a small percentage of mature-aged trees. This composition suggests past disturbance by grazing and timbering activities.

The *Soil Survey of Butler County, Iowa* (U.S. Department of Agriculture, July 1982) states that nearly 75 percent of Butler County meets the soil requirements for prime farmland. Many of these prime farmland soils also are designated as hydric soils in the *Corps of Engineers Wetlands Delineation Manual* (Technical Report Y-87-1, January 1987). A majority of these lands has been drained and tilled for agricultural production. However, the National Wetland Inventory maps prepared for the New Hartford area indicate that much of the riparian zone bordering Beaver Creek, and

scattered areas surrounding the city, retain wetland characteristics. These areas are shown on plate 6.

Historic Properties

The city of New Hartford was first platted in 1855, and the first two houses built in the village were constructed in 1856 by Charles and S. B. Ensign. Information on the early history and people of New Hartford is summarized in a publication entitled, *New Hartford Remembers*, compiled by the New Hartford Bicentennial Committee in 1976 and on file at the local library.

A coordination letter from the Iowa State Historic Preservation Office dated May 16, 1991, indicated that there are no historic properties within the city of New Hartford currently listed on or determined eligible for the National Register of Historic Places. No archeological surveys have been conducted in the study area, and there are no recorded archeological sites in the area.

If the New Hartford flood protection study is reinstituted in the future, an archeological survey of the proposed levee alignment and any borrow sites, disposal sites, and ponding areas will be required to determine the presence of significant historic properties.

FUTURE CONDITIONS

Significant change in study area habitation is not expected in the foreseeable future. Population has been steady to declining for the past 20 years. Commercial activity in the area is not increasing perceptibly. Therefore, it is reasonable to assume that the future conditions for damageable property (number and type) will not significantly change from existing conditions.

PLANNING OBJECTIVES

NATIONAL OBJECTIVES

The Federal objective of water and related land resources planning is to contribute to national economic development consistent with protecting the Nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements.

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 net benefits that accrue in the planning area and the rest of the nation. Contributions to NED include increases in the net value of those goods and services that are marketed, and also of those that may not be marketed.

SPECIFIC OBJECTIVES WITHIN THE STUDY AREA

It is a specific objective in the study area to reduce damages from over-bank flooding on Beaver Creek for the city of New Hartford.

PLANNING CONSTRAINTS

A number of planning constraints must be considered in the formulation of project alternatives. In general, the study is constrained by all applicable laws of the United States and the State of Iowa, all executive orders of the President, the Water Resources Council's Principles and Guidelines, and all regulations of the Corps of Engineers. Specifically, there is a \$5,000,000 Federal funding limitation for individual Section 205 projects.

DEVELOPMENT OF ALTERNATIVE PLANS

AVAILABLE MEASURES

The range of available measures can be divided into two categories - structural and nonstructural. Structural measures include dams with reservoirs, dry dams, channelization measures, levees, walls, diversion channels, ice-control structures, and bridge modifications. All such measures reduce the frequency or extent of damaging flows.

Nonstructural measures include permanent floodplain evacuation, flood-proofing measures, flood-warning system, and regulation of floodplain uses. These may be used alone or in conjunction with structural measures.

FORMULATION CRITERIA

Plans are formulated in consideration of four criteria:

1. Completeness is the extent to which a given alternative plan provides and accounts for all necessary investments or other actions to ensure the realization of the planned effects. This may require relating

the plan to other types of public or private plans if the other plans are crucial to realization of the contributions to the objective.

2. Effectiveness is the extent to which an alternative plan alleviates the specified problems and achieves the specified opportunities.

3. Efficiency is the extent to which an alternative plan is the most cost-effective means of alleviating the specified problems and realizing the specified opportunities, consistent with protecting the Nation's environment.

4. Acceptability is the workability and viability of the alternative plan with respect to acceptance by State and local entities and the public and compatibility with existing laws, regulations, and public policies.

A plan that reasonably maximizes net economic development benefits, consistent with the Federal objective, is to be formulated. This plan is to be identified as the national economic development plan.

DESCRIPTION OF PLANS

Seven alternatives were formulated for the study area:

Floodproofing

Floodproofing is the process by which structures subject to flooding are, by generally structural methods, made waterproof and less likely to suffer damages from floodwaters. This measure involves raising existing structures, properly elevating future structures, or providing panels that may be placed over building doors and windows to inhibit flood damages. There are approximately 150 to 200 structures in New Hartford which are subject to flooding.

Permanent Floodplain Evacuation

Permanent floodplain evacuation involves acquiring affected homes or businesses and relocating the occupants and their possessions to homes or buildings that are outside of the floodplain, of similar worth, and in decent, safe, and sanitary condition.

Relocation of homes or businesses involves physically lifting the structure off its present foundation, moving it, and then lowering it onto a suitable foundation outside of the floodplain. Relocation is considered where it is structurally feasible and less costly than evacuation. Some structures,

e.g., those constructed of brick or steel, are not normally relocated due to structural limitations.

Permanent evacuation for New Hartford would involve 150 to 200 residential and commercial structures.

Flood-Warning System

A flood-warning system includes a water level sensing device or devices which are connected to an alarm. As water levels rise and reach a potentially threatening level, the alarm is activated. This would alert city officials of imminent flooding and prompt them to warn affected residents via some public warning system. Flood-warning systems help to assure residents' safety by providing evacuation time.

The city has a civil defense siren system at the city hall. The addition of a system with upstream gages would be required to make the system complete.

Levees

A ring levee encompassing the developed areas of New Hartford was justified in the December 1963 reconnaissance study (see plate 7).

An updated and modified version of this plan was investigated in detail. The 14,500-foot alignment would encircle residential areas to the east, west, and north, and the railroad and grain elevator to the south. The plan would require several road ramps and two railroad closure structures. The levee would range from 8 to 10 feet high to provide protection during 50- to 100-year floods (see plate 8.)

The foundation beneath the levee would be stripped to remove unsuitable material. Inspection trenches would be excavated to a depth of about 5 feet to assure that there are no buried pipes or unsuitable materials in the foundation. The trenches would be backfilled with compacted fill.

The levee embankment would be constructed of compacted fill. Impervious soils would be placed on the riverside slopes and more pervious materials would be placed on the landside slopes. The levee would have a crown width of 10 feet with 1 vertical on 3 or 4 horizontal slopes.

Slope stability problems are not expected, but analyses would be performed if areas of soft foundation soils were encountered. Because of the relatively low head and short duration of the design flood, landside berms probably would not be required.

A field reconnaissance of borrow areas proposed by the city of New Hartford indicates that suitable borrow materials in sufficient quantities are available within a mile of the project area. Potential borrow areas are shown on plate 9. Suitable riprap is available within 20 miles of the project. Concrete available locally could be used in the structures, but would need to be evaluated in detail.

Channelization

Channelization improves a stream's conveyance of water by realignment, widening, or deepening of the streambed. A channel modification of about 7,000 feet in length would be required for this alternative. The channel would start about 5,000 feet upstream of the Broadway Street bridge and extend about 2,000 feet downstream of the bridge.

Reservoir

A reservoir is an artificial lake or pool used as a temporary storage area for floodwaters. These structures are constructed upstream of areas that encounter significant flooding problems. A reservoir covering about 6 square miles would be required to protect the area.

Bridge Modifications

Modifications to bridges are performed when the bridges impede stream flow. By modifying or removing the bridge, flood profiles can be lowered, which may reduce flooding in affected areas. There is one bridge over Beaver Creek on Broadway Street.

EVALUATION OF ALTERNATIVE PLANS

Four accounts are established to facilitate evaluation and display of the effects of alternative plans. These accounts are: national economic development (NED), environmental quality (EQ), regional economic development (RED), and other social effects (OSE). These four accounts encompass all significant effects of the plan on the human environment and encompass social well-being.

The NED account shows effects on the national economy. The EQ account shows effects on ecological, cultural, and aesthetic attributes of significant natural and cultural resources that cannot be measured in monetary terms. The RED account shows the regional incidence of national economic development effects, income transfers, and employment effects.

The OSE account shows urban and community impacts and effects on life, health, and safety.

An initial evaluation of the slate of alternatives was conducted to identify the options with the greatest likelihood of justification. The evaluation was based upon experience with similar projects, expected benefits and costs, and professional judgment. The following alternatives were eliminated from further consideration as noted.

Floodproofing - There are approximately 150 to 200 structures in New Hartford which are subject to flooding. The costs associated with floodproofing are greater than potential benefits realized.

Permanent Floodplain Evacuation - There are approximately 150 to 200 structures in New Hartford which would have to be relocated to high ground. This plan would not have economic justification.

Flood-Warning System - The low flood heights and low velocity of floodwaters greatly reduce the benefits of a flood-warning system. The city currently has in operation an effective, practiced procedure for sounding a flood alert. A flood-warning system could be implemented as a local measure.

Channelization - Channelization would have significant adverse environmental impacts. This would not have economic justification.

Reservoir - The reservoir would have to cover about 6 square miles in order to protect the city of New Hartford. This plan would not have economic justification.

Bridge modifications - The existing bridge on Beaver Creek at Broadway Street does not significantly impact flooding at the city of New Hartford. This is not a viable flood reduction solution.

The remaining alternative is a levee. Levee alternatives were found to lack economic justification (see table 5). An updated economic analysis of the 1963 levee plan (plate 7) would be similar to that of the 1991 levee alternative.

TABLE 5

Evaluation of Levee Alternatives - 1991 Plan
National Economic Development
 (1991 Price Levels, 50-year Life, 8-3/4%)

	<u>50-Yr</u> <u>Design</u>	<u>100-Yr</u> <u>Design</u>
Total Project Benefits	\$ 109,500	\$ 136,800
Existing Flood Control Benefits	(105,400)	(132,300)
Residential (Structure, content)	66,000	73,500
Commercial	29,800	33,100
Public	9,600	10,800
Flood Insurance Savings	0	14,900
Future Growth-Residential Content	(4,100)	(4,500)
Project Cost Estimates		
Estimated Construction Cost	\$2,821,000	\$3,415,000
Interest During Construction	254,000	308,000
Total Annual Charges	\$ 274,200	\$ 331,800
Interest	(269,100)	(325,800)
Amortization	(4,100)	(5,000)
Operation & Maintenance	(1,000)	(1,000)
Net Annual Benefits	\$ -164,700	\$ -195,000
Benefit-to-Cost Ratio	0.40	0.41

SECTION 3 - FUTURE STUDY REQUIREMENTS

Future Federal studies will not be required since the project lacks economic feasibility.

SECTION 4 - SUMMARY OF STUDY MANAGEMENT, COORDINATION, PUBLIC VIEWS & COMMENTS

A Notice of Initiation was sent to the public on June 11, 1990. Correspondence detailing study coordination is found in Appendix A - Pertinent Correspondence.

Several meetings and site visits were held with city officials to discuss the study process and to define problems and opportunities:

A meeting was held on October 2, 1990, at the New Hartford city hall with city representatives to discuss potential flood control solutions.

On April 9, 1991, Corps personnel conducted a field trip to New Hartford to evaluate potential borrow sites proposed by city staff and to evaluate potential environmental impacts of a project.

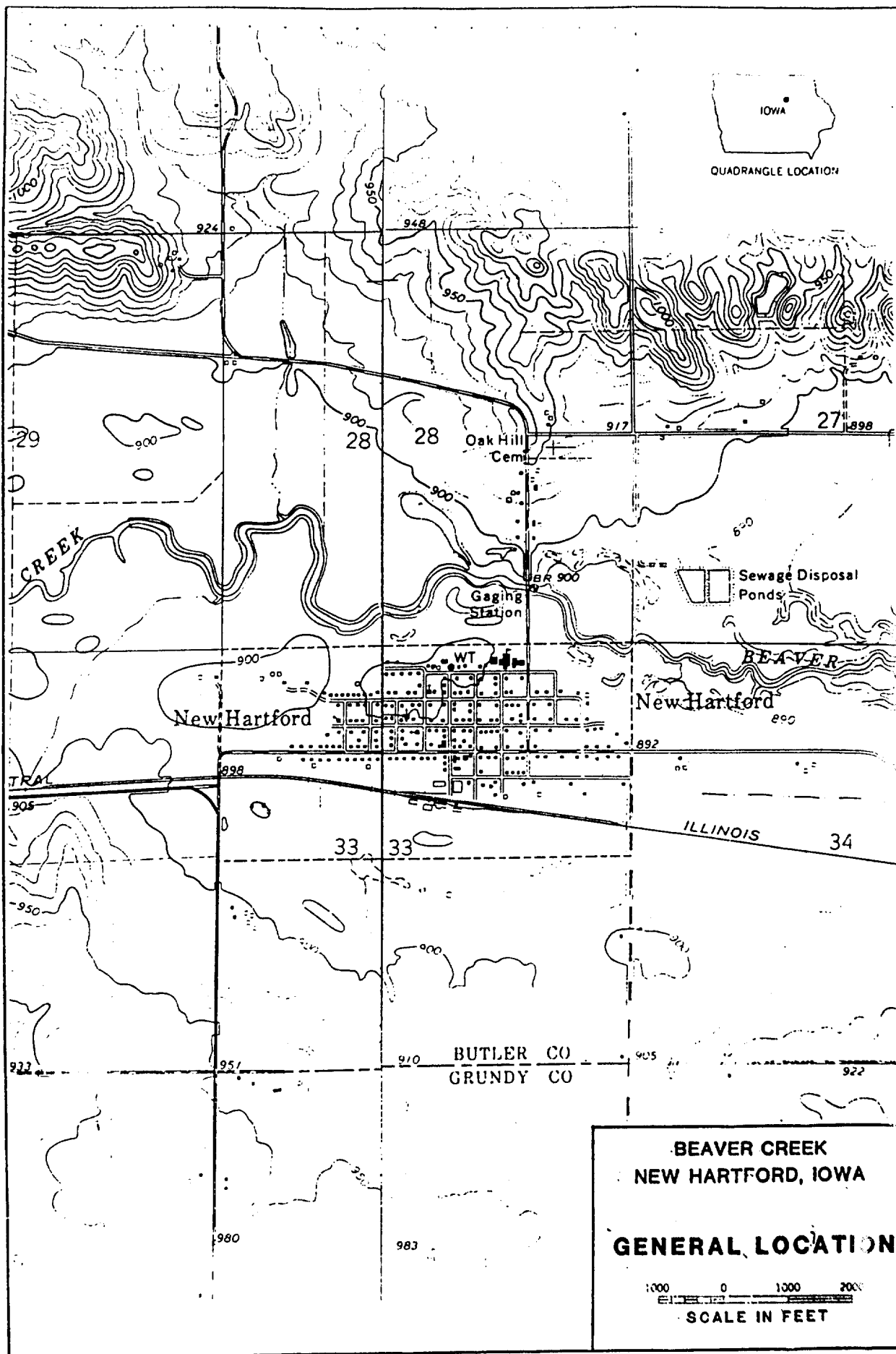
On June 4, 1991, a site visit was conducted to view damages from recent flooding.

SECTION 5 - RECOMMENDATIONS

Based on the findings of this reconnaissance study, I recommend that the Section 205 Flood Damage Reduction Study for Beaver Creek, City of New Hartford, Iowa, be terminated at this time.

A handwritten signature in cursive script, reading "Dudley M. Hanson".

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



100 Year Flood Boundary

100 Year Flood Boundary

FLOODWAY Right-of-Way

100 Year Flood Boundary

100 Year Flood Boundary

American 100 Year Flood Boundary

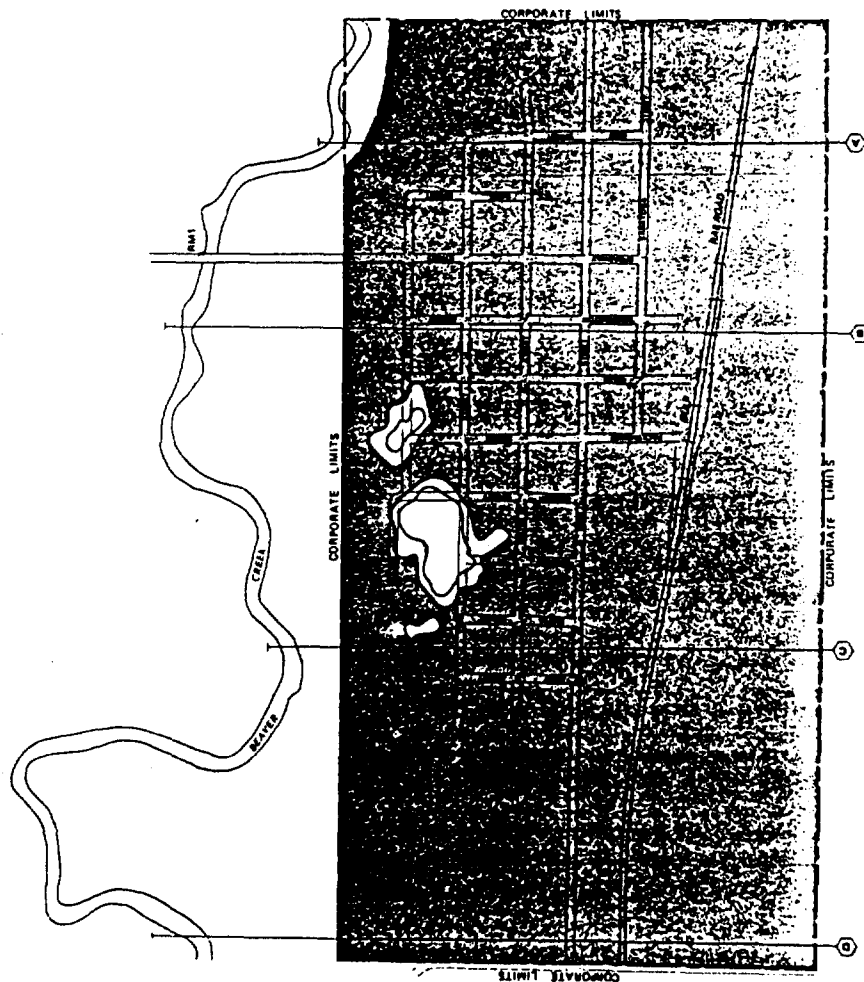
Cross Section View

Elevation Reference Mark

Rail-Map

Rail-Map

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APPROXIMATE SCALE
1" = 1/4" MILE

NATIONAL FLOOD INSURANCE PROGRAM

FLOODWAY FLOOD BOUNDARY AND FLOODWAY MAP

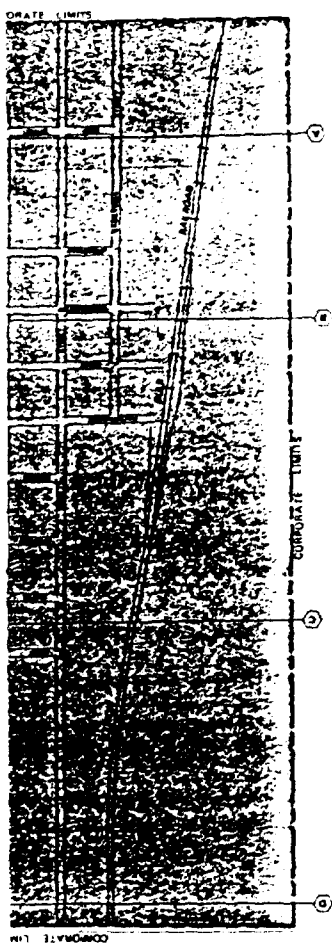
CITY OF
NEW HARTFORD,
IOWA
HUTTENLOUGH COUNTY

(ONLY PANEL PRINTED)

COMMUNITY PANEL NUMBER
19003B 0001
EFFECTIVE DATE:
SEPTEMBER 29, 1966

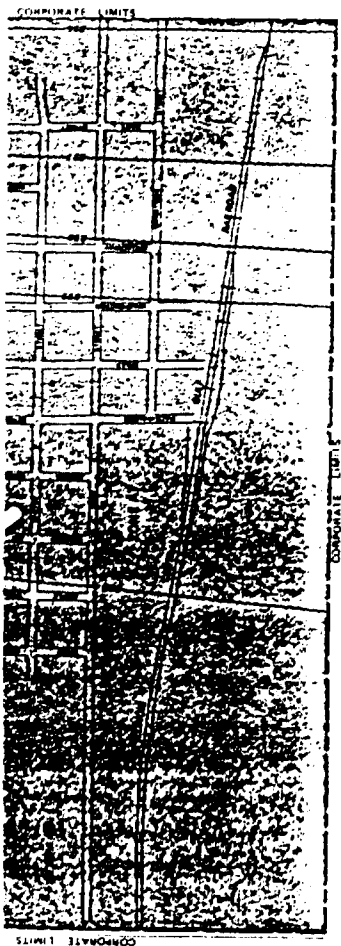


Federal Emergency Management Agency



ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FEET)	LOCATION
1	841.12	Checked by an independent survey of floodway limits and floodway crest



The Department of Flood Insurance is a part of the Federal Emergency Management Agency. It is authorized to issue flood insurance policies and to provide flood insurance coverage to property owners in the United States.



APPROXIMATE SCALE
1" = 100'

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
NEW HARTFORD,
IOWA
BUTLER COUNTY

(ONLY PANEL PRINTED)

COMMUNITY-PANEL NUMBER
190318 0001 B

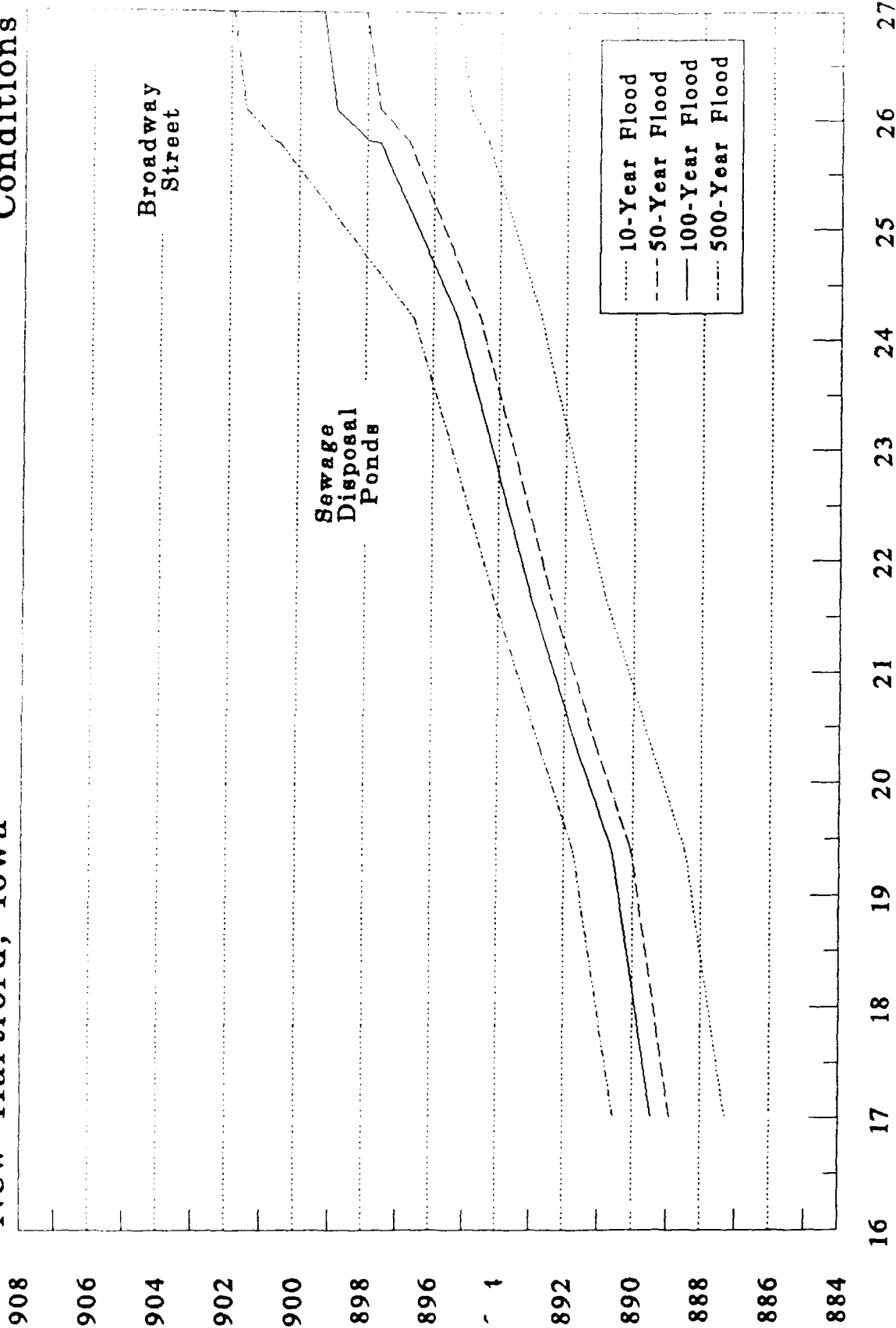
EFFECTIVE DATE:
SEPTEMBER 29, 1966



Federal Emergency Management Agency

Beaver Creek New Hartford, Iowa

Existing
Conditions

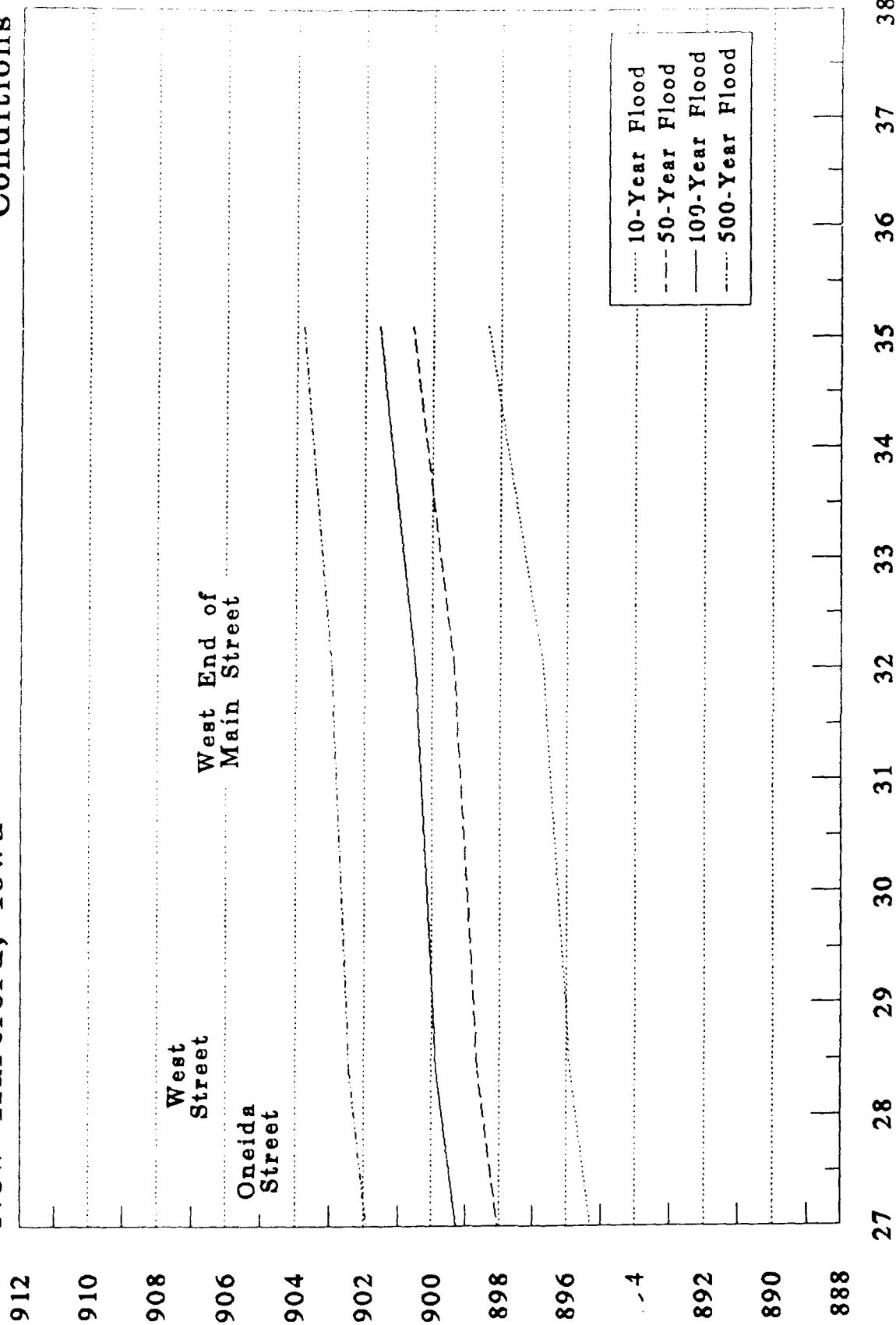


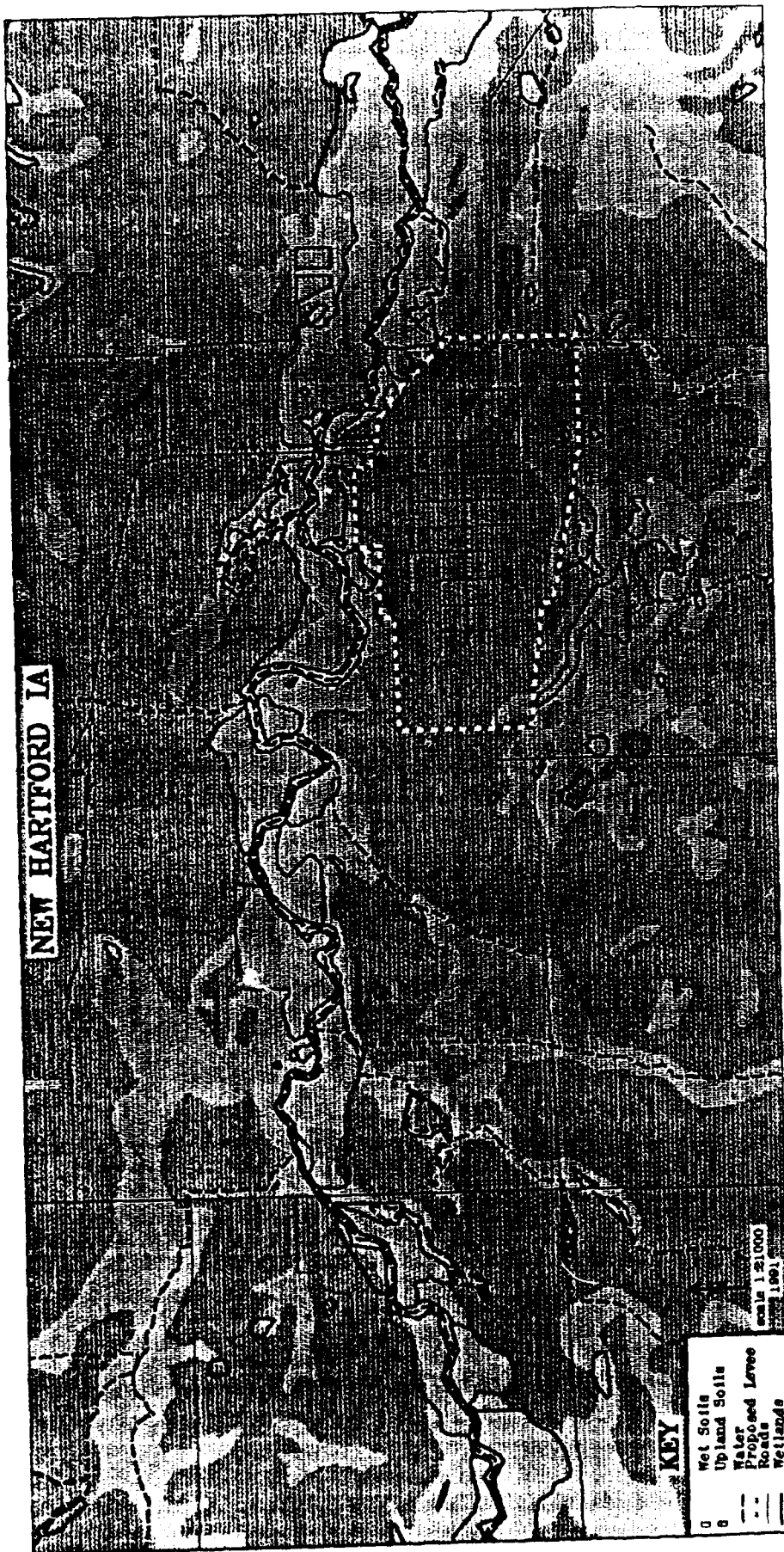
Water-Surface Elevation, feet NGVD

1000's of Feet above County Line

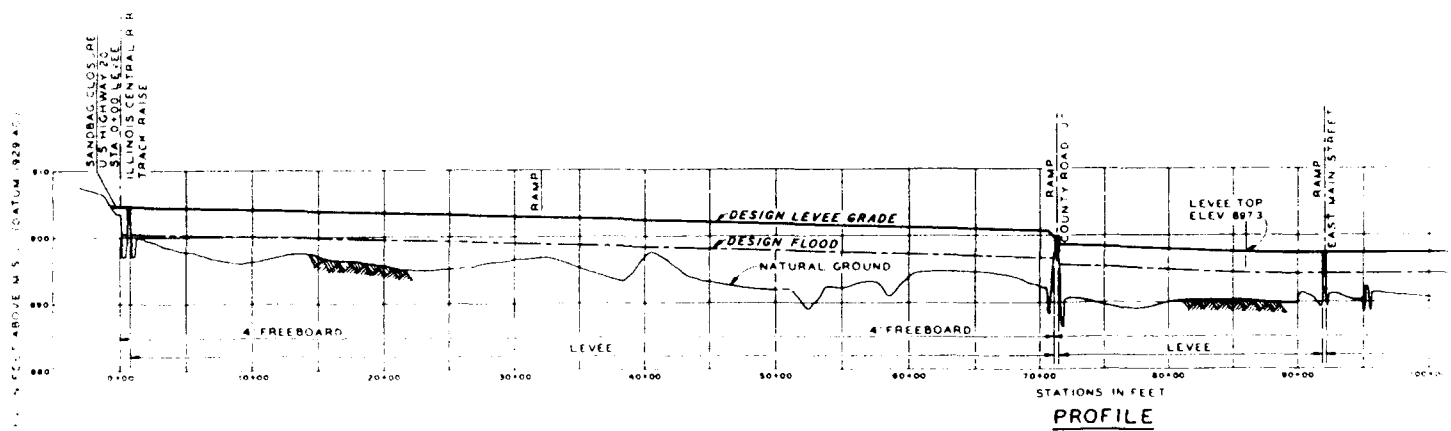
Beaver Creek New Hartford, Iowa

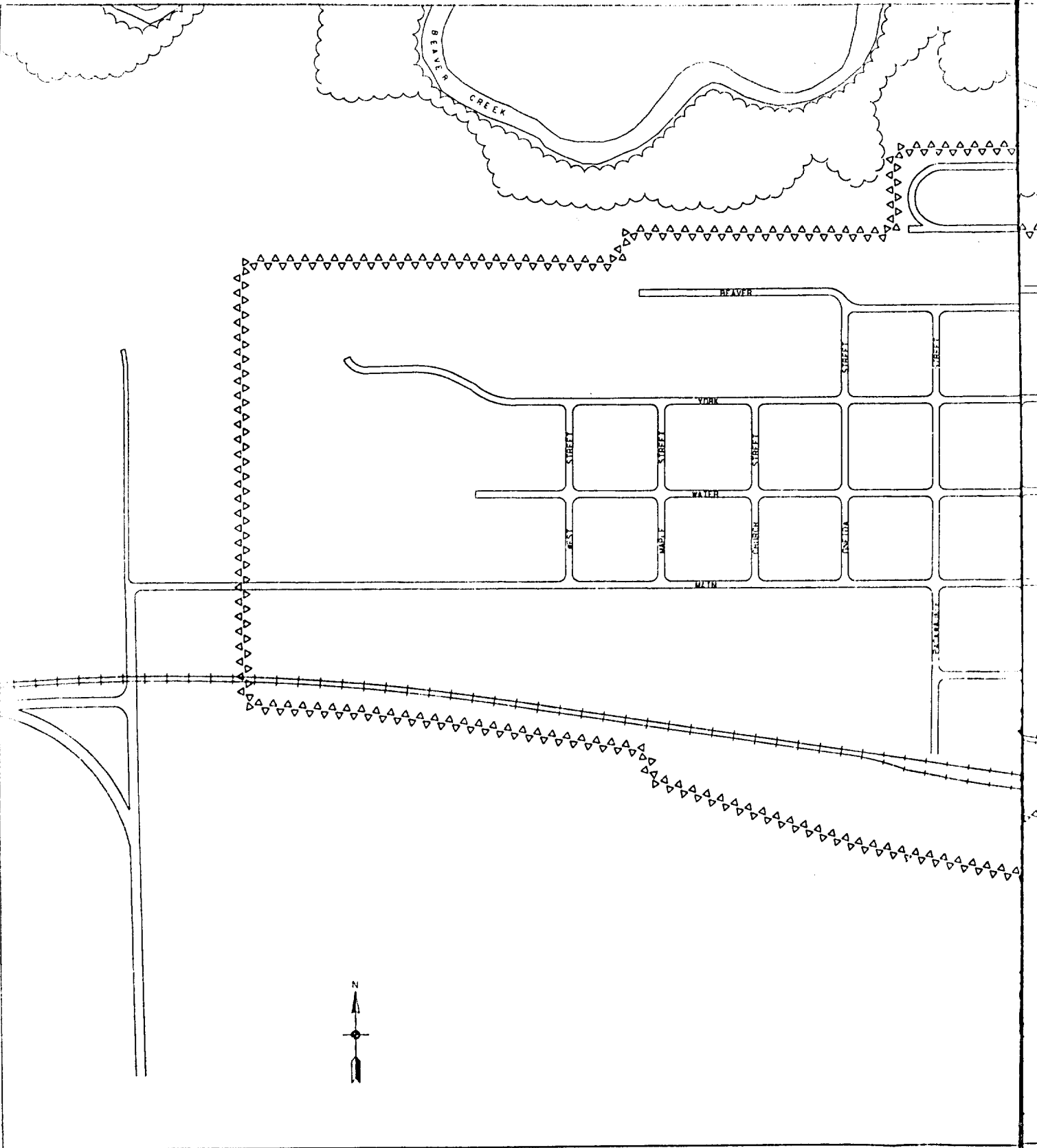
Existing
Conditions

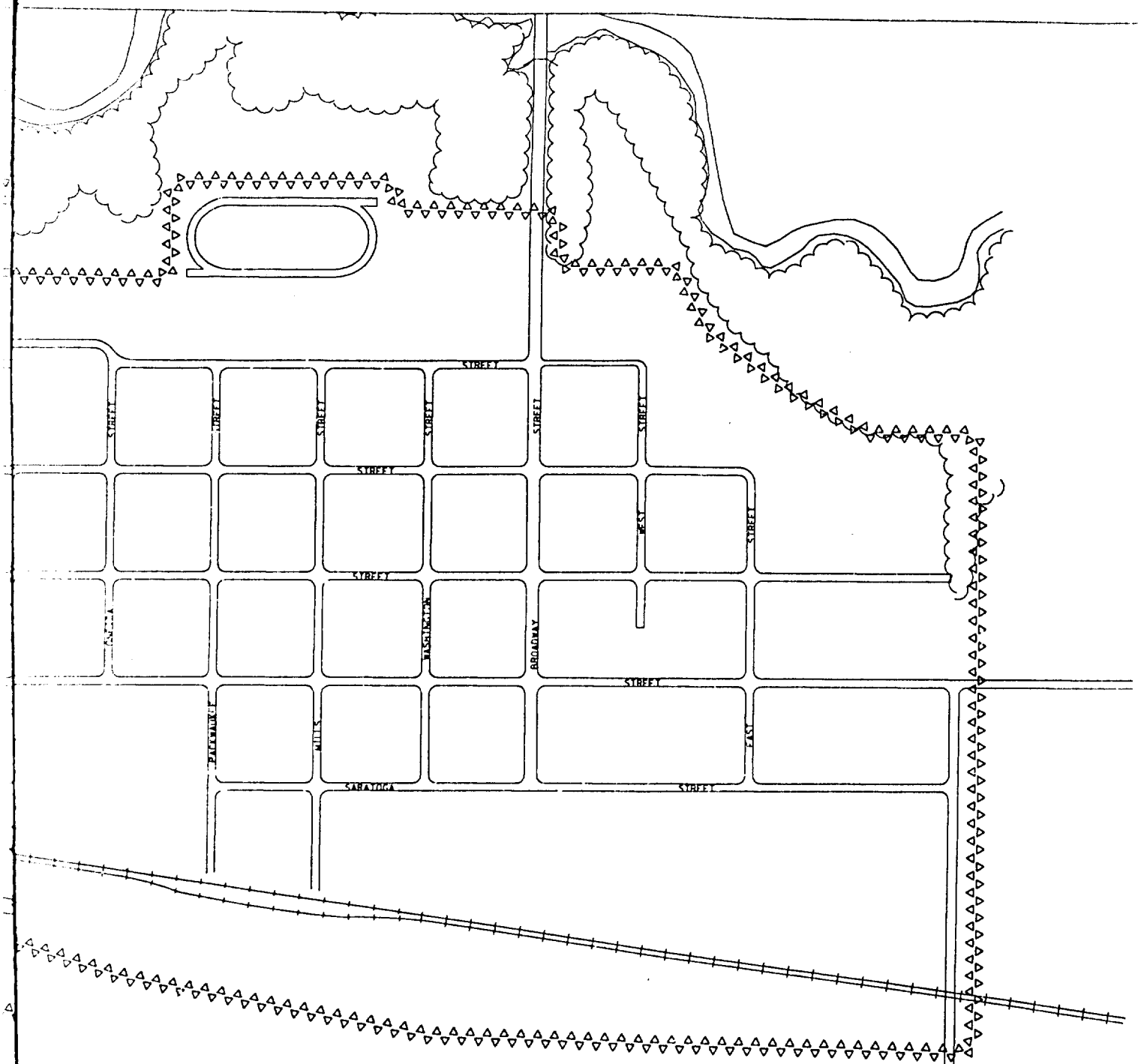




WETLANDS OF
NEW HARTFORD, IOWA





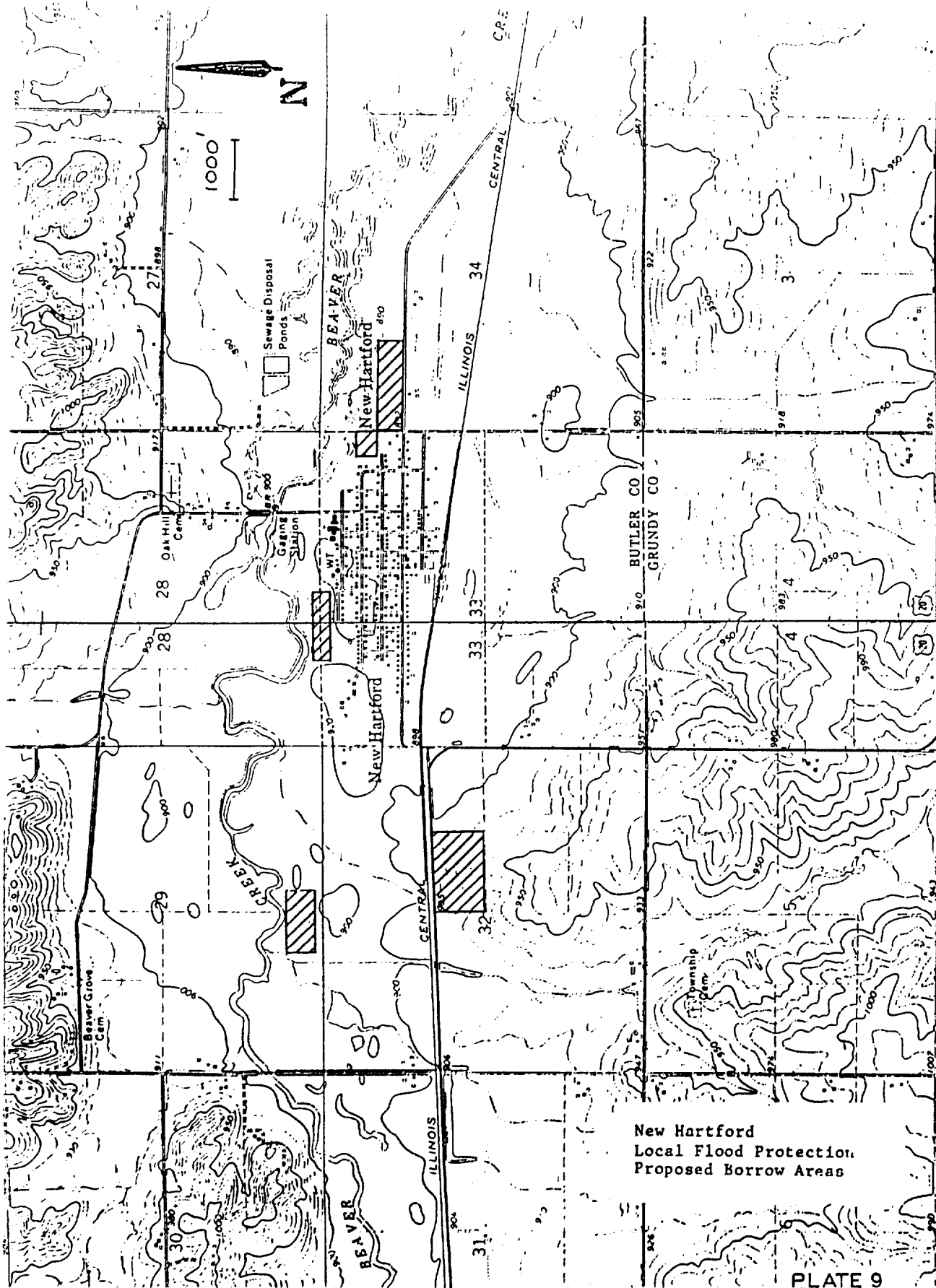


US Army Corps
of Engineers
New Hartford District

BEAVER CREEK
NEW HARTFORD, IOWA

1991 PLAN

200 0 200
SCALE IN FEET



New Hartford
Local Flood Protection
Proposed Borrow Areas

PERTINENT CORRESPONDENCE

A

P

P

E

N

D

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X

A

RECONNAISSANCE REPORT
SECTION 205 FLOOD DAMAGE REDUCTION STUDY
BEAVER CREEK, NEW HARTFORD, IOWA

APPENDIX A
PERTINENT CORRESPONDENCE

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<u>Subject</u>	<u>Page</u>
Letter from the City of New Hartford, Iowa, dated February 7, 1990, making formal request for reconnaissance study	A-1
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City of New Hartford

Office of the Clerk
NEW HARTFORD, IOWA 50660

February 7, 1990

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 New Hartford hereby makes formal application for a study of a dike around New Hartford.

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 New Hartford 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 New Hartford can provide the following local cooperation and participation.

1. Provide without cost to the United States all land, easements and right-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.

District Engineer
U.S. Army Engineer District, Rock Island

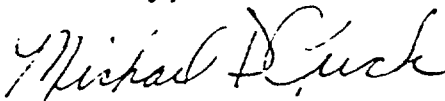
February 7, 1990
Page 2

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,

A handwritten signature in cursive script, reading "Michael D. Luck".

Michael D. Luck
Mayor



State Historical Society of Iowa

The Historical Division of the Department of Cultural Affairs

May 16, 1991

In reply refer to:
R&C#: 910312006

Dudley M. Hanson, P. E.
Chief, Planning Division
Rock Island District Corps of Engineers
Clock Tower Building
P. O. Box 2004
Rock Island, IL 61204-2004

RE: COE - BUTLER COUNTY - NEW HARTFORD - EVALUATE FLOOD PROTECTION

Dear Mr. Hanson:

We have reviewed our site records and maps for the New Hartford vicinity. No archeological sites have been recorded in the area, and no archeological surveys have been conducted. Similarly, no architectural or historical sites have been recorded in the New Hartford vicinity. No previous architectural or historical surveys have been conducted in Butler county.

If we can be of further assistance, please contract the Review and Compliance program at 515-281-8743.

Sincerely,

A handwritten signature in cursive script that reads "Kathy Gourley".

Kathy Gourley
Archeologist, Review and Compliance Program
Bureau of Historic Preservation

/kh

cc Ken Barr

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Reconnaissance Report
Section 205 Flood Damage Reduction Study
Beaver Creek
New Hartford, Iowa
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WATERLOO, IA 50701

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WASHINGTON DC 20004

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DEPT OF ENERGY - ROOM 4G064, 1000 INDEPENDENCE AVE SW
WASHINGTON DC 20585

FEDERAL EMERGENCY MANAGEMENT ADMIN. 500 C STREET SW
ROOM 713, WASHINGTON DC 20472

OFFICE OF ENVIRONMENTAL PROJ REVIEW, DEPARTMENT OF INTERIOR
MS 4239-MIB, 18TH & C STREETS NW
WASHINGTON DC 20240

MR RICHARD NELSON - FIELD SUPERVISOR, U.S. FISH & WILDLIFE SERVICE
1830 SECOND AVE. - 2ND FLOOR, ROCK ISLAND, IL 61201

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STATE CONSERVATIONIST, SOIL CONSERVATION SERVICE USDA
693 FEDERAL BLDG, 210 WALNUT STREET
DES MOINES IA 50309

WATER RES. RESEARCH CENTER, ATTN DR AL AUSTIN
5 TOWN ENGINEERING BUILDING, IOWA STATE UNIVERSITY
ES IA 50010

AREA DIRECTOR-MINNEAPOLIS AREA, BUREAU OF INDIAN AFFAIRS
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IOWA DEPT OF NATURAL RESOURCES, 123 NORTH CAPITOL STREET
IOWA CITY IA 52240

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