US Army Corps
of Engineers
St. Paul District

OPERATION AND MAINTENANCE MANUAL

FLOOD CONTROL PROJECT

LAKE PULASKI

WRIGHT COUNTY, MINNESOTA

JUNE 1988

PREFACE

Construction of the Lake Pulaski, Wright County, Minnesota, flood control project under the direction of the Corps of Engineers was essentially completed in January 1987. With the transfer of the completed project to the Lake Pulaski Improvement District, officials of the district will assume responsibility for its operation and maintenance. The Corps of Engineers has prepared this manual to assist local officials who will ultimately be in charge of this project in complying with the regulations for operation and maintenance of flood control works as prescribed by the Secretary of the Army in conformance with Section 3 of the 22 June 1936 Flood Control Act, as amended.

The manual and appendices contain the latest approved flood control regulations, maps, drawings, tables, and references pertinent to the operation and maintenance of the project.

The project, as designed and constructed, will greatly reduce the possibility of flooding. However, continued successful functioning of the project will depend upon the manner in which responsible local officials maintain the project. Careful inspection, proper maintenance, and establishment of effective operational procedures can prevent serious flood damages which could result from failure of any part of the project.

DEPARTMENT OF THE ARMY
St. Paul District, Corps of Engineers
1421 U.S. Post Office & Custom House
St. Paul, Minnesota 55101-1479

FLOOD CONTROL PROJECT
LAKE PULASKI
WRIGHT COUNTY, MINNESOTA
OPERATION AND MAINTENANCE MANUAL

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INTRODUCTION

The purpose of this manual is to provide guidance and instruction for the proper operation and maintenance of the flood control project facilities at Lake Pulaski. For greater ease in use, the manual is divided into two sections:

Part I. This section presents a description and some historical information on the project.

Part II. This section gives details on the operation and maintenance of the project.

The scope of the manual is limited to essential operation and maintenance instructions. The manual does not contain information believed to be of common knowledge to those local officials who are responsible for the project.

PART I - GENERAL

AUTHORIZATION AND LOCATION

The project for local flood control improvements at Lake Pulaski, Wright County, Minnesota, was authorized under the provisions of Section 205 of the Flood Control Act approved 30 June 1948, as amended. Lake Pulaski is located about 45 miles northwest of the Twin Cities. Part of the lake is within the city limits of Buffalo, Minnesota. Prior to construction of this project, the lake was landlocked. This means that there was essentially no natural or artificial outlet from which water in the lake can exit. Therefore, historically, the elevation of the lake has fluctuated considerably. In the past, this situation has led to flooding problems around the lake.

DESCRIPTION OF PROJECT

General

The structural features of the flood control project at Lake Pulaski consist of a pumping station and combination force main and gravity flow

pipeline system. The entire project is designed to control rising lake levels during periods of high water by stabilizing the water elevation of Lake Pulaski over the long term. The elevation to which the lake will be stabilized was dependent upon what was permissible under State statute as executed by the Minnesota Department of Natural Resources (DNR). According to State of Minnesota regulations, pumping more than 1-1/2 feet below what is termed the Natural Ordinary High Water Level (NOHWL) is not allowed. The NOHWL is defined as the highest water level that has persisted for a sufficient period of time to leave recordable evidence upon the landscape. In 1985, following a series of public hearings, the NOHWL at Lake Pulaski was officially established at elevation 967.5 feet above mean sea level (msl). The DNR has, therefore, permitted pumping at Lake Pulaski to elevation 966 feet msl.

Appendix A, which is bound separately, contains a set of as-built drawings showing details of the project. The Decision Report for Flood Control, Lake Pulaski Stabilization Project, City of Buffalo and Wright County, Minnesota, December 1985, contains additional information on the planning and design of the project.

Pumping Station

a. General. The pumping station is located in Griffing Park, which is on the southwestern shore of Lake Pulaski. Total station capacity is 8,000 gallons per minute (gpm). The station consists of two separate structures. There is a wet well which was cast, sunk into place, and tied into a sheet pile wall. This 10-foot by 12-foot concrete structure houses two 4,000 gpm submersible pumps. A dry well constructed of a 10-foot diameter precast manhole houses the pipe valves and is located 15 feet landward of the wet well. An electrical panel is located beside the wet well and provides control for the pumps.

b. Pumps. The storm water pumps consist of two Hydr-O-Matic submersible pumps powered by 75 hp electric motors.

c. Controls. Pump operation is controlled manually but there is also an automatic shutoff at 966 feet msl. Manual control is provided by four push-button type switches, one start and one stop for each pump. Automatic control

is provided by float type mercury switches. The pumps are protected against overheating and phase failure by alarm circuits, and the starting circuits are equipped with backspin timers to ensure against plugged starting and possible overload.

More specific details of all features can be found under separate cover either on the as-built drawings (Appendix A) or in the "Installation and Service Manual" supplied by the contractor.

Pipeline System

A 20-inch diameter polyvinyl chloride (PVC) force main (pressure line) extends from the pumping station approximately 2,140 feet to the high point in the system near County Highway 114. Water from Lake Pulaski will be pumped a vertical distance of approximately 20 feet from the intake area at the pumping station to the end of the force main. A gravity flow line begins at this location and extends an additional 4,750 feet. (Various sizes of reinforced concrete pipe (RCP) were used throughout this portion of the system. Refer to the as-built drawings for specific information.) Manholes were placed at various locations along the gravity flow line. Their location, size, and pertinent elevation data are also part of the information included in the as-built drawings.

The gravity flow portion of the system, from the junction with the force main, follows Highway 114, crosses behind the Buffalo High School football stands to County Highway 25, then follows this road along the east side continuing to State Highway 55. There it turns east for approximately 400 feet where it crosses Highway 55 and the Soo Line Railroad tracks. At this point, it connects with an existing storm sewer system of the city of Buffalo. The city recently upgraded this system to handle flows pumped from Lake Pulaski and to provide additional capacity for future city development.

Natural Drainage

The city's storm sewer system outlets into Buffalo Lake at Lake Boulevard and First Avenue Northwest. From this point onward, it joins the natural

drainage system which flows through Buffalo Lake, Deer Lake, Mill Creek, and on into the North Fork of the Crow River.

Gages

Staff gages to monitor water surface elevations on Lake Pulaski as well as on other downstream lakes have been installed to aid in the operation of the project. The location of each gage is given below.

Lake Pulaski - Direct read wire weight gage located on the face of the pumping station.

Buffalo Lake - This gage is set two times each year; therefore, the type, location, and "zero" gage reading vary depending on the season. In the summer, a staff gage is placed at the south end of the lake near the Mink Lake channel. During the winter, a hub is set under the ice on the north side of the lake in the vicinity of what is currently the House of Lo Restaurant. Information on the exact location and elevation to which the gage is currently set can be obtained from the Chief of Operations, City of Buffalo Water Department.

Deer Lake - Direct read wire weight gage located on the face of the County Road 108 bridge.

CONSTRUCTION HISTORY

A contract was awarded on 29 September 1986 for the construction of the flood control project at Lake Pulaski. It was considered complete in June 1988. The construction was done under Contract DACW37-86-C-0060 by Lametti & Sons, Inc., 16028 Forest Boulevard, P.O. Box 375, Hugo, Minnesota 55308.

LOCAL COOPERATION REQUIREMENTS

Prior to project authorization and commencement of construction, local interests were required to furnish a number of assurances. These are contained in a signed local cooperation agreement included in Appendix B of this report. Most of the responsibilities of the local sponsor center around actual construction of the project. However, article IIc of this document requires

that the local sponsor be solely responsible for operating, maintaining, and rehabilitating the project after completion (reference article VIII).

As part of the maintenance responsibility, the local sponsor (Lake Pulaski Improvement District) grants the Government a right to enter, at reasonable times and in a reasonable manner, upon lands which the district owns or controls, for access to the project for the purpose of inspection. If such inspection shows that the district, for any reason, is failing to operate or maintain the project in accordance with the assurances herein, and has persisted in such failure after a reasonable notice in writing by the Government delivered to the District Board, the Government shall have the further right to enter the land for the purpose of operating and maintaining the project. Operation and maintenance by the Government in such an event shall not operate to relieve the district of responsibility to meet its obligations as set forth in the Local Cooperation Agreement, or to preclude the Government from pursuing any other remedy at law or equity.

PART II - OPERATION AND MAINTENANCE

REGULATIONS AND PROCEDURES

Approved Regulations

Pursuant to the provisions of Section 3 of the Flood Control Act approved 22 June 1936, regulations governing the maintenance and operation of flood control works have been prescribed by the Secretary of the Army and published under Title 33, Navigation and Navigable Waters, Chapter II, Part 208, Flood Control Regulations. Although the Lake Pulaski project has few of the features generally associated with flood protection, these regulations should be periodically reviewed for the general responsibilities of the local sponsor. (See Appendix C.) In particular, Section 208.10a and 208.10f should be noted.

Procedure for Insuring Compliance with Regulations

The District Engineer or his representative will be kept informed as to the extent of compliance with approved regulations for operation and maintenance through a periodic inspection of the project by the Corps and through a careful analysis of an annual report submitted by the local operating and maintaining agency. (Specific information required in this annual report is contained in a subsequent section.)

The Corps will inspect the project at least once a year, and at other times as may be required. The findings of these inspections will be transmitted to the responsible project operating officials and will include recommendations for any remedial work considered necessary to maintain the project in a satisfactory operating condition. This remedial work should be completed promptly by the local sponsor, and the District Engineer shall be advised upon its completion.

Superintendent

The Lake Pulaski Improvement District will designate an official, called the Superintendent, who will be responsible for carrying out the provisions for operation and maintenance of the flood protection project. The

superintendent's name, address, and telephone number shall be given to the District Engineer. Whenever there is a change of project superintendent, the District Engineer should be advised. In addition to the duties outlined in other portions of the manual, the superintendent has a general responsibility for developing and maintaining an organization that can efficiently carry out the maintenance and operation of the facility during periods when this stabilization system is actually in operation and the inspection and maintenance of the project works at all other times.

Improvements or Alterations

No improvement or change shall be made in any feature of the project without approval of the District Engineer. Therefore, prior to initiating improvements or changes, two complete sets of plans of the proposals shall be submitted for consideration and approval to the District Engineer, St. Paul District, Corps of Engineers, 1421 U.S. Post Office and Custom House, St. Paul, Minnesota 55101-1479. Submission of the plans should be sufficiently in advance of initiation of the proposed change to permit adequate study and consideration of the work. In addition, any changes in the system need to be coordinated with the City of Buffalo, because the Corps project ties into the city's storm sewer system, and with the Minnesota Department of Natural Resources, because of their permitting responsibilities.

After completion of any work, the District Engineer should be furnished drawings, in duplicate, or reproducible prints, showing any improvements or alterations as finally constructed.

Annual Report to the Corps of Engineers

An annual report covering inspection, maintenance, and operation of the protective works should be submitted to the District Engineer each year on the first of October. The first report should be made by October 1, 1988. A sample copy of the form for reporting inspections can be found in Appendix D. (This form includes the address to which it should be returned.) In addition to the completed inspection checklist, each report should summarize the condition of the entire system, maintenance work done during the past 1-year period, action taken on measures considered necessary by the District Engineer

or his representatives, schedule of maintenance work for the next 1-year period, and the manner in which the project functioned during any periods of high water experienced in the last year.

In conjunction with the inspection information submitted, a copy of any gage readings, water quality testing results, and pump operation data taken from the previous year should be provided. Forms for logging in all of this information are included in Appendix D.

MAINTENANCE

Inspection

The person officially designated as the superintendent is in charge of maintaining and inspecting the project works. Inspections of the project should be made by the superintendent to be certain that:

1. Guard railings at the pump station are being maintained in acceptable operating condition.

2. There is no debris in the intake area of the pump station. This should be checked prior to commencement of any pumping, and otherwise periodically during open-water periods.

Structural Maintenance

Any equipment removed from the system for repair or replacement should be returned or replaced as soon as practicable and shall be trial operated after reinstallation. Repairs requiring removal of equipment from the plant should be made during off-use seasons insofar as practicable.

1. Pipeline. Once every 3 to 5 years, a general inspection of the pipeline system should be made. This inspection should be detailed enough to insure that sediment is not built up in the line. Of particular importance is the gravity flow portion of the system, as velocities in this section are rather low.

2. Pump and Control Station. Paragraph 208.10 (f) (1) of the Flood Control Regulations specifies detailed requirements for periodic inspection and trial operation of all equipment in the pumping station to insure availability of the station for instant use. Detailed procedures for preparatory work and trial operations to assure proper performance of the pumping equipment during flood periods follow.

a. General. Prior to each pumping season, the station pumping equipment should be tested to ensure that it is functioning properly.

b. Verify pump starter and alarm circuits.

(1) Inspect the station intake area to ensure that it is free of debris. Any trash or vegetation collected on the station's intake grate should be removed with a rake.

(2) Check the pump circuit breakers and verify that they are in the ON position.

(3) Press the indicator light test switch to ensure that all indicator lights are functioning.

(4) Press the left pump START button; the pump should be run for no more than 30 seconds. Stop the pump by pressing its STOP button.

(5) While the pump is running, special attention should be paid to the sound of the pump. Any unusual noise or excessive vibration should be investigated and the cause determined and corrected.

(6) Test the second pump in the same fashion.

(7) If the pumps do not start, check the alarm indicators to ensure that all are in safe condition. Take required corrective action as needed.

c. Dry well inspection. Twice a year (spring-fall), the dry well should be checked to ensure that no water has collected in the chamber. If there is water in the dry well, it should be pumped out using a portable pump.

(Note: In extreme cases, when temperatures of -20 degrees F or lower are predicted for a period of over one week, portable heating lamps should be lowered into the dry well and positioned in the vicinity of the check valve.

3. Bi-Annual Pump Station Inspection and Maintenance. Once every 2 years, the pump station shall undergo a complete cleaning and inspection. Detailed procedures for this inspection follow.

a. Pumps

(1) Disconnect the alarm controller's positive battery terminal lead.

(2) Switch the main and pump motor branch circuit breakers to the OFF position. At this time, the pump assemblies may be removed from the chamber.

- Attach the hoisting hooks only to the lifting lugs located on the top of the motor. Do not attempt to lift the pump by the power cables.

- Carefully lift the pump assembly clear of the access hatch. Set the pump down on the concrete beside the access hatch. DO NOT SET THE PUMP DOWN ON AN UNSUPPORTED HATCH COVER.

(3) Inspect the impeller through the discharge outlet once the pump has been raised, check for any damage to the impeller and shaft, and clean out any debris that may be present. After cleaning, the shaft should be rotated using a 3X3 piece of hardwood to check for any bearing damage or shaft misalignment. Repairs should be made as necessary.

(4) Drain the motor lubricating oil and check for water. If no water is found, refill the motor with the recommended lubricant. The pump itself has no bearings and needs no lubrication. The motor is oil filled and should require no additional lubrication or maintenance.

(5) If water is found in the oil, seal failure is indicated. Replace the seals and O-rings according to the manufacturer's instructions and refill the motor with the recommended lubricant.

(6) The motor winding insulation resistance should be megger tested to ensure that the insulation is adequate. If the insulation resistance is less than 1.5 megohms, the following procedure should be used:

- If water was found in the oil, the motor should be redrained, thoroughly air dried, refilled with oil, and retested.

- If the resistance is still less than 1.5 megohms, or no water was found in the oil, it is likely that the stator wires are shorting and the stator should be replaced. See the manufacturer's instructions.

(7) Reinstall the pump, making sure that it has been seated properly.

b. Inspect the trashrack and remove any debris, including vegetation, that may have collected on it.

OPERATION

Operation of the pumping system is regulated by Minnesota Department of Natural Resources permit. A copy of this permit is included in Appendix C. The following operating schedule reflects DNR permitting restrictions as well as Corps requirements.

General Operation

1. Gage readings should be taken at all gages at least on a monthly basis when the pumps are not in operation.

2. **NO** pumping will be allowed under the following circumstances:

a. If Lake Pulaski is lower than elevation 966.0 feet msl.

b. If Buffalo or Deer Lake is above elevation 915.5 feet msl.

c. If ice cover exists on Buffalo, Deer, Goose, or Mink Lake except following approval by the Department of Natural Resources based on a safety

plan submitted by the Lake Pulaski Improvement District. This approval will be made on a case-by-case basis and will not be automatically renewable from year-to-year.

d. Prior to June 1, in the spring of each year, except when specifically permitted by the DNR on the basis of examination of the receiving lakes and streams and DNR's concluding that spawning and nesting will not be adversely affected.

Preparations For Pumping

1. Check to see that all gages are properly set.

2. On Lake Pulaski, conduct water quality sampling for fecal coliform on one occasion during the week prior to any planned pumping operation. Pumping will not be allowed unless the water quality of Lake Pulaski meets the water quality criteria for fecal coliform bacteria applicable to Class 2B (Fisheries and Recreational) waters.

3. Notify the public and the DNR that pumping will be taking place.

4. Take gage readings on a daily basis for 2 weeks prior to the start of pumping. All readings will be recorded on a standard form (Appendix D contains a copy of the standard report form for all gage readings). Copies of the completed form will be supplied to the DNR on a weekly basis. The forms should also be on file for public record. Copies should be submitted to the Corps of Engineers along with the annual report.

Pumping

1. During the entire period of pumping, water levels should be observed and recorded for Lake Pulaski, Buffalo Lake, and Deer Lake on a daily basis. Pumping shall cease if any of the aforementioned elevations are reached.

2. During periods of pumping, accurate records should be kept of pump operations including operating hours and pumping volumes. The pumping volumes are calculated using the hours of operation and flow meter information.

Records should also note any periods of downtime resulting from maintenance or power failure. All readings will be recorded on a standard form (see an example in Appendix D). Copies of the completed forms will be supplied to the DNR on a weekly basis. They will also be on file for public record. These forms should be submitted to the Corps of Engineers as part of the annual report.

3. During pumping, water quality samples should be taken for fecal coliform bacteria at least once every 2 weeks. Samples should be gathered at Lake Pulaski and in the vicinity of the outfall on Buffalo Lake. Pumping shall be discontinued if fecal coliform bacteria contamination exceeds Class 2B standards and is attributable to Lake Pulaski waters.

INSPECTIONS, TESTS, AND OPERATIONS FOLLOWING PUMPING

Immediately following a period when the pumps were in use, the superintendent shall make a general inspection of the project and make any repairs, if needed, to the project works. Following this action, procedures will revert to ordinary maintenance.

APPENDIX A

PROJECT DRAWINGS

(As-built drawings under separate cover)

APPENDIX B

ASSURANCES OF LOCAL COOPERATION

LOCAL COOPERATION AGREEMENT

BETWEEN THE UNITED STATES OF AMERICA

AND THE LAKE PULASKI IMPROVEMENT DISTRICT

FOR THE CONSTRUCTION OF THE

LAKE PULASKI STABILIZATION PROJECT

CITY OF BUFFALO AND WRIGHT COUNTY

MINNESOTA

This Agreement, entered into this 12 day of August, 19 86 by and between the United States of America (hereinafter called the "Government"), represented by the Contracting Officer executing this Agreement and the Lake Pulaski Improvement District (hereinafter called the "Local Sponsor"), pursuant to Section 221 of Public Law 91-611, approved December 30, 1970.

WITNESSETH THAT:

WHEREAS, construction of a Flood Control Project at Buffalo, Minnesota (hereinafter called the "Project"), was approved June 18, 1986 by the Office, Chief of Engineers, in accordance with a report entitled "Decision Report, Flood Control, Lake Pulaski Stabilization Project, City of Buffalo and Wright County, Minnesota," dated December 1985, pursuant to the authority provided by Section 205 of the 1948 Flood Control Act as amended (Public Law 858, 80th Congress, 2nd Session); and

WHEREAS, the Project involves the construction of an 8,000 gallon per minute pumping station at Lake Pulaski (approximate size): and a pressure pipeline and gravity flow ditches and pipelines through the City of Buffalo

to Buffalo Lake; and

WHEREAS, said Decision Report, as approved, specifies certain items of local cooperation to be fulfilled by the Local Sponsor; and

WHEREAS, the Local Sponsor hereby represents that it has the authority and capability to furnish the non-Federal cooperation required by the Federal legislation authorizing the Project, said approved Decision Report and other applicable law and is willing to participate in the Project cost-sharing and financing in accordance with the terms of this Agreement.

NOW THEREFORE, in consideration of the benefits which shall occur as a result of the construction of the Project, the parties agree as follows:

ARTICLE I - DEFINITIONS

For the purposes of this Agreement:

1. The term "total project cost" shall mean all costs incurred by the Local Sponsor and the Government directly related to construction of the Project (excluding betterments and operation, maintenance and rehabilitation costs). Such total project costs shall include, but not necessarily be limited to, actual construction costs, the value of lands, easements, and rights-of-way made available for the Project, relocation and alteration costs, costs of engineering and design, and supervision and administration costs.

2. The "Contracting Officer" shall be the District Commander of St. Paul District or his properly designated representative.

ARTICLE II - OBLIGATIONS OF PARTIES:

a. The Local Sponsor shall provide, during the period of construction, an amount not less than 25 percent of total project costs. The amount to be provided shall include all lands, easements, and rights-of-way, and utility and facility alterations and relocations required for construction and subsequent maintenance of the Project, including suitable borrow and dredged material disposal areas as may be deemed necessary by the Chief of Engineers as well as cash payment or services equal in total to the difference between the value of the above items, as determined pursuant to Article IV of this Agreement, and 25 percent of total project costs, provided, however, that in no case shall the cash payment required herein be less than 5 percent of total project costs. And provided further, that in no instance shall the Government's share of project costs, including all preauthorization planning, exceed Four million dollars, $4,000,000.00, and provided further that the Local Sponsor shall assume full responsibility

for all project costs in excess of the Federal Cost limitation of Four million dollars ($4,000,000.00).

b. The Government, using funds provided by the Local Sponsor and appropriated by the Congress, shall expeditiously construct the Project, applying those procedures usually followed or applied in Federal projects, pursuant to Federal laws, regulations, and policies. Award of Federal contracts and the work thereunder shall be exclusively within the control of the Government.

c. Upon completion of project construction, the Government shall turn the project over to the Local Sponsor, which shall be solely responsible for operating, maintaining and rehabilitating the Project in accordance with Article VIII of this Agreement.

d. At least annually, while the lake is stabilized by the pumping system, the Local Sponsor shall inform residents in the zone from the stabilization level to 1.5 feet above that level that they are vulnerable to flooding by extreme runoff events. The above identified area will continue to be zoned as "floodplain" and be regulated in accordance with Federal, State, and local laws regarding uses of floodplain lands.

e. At the sole discretion of the Government, and subject to Government audit, the Local Sponsor may be permitted to construct all or portions of the Project which may include engineering and design services, and supervision and administration of construction contracts.

ARTICLE III LANDS, FACILITIES, AND RELOCATION ASSISTANCE

a. The Local Sponsor shall provide without cost to the Government all lands, easements, and rights-of-way, including suitable borrow and material disposal areas, as may be determined by the Chief of Engineers

to be necessary for the construction, operation and maintenance of the Project. Prior to the award of any construction contract, the Local Sponsor shall furnish to the Government rights-of-entry to all lands required for the Project, together with evidence supporting the Local Sponsor's legal authority to grant such rights-of-entry.

b. The Local Sponsor shall accomplish without cost to the Government all alterations and relocations of buildings, utilities, highways and highway bridges, made necessary by the construction, operation and maintenance of the Project.

c. The Local Sponsor shall comply with the provisions of the Uniform Relocations Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, approved 2 January 1971, in the acquisition of lands, easements, and rights-of-way for construction and subsequent operation, maintenance and rehabilitation of the Project and advise all affected persons of pertinent procedures, policies, and benefits in connection with said Act.

ARTICLE IV - VALUE OF LANDS AND FACILITIES

1.a. The value of the lands, easements and rights-of-way to be included in total project costs and credited toward the Local Sponsor's share of total project costs will be determined in accordance with the following procedures:

i. If the lands, easements and rights-of-way are owned by the Local Sponsor as of the date this agreement is signed, the credit shall be the fair market value of the lands at the time such lands are made available to the Government for construction of the Project. The fair market value shall be determined by an appraisal to be obtained by the Local Sponsor which has been prepared by an independent and qualified appraiser who is acceptable to both the Local Sponsor and the Government. The appraisal shall be reviewed and approved by the Government.

ii. If the lands, easements and rights-of-way are to be acquired by the Local Sponsor after the date this Agreement is signed, the credit shall be the fair market value of the lands at the time such lands are made available to the Government for construction of the project. The fair market value shall be determined by an independent and qualified appraiser who is acceptable to both the Local Sponsor and the Government. The appraisal shall be reviewed and approved by the Government.

Provided, however, that if the Local Sponsor pays an amount in excess of the appraised fair market value, it may be entitled to credit for the excess amount if the Local Sponsor has secured prior approval from the Government of its offer to purchase said lands.

b. If the Local Sponsor acquires more land, easements, or rights-of-way or interests therein than are necessary for project purposes, as determined by the Government, then only the value of such portions of those acquisitions or interests therein as are necessary for project purposes shall be included in total project costs and credited to the Local Sponsor's share.

c. Credit for lands, easements and rights-of-way in the case of involuntary acquisitions after the date this agreement is signed will be based on court awards or stipulated settlements, in which instance the stipulated settlements must have prior Government approval.

d. The credits provided for in this article will also include the actual costs of acquiring land, e.g. closing and title costs, as well as the actual amounts expended for any relocation assistance made in accordance with Article III.

2.a. The costs of construction, relocation, alteration or modification of utilities or facilities which will be included in total project costs and credited towards the Local Sponsor's share of total project costs shall be

that portion of the actual costs incurred by the Local Sponsor as set forth below:

i. Bridges and Highways: Only that portion of the cost as would be necessary to construct substitute bridges and roads to the design standard that the State of Minnesota would use in constructing a new bridge or road under similar conditions of geography and traffic loads.

ii. Utility Facilities: Actual relocation costs, less depreciation, less salvage value, plus the cost of removal, less the cost of betterments. With respect to betterments, new materials shall not be used in any relocation or alteration if materials of value and usability equal to those in the existing facility are available or can be obtained as salvage from the existing facility or otherwise, unless the provision of new material is more economical. If, despite the availability of used material, new material is used, where the use of such new material represents an additional cost, such cost shall not be included in total project costs.

3.a. For purposes of determining total project costs and the Local Sponsor's share thereof, the cost of construction and engineering and design services that may be furnished by the Local Sponsor pursuant to this Agreement shall be that portion of these actual costs as set forth below:

i. Actual construction costs incurred by the Local Sponsor in constructing all or portions of the Project, less salvage value, and less the cost of betterments.

ii. Actual expenses directly incurred and auditable in providing engineering and design services and expenses directly incurred and auditable in supervision and administration of construction contracts. For any expenses of the Local Sponsor incurred after the date of this Agreement to qualify for reimbursement as a contribution to project costs, all local expenditures

for construction and engineering and design must be approved in advance by the Contracting Officer and will be subject to final Government audit. "Overhead" and other "indirect" expenditures by the Local Sponsor not relating directly to performance of the Project shall not be allowed as a project cost.

iii. At the sole discretion of the Government, the Local Sponsor may be permitted to perform engineering and design services on all or any portion of the Project and construct all or portions of the Project subject to Government audit. Any work performed by the Local Sponsor, and reimbursed therefor, shall be in accordance with Section 215 of the Flood Control Act of 1968 (42 U.S.C. 1962d-5a).

iv. Principles for determining allowable cost of contracts and subcontracts with State, Local, and federally recognized Indian tribal governments are set forth in Office of Management and Budget (OMB) Circular No. A-87, Cost Principles for State and Local Governments, Revised. Those cost principles shall be applied during audit to determine allowability, allocability and reasonableness of costs incurred and claimed by the Local Sponsor as a part of total project costs. Costs shall be deemed allowable and includable as project costs to the extent they are incurred in accordance with and are in compliance with the principles enunciated in OMB Circular A-87 and are not exclud[redacted] the terms of this Agreement.

b. A [redacted] sewer upgrade along a portion of the alignment proposed for the Lake Pulaski outlet pipeline is being considered by others. This storm sewer could further be enlarged to serve as a joint project which will accommodate both Lake Pulaski outlet needs and storm sewer needs. Should this joint project be constructed coincident with the balance of the Lake Pulaski Stabilization Project, a credit for joint project design and construction will be granted to the Local Sponsor. This credit will be based on the

allocated Lake Pulaski Stabilization Project share of the joint project. This share will be computed by multiplying the joint project cost by the ratio determined as follows: The cost of a Lake Pulaski outlet pipeline along the reach of the joint project divided by the sum of the cost of a Lake Pulaski outlet pipeline along the reach of the joint project and the cost of a storm sewer upgrade along the reach of the joint project. This formula is discussed in more detail in the report entitled "Decision Report, Flood Control, Lake Pulaski Stabilization Project, City of Buffalo and Wright County, Minnesota" dated December, 1985, and approved June 18, 1986.

ARTICLE V - CONSTRUCTION PHASING AND MANAGEMENT

a. To provide for consistent and effective communication between the Government and the Local Sponsor for the Project, the Local Sponsor and the Government shall appoint representatives to coordinate on scheduling, plans, specifications, modifications, contract costs and other matters relating to the Project.

b. The representatives appointed above shall meet as necessary as the Project is implemented and shall make such recommendations as they deem warranted to the Contracting Officer.

c. The Contracting Officer, having ultimate responsibility for construction of the Project, has complete discretion to accept, reject, or modify the recommendations of the representatives. No action shall be taken by the Local Sponsor with respect to plans, specifications, scheduling, modifications, contract costs or other matters affecting the incidence of costs under this Project without the prior written approval of the Contracting Officer.

ARTICLE VI - METHOD OF PAYMENT

a. Pursuant to Article II of this Agreement, the Local Sponsor shall provide, over the term of construction, not less than 25 percent of total project costs. Total project costs are presently estimated to be $700,000.00 of which an estimated $68,500 will be in the form of lands, easements, rights-of-way and utility and facility alterations and relocations to be provided by the Local Sponsor. In order to meet its 25 percent share, the Local Sponsor must provide a cash contribution or services-in-kind presently estimated to be $106,500 (at least 5 percent of project costs or an estimated $35,000, must be in cash).

b. The Government shall, 30 days prior to the award of the construction contract, notify the Local Sponsor of its share of total project costs, after crediting the Local Sponsor's share with the value of lands, easement, rights-of-way, relocations and alterations and services provided or to be provided by the Local Sponsor. Within 20 days thereafter, the Local Sponsor shall provide the Government the full amount of the required contribution by cash, escrow account or irrevocable letter of credit. In the event that total project costs are expected to exceed the estimate given at the outset of construction, the Government shall immediately notify the Local Sponsor of the additional contribution it will be required to make to meet its share of the revised estimated [redacted] project costs. Within 30 days thereafter, the Local Sponsor shall provide the Government the full amount of the additional required contribution.

c. The Government will draw on the funds, escrow account, or letter of credit provided by the Local Sponsor such sums as it deems necessary to cover contractual and in-house fiscal obligations as they occur and Government costs incurred prior to the date of this agreement.

d. Upon completion of the Project and resolution of all contract claims and appeals, the Government will compute the total project costs and render to the Local Sponsor a final accounting of its share of total project costs. In the event the total contribution by the Local Sponsor is less than its required share of total project costs at the time of the final accounting, the Local Sponsor shall deposit within 90 calendar days after receipt of written notice whatever sum is required to meet its required share of total project costs. In the event the Local Sponsor has made excess cash contributions and/or provided services that result in the Local Sponsor's having provided more than its required share of total project costs, the Government shall, subject to the availability of funds, return such cash contributions or otherwise reimburse the Local Sponsor for any amount in excess of its required 25 percent share, within 90 calendar days of the final accounting of total project costs; provided, however, that there will be no reimbursement of cash contributions made in satisfaction of the 5% of total project costs cash contribution requirement.

ARTICLE VII - DISPUTES

a. Before any party to this Agreement may bring suit to any court concerning an issue relating to this agreement, such party must first seek in good faith to resolve the issue through negotiation or other forms of non-binding alternative dispute resolution.

ARTICLE VIII - OPERATION, MAINTENANCE AND REHABILITATION

a. The Local Sponsor shall operate, maintain and rehabilitate the Project upon completion, without cost to the United States in accordance with regulations or directions prescribed by the Secretary of the Army.

b. The Local Sponsor hereby gives the Government a right to enter, at reasonable times and in a reasonable manner, upon land which it owns or controls for access to the Project for the purpose of inspection, and, if necessary, for the purpose of completing, operating, maintaining and repairing the Project. If an inspection shows that the Local Sponsor for any reason is failing to complete, operate, maintain and repair the Project in accordance with the assurances hereunder, the Government will send a written notice to the Local Sponsor. If the Local Sponsor persists in such failure for 30 calendar days after receipt of the notice, the Government shall have a right to enter, at reasonable times and in a reasonable manner, upon lands the Local Sponsor owns or controls for access to the Project for the purpose of completing, operating, maintaining or repairing the Project. No completion, operation, maintenance or repair by the Government shall operate to relieve the Local Sponsor of its responsibility to meet its obligations as set forth in this Agreement, or to preclude the Government from pursuing any other remedy at law or equity to assure faithful performance pursuant to this Agreement.

ARTICLE IX - MAINTENANCE OF RECORDS

The Government and the Local Sponsor shall keep books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to this Agreement to the extent and in such detail as will properly reflect total project costs. The Government and the Local Sponsor shall maintain such books, records, documents, and other evidence for a minimum of three years after completion of construction of the Project and final resolution of contract claims and appeals, and shall make available at their offices at reasonable times, such books, records, documents, and other evidence for inspection and audit by authorized representatives of the parties to this Agreement.

ARTICLE X - RELEASE OF CLAIMS

The Local Sponsor will hold and save the Government free from all damages arising from the construction, operation and maintenance of the completed project, except for damages due to the fault or negligence of the Government or its contractors.

ARTICLE XI - FEDERAL AND STATE LAWS

a. In acting under its rights and obligations hereunder, the Local Sponsor agrees to comply with all applicable Federal and State laws and regulations.

b. The Local Sponsor agrees to comply with Section 601 of Title VI of the Civil Rights Act of 1964 (Public Law 88-352) and Department of Defense Directive 5500.11 issued pursuant thereto and published in Part 300 of Title 32, Code of Federal Regulations, in connection with the construction, operation, and maintenance of the Project.

ARTICLE XII - RELATIONSHIP OF PARTIES

The parties to this Agreement act in an independent capacity in the performance of their respective functions under this agreement, and neither party is considered the officer, agent, or employee of the other.

ARTICLE XIII - OFFICIALS NOT TO BENEFIT

No member of or delegate to the Congress shall be committed to any share or part of this Agreement, or to any benefit that may arise therefrom.

ARTICLE XIV - CONVENANT AGAINST CONTINGENT FEES

The Local Sponsor warrants that no person or selling agency has been employed or retained to solicit or secure this Agreement upon agreements or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Local Sponsor for the purpose of securing business. For breach or violation of this warranty, the Government shall have the right to annul this Agreement without liability, or, in its discretion, to add to the Agreement or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

ARTICLE XV - TERMINATION OR SUSPENSION

a. If at any time the Local Sponsor fails to make the payments required under this Agreement, the Secretary of the Army shall terminate or suspend work on the Project unless the Secretary determines that continuation of work on the Project is in the interest of the United States. Any delinquent payment shall be charged interest at a rate, to be determined by the Secretary of the Treasury, equal to 150 percentum of the average bond equivalent rate of the 13 week Treasury bills auctioned immediately prior to the date on which such payment became delinquent, or auctioned immediately prior to the beginning of each additional 3 month period if the period of delinquency exceeds 3 months.

b. If the Government fails to receive annual appropriations in amounts sufficient to meet expenditures for the then-current fiscal year, the Government shall so notify the Local Sponsor. After 60 calendar days, either party may elect without penalty to terminate the agreement or to suspend performance thereunder, and the parties shall proceed to wind up their

activities relating to the Project and proceed to a final accounting in accordance with Article VI d.

ARTICLE XVI - STATEMENT OF INTENT

The Local Sponsor hereby affirms its willingness and capability to meet its cost-sharing obligations as set forth in this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the day and year first above written.

THE UNITED STATES OF AMERICA

BY _____
DAVID M. NELSON
Lieutenant Colonel, CE
Deputy District Engineer
Contracting Officer

FOR THE DEPARTMENT OF THE ARMY

DATE: 8-12-86

LAKE PULASKI IMPROVEMENT DISTRICT

BY _____
MIKE MCGLENNON, CHAIRMAN

DATE: August 12, 1986

CERTIFICATE OF AUTHORITY

I, William S. Rodgwill, do hereby certify that I am the Attorney for the Lake Pulaski Improvement District, that the Lake Pulaski Improvement District is a legally constituted public body with full authority and legal capability to perform the terms of the Agreement between the UNITED STATES OF AMERICA and the LAKE PULASKI IMPROVEMENT DISTRICT in connection with the Lake Pulaski Stabilization Project at City of Buffalo and Wright County, Minnesota, and pay damages, if necessary, in the event of the failure to perform, in accordance with Section 221 of Public Law 91-611, and that the persons who have executed the contract on behalf of the Lake Pulaski Improvement District have acted within their statutory authority.

IN WITNESS WHEREOF, I have made and executed this Certificate this 12th day of August, 19 86.

Attorney for Lake Pulaski Improvement District

APPENDIX C

FLOOD CONTROL REGULATIONS

DEPARTMENT OF THE ARMY
St. Paul District, Corps of Engineers
1421 U.S. Post Office and Custom House
St. Paul, Minnesota 55101-1479

FLOOD CONTROL PROJECT

LAKE PULASKI

WRIGHT COUNTY, MINNESOTA

OPERATION AND MAINTENANCE MANUAL

APPENDIX C

FLOOD CONTROL REGULATIONS

Table of Contents

TITLE 33 - NAVIGATION AND NAVIGABLE WATERS

Chapter II - Corps of Engineers
Department of the Army

Part 208 - FLOOD CONTROL REGULATIONS

MAINTENANCE AND OPERATION OF FLOOD CONTROL WORKS

AUTHORITY: The provisions of this Part 208 issued under sec. 7, 58 Stat. 890; 33 U.S.C. 709, unless otherwise noted.

208.10 Local flood protection works; maintenance and operation of structures and facilities.

(a) GENERAL. (1) The structures and facilities constructed by the United States for local flood protection shall be continuously maintained in such a manner and operated at such times and for such periods as may be necessary to obtain the maximum benefits.

(2) The State, political subdivision thereof, or other responsible local agency, which furnished assurance that it will maintain and operate flood control works in accordance with regulations prescribed by the Secretary of the Army, as required by law, shall appoint a permanent committee consisting of or headed by an official hereinafter called the "Superintendent," who shall be responsible for the development and maintenance of, and directly in charge of, an organization responsible for the efficient operation and maintenance of all of the structures and facilities during flood periods and for continuous inspection and maintenance of the project works during periods of low water, all without cost to the United States.

(3) A reserve supply of materials needed during a flood emergency shall be kept on hand at all times.

(4) No encroachment or trespass which will adversely affect the efficient operation or maintenance of the project works shall be permitted upon the right-of-way for the protective facilities.

(5) No improvement shall be passed over, under, or through the walls, levees, improved channels or floodways, nor shall any excavation or construction be permitted within the limits of the project right-of-ways, nor shall any change be made in any feature of the works without prior determination by the District Engineer of the Department of the Army or his authorized representative that such improvement,

excavation, construction, or alteration will not adversely affect the functioning of the protective facilities. Such improvements or alterations as may be found to be desirable and permissible under the above determination shall be constructed in accordance with standard engineering practice. Advice regarding the effect of proposed improvements or alterations on the functioning of the project and information concerning methods of construction acceptable under standard engineering practice shall be obtained from the District Engineer or, if otherwise obtained, shall be submitted for his approval. Drawings or prints showing such improvements or alterations as finally constructed shall be furnished the District Engineer after completion of the work.

(6) It shall be the duty of the superintendent to submit a semi-annual report to the District Engineer covering inspection, maintenance, and operation of the protective works.

(7) The District Engineer or his authorized representatives shall have access at all times to all portions of the protective works.

(8) Maintenance measures or repairs which the District Engineer deems necessary shall be promptly taken or made.

(9) Appropriate measures shall be taken by local authorities to insure that the activities of all local organizations operating public or private facilities connected with the protective works are coordinated with those of the Superintendent's organization during flood periods.

(10) The Department of the Army will furnish local interests with an Operation and Maintenance Manual for each completed project, or separate useful part thereof, to assist them in carrying out their obligations under this part.

(b) LEVEES - (1) MAINTENANCE. The superintendent shall provide at all times such maintenance as may be required to insure serviceability of the structures in time of flood. Measures shall be taken to promote the growth of sod, exterminate burrowing animals, and to provide for routine mowing of the grass and weeds, removal of wild growth and drift deposits, and repair of damage caused by erosion or other forces. Periodic inspections shall be made by the Superintendent to insure that the above maintenance measures are being effectively carried out and, further, to be certain that:

(i) No unusual settlement, sloughing, or material loss of grade or levee cross section has taken place;

(ii) No caving has occurred on either the land side or the river side of the levee which might affect the stability of the levee section;

(iii) No seepage, saturated areas, or sand boils are occurring;

(iv) Toe drainage systems and pressure relief wells are in good working condition, and that such facilities are not becoming clogged;

(v) Drains through the levees and gates on said drains are in good working condition;

(vi) No revetment work or riprap has been displaced, washed out, or removed;

(vii) No action is being taken, such as burning grass and weeds during inappropriate seasons, which will retard or destroy the growth of sod;

(viii) Access roads to and on the levee are being properly maintained;

(ix) Cattle guards and gates are in good condition;

(x) Crown of levee is shaped so as to drain readily, and roadway thereon, if any, is well shaped and maintained;

(xi) There is no unauthorized grazing or vehicular traffic on the levees;

(xii) Encroachments are not being made on the levee right-of-way which might endanger the structure or hinder its proper and efficient functioning during times of emergency.

Such inspections shall be made immediately prior to the beginning of the flood season; immediately following each major high water period, and otherwise at intervals not exceeding 90 days, and such intermediate times as may be necessary to insure the best possible care of the levee. Immediate steps will be taken to correct dangerous conditions disclosed by such inspections. Regular maintenance repair measures shall be accomplished during the appropriate season as scheduled by the superintendent.

(2) OPERATION. During flood periods the levee shall be patrolled continuously to locate possible sand boils or unusual wetness of the landward slope and to be certain that:

(i) There are no indications of slides or sloughs developing;

(ii) Wave wash or scouring action is not occurring;

(iii) No low reaches of levee exist which may be overtopped;

(iv) No other conditions exist which might endanger the structure.

Appropriate advance measures will be taken to insure the availability of adequate labor and materials to meet all contingencies. Immediate steps will be taken to control any condition which endangers the levee and to repair the damaged section.

(c) FLOODWALLS - (1) MAINTENANCE. Periodic inspection shall be made by the Superintendent to be certain that:

(i) No seepage, saturated areas, or sand boils are occurring;

(ii) No undue settlement has occurred which affects the stability of the wall or its water tightness.

(iii) No trees exist, the roots of which might extend under the wall and offer accelerated seepage paths;

(iv) The concrete has not undergone cracking, chipping, or breaking to an extent which might affect the stability of the wall or its water tightness;

(v) There are no encroachments upon the right-of-way which might endanger the structure or hinder its functioning in time of flood;

(vi) Care is being exercised to prevent accumulation of trash and debris adjacent to walls, and to insure that no fires are being built near them;

(vii) No bank caving conditions exist riverward of the wall which might endanger its stability;

(viii) Toe drainage systems and pressure relief wells are in good working condition, and that such facilities are not becoming clogged.

Such inspections shall be made immediately prior to the beginning of the flood season, immediately following each major high water period, and otherwise at intervals not exceeding 90 days. Measures to eliminate encroachments and effect repairs found necessary by such inspections shall be undertaken immediately. All repairs shall be accomplished by methods acceptable in standard engineering practice.

(2) OPERATION. Continuous patrol of the wall shall be maintained during flood periods to locate possible leakage at monolith joints or seepage underneath the wall. Floating plant or boats will not be allowed to lie against or tie up to the wall. Should it become necessary during a flood emergency to pass anchor cables over the wall, adequate measures shall be taken to protect the concrete and construction joints. Immediate steps shall be taken to correct any condition which endangers the stability of the wall.

(d) DRAINAGE STRUCTURES - (1) MAINTENANCE. Adequate measures shall be taken to insure that inlet and outlet channels are kept open and that trash, drift, or debris is not allowed to accumulate near drainage structures. Flap gates and manually operated gates and valves on drainage structures shall be examined, oiled, and trial operated at least once every 90 days. Where drainage structures are provided with stop logs or other emergency closures, the condition of the equipment and its housing shall be inspected regularly and a trial installation of the emergency closure shall be made at least once each year. Periodic inspections shall be made by the Superintendent to be certain that:

(i) Pipes, gates, operating mechanism, riprap, and headwalls are in good condition;

(ii) Inlet and outlet channels are open;

(iii) Care is being exercised to prevent the accumulation of trash and debris near the structures and that no fires are being built near bituminous coated pipes;

(iv) Erosion is not occurring adjacent to the structure which might endanger its water tightness or stability.

Immediate steps will be taken to repair damage, replace missing or broken parts, or remedy adverse conditions disclosed by such inspections.

(2) OPERATION. Whenever high water conditions impend, all gates will be inspected a short time before water reaches the invert of the pipe and any object which might prevent closure of the gate shall be removed. Automatic gates shall be closely observed until it has been ascertained that they are securely closed. Manually operated gates and valves shall be closed as necessary to prevent inflow of flood water. All drainage structures in levees shall be inspected frequently during floods to ascertain whether seepage is taking place along the lines of their contact with the embankment. Immediate steps shall be taken to correct any adverse condition.

(e) CLOSURE STRUCTURES - (1) MAINTENANCE. Closure structures for traffic openings shall be inspected by the superintendent every 90 days to be certain that:

(i) No parts are missing;

(ii) Metal parts are adequately covered with paint;

(iii) All movable parts are in satisfactory working order;

(iv) Proper closure can be made promptly when necessary;

(v) Sufficient materials are on hand for the erection of sand bag closures and that the location of such materials will be readily accessible in times of emergency.

Tools and parts shall not be removed for other use. Trial erections of one or more closure structures shall be made once each year, alternating the structures chosen so that each gate will be erected at least once in each 3-year period. Trial erection of all closure structures shall be made whenever a change is made in key operating personnel. Where railroad operation makes trial erection of a closure structure infeasible, rigorous inspection and drill of operating personnel may be substituted therefor. Trial erection of sand bag closures is not required. Closure materials will be carefully checked prior to and following flood periods, and damaged or missing parts shall be repaired or replaced immediately.

(2) OPERATION. Erection of each movable closure shall be started in sufficient time to permit completion before flood waters reach the top of the structure sill. Information regarding the proper method of erecting each individual closure structure, together with an estimate of the time required by an experienced crew to complete its erection will be given in the Operation and Maintenance

Manual which will be furnished local interests upon completion of the project. Closure structures will be inspected frequently during flood periods to ascertain that no undue leakage is occurring and that drains provided to care for ordinary leakage are functioning properly. Boats or floating plant shall not be allowed to tie up to closure structures or to discharge passengers or cargo over them.

(f) PUMPING PLANTS - (1) MAINTENANCE. Pumping plants shall be inspected by the Superintendent at intervals not to exceed 30 days during flood seasons and 90 days during off-flood seasons to insure that all equipment is in order for instant use. At regular intervals, proper measures shall be taken to provide for cleaning plant, buildings, and equipment, repainting as necessary, and lubricating all machinery. Adequate supplies of lubricants for all types of machines, fuel for gasoline or diesel powered equipment, and flashlights or lanterns for emergency lighting shall be kept on hand at all times. Telephone service shall be maintained at pumping plants. All equipment, including switch gear, transformers, motors, pumps, valves, and gates shall be trial operated and checked at least once every 90 days. Megger tests of all insulation shall be made whenever wiring has been subjected to undue dampness and otherwise at intervals not to exceed one year. A record shall be kept showing the results of such tests. Wiring disclosed to be in an unsatisfactory condition by such tests shall be brought to a satisfactory condition or shall be promptly replaced. Diesel and gasoline engines shall be started at such intervals and allowed to run for such length of time as may be necessary to insure their serviceability in times of emergency. Only skilled electricians and mechanics shall be employed on tests and repairs. Operating personnel for the plant shall be present during tests. Any equipment removed from the station for repair or replacement shall be returned or replaced as soon as practicable and shall be trial operated after reinstallation. Repairs requiring removal of equipment from the plant shall be made during off-flood seasons insofar as practicable.

(2) OPERATION. Competent operators shall be on duty at pumping plants whenever it appears that necessity for pump operation is imminent. The operator shall thoroughly inspect, trial operate, and place in readiness all plant equipment. The operator shall be familiar with the equipment manufacturers' instructions and drawings and with the "Operating Instructions" for each station. The equipment shall be operated in accordance with the above-mentioned "Operating Instructions" and care shall be exercised that proper lubrication is being supplied all equipment, and that no overheating, undue vibration or noise is

occurring. Immediately upon final recession of flood waters, the pumping station shall be thoroughly cleaned, pump house sumps flushed and equipment thoroughly inspected, oiled, and greased. A record or log of pumping plant operation shall be kept for each station, a copy of which shall be furnished the District Engineer following each flood.

(g) CHANNELS AND FLOODWAYS - (1) MAINTENANCE. Periodic inspections of improved channels and floodways shall be made by the Superintendent to be certain that:

(i) The channel or floodway is cleared of debris, weeds, and wild growth;

(ii) The channel or floodway is not being restricted by the depositing of waste materials, building of unauthorized structures or other encroachments;

(iii) The capacity of the channel or floodway is not being reduced by the formation of shoals;

(iv) Banks are not being damaged by rain or wave wash, and that no sloughing of banks has occurred;

(v) Riprap sections and deflection dikes and walls are in good condition;

(vi) Approach and egress channels adjacent to the improved channel or floodway are sufficiently clear of obstructions and debris to permit proper functioning of the project works.

Such inspections shall be made prior to the beginning of the flood season and otherwise at intervals not to exceed 90 days. Immediate steps will be taken to remedy any adverse conditions disclosed by such inspections. Measures will be taken by the Superintendent to promote the growth of grass on bank slopes and earth deflection dikes. The Superintendent shall provide for periodic repair and cleaning of debris basins, check dams, and related structures as may be necessary.

(2) OPERATION. Both banks of the channel shall be patrolled during periods of high water, and measures shall be taken to protect those reaches being attacked by the current or by wave wash. Appropriate measures shall be taken to prevent the formation of jams of

ice or debris. Large objects which become lodged against the bank shall be removed. The improved channel or floodway shall be thoroughly inspected immediately following each major high water period. As soon as practicable thereafter, all snags and other debris shall be removed and all damage to banks, riprap, deflection dikes and walls, drainage outlets, or other flood control structures repaired.

(h) MISCELLANEOUS FACILITIES - (1) MAINTENANCE. Miscellaneous structures and facilities constructed as a part of the protective works and other structures and facilities which function as a part of, or affect the efficient functioning of the protective works shall be periodically inspected by the Superintendent and appropriate maintenance measures taken. Damaged or unserviceable parts shall be repaired or replaced without delay. Areas used for ponding in connection with pumping plants or for temporary storage of interior runoff during flood periods shall not be allowed to become filled with silt, debris, or dumped material. The Superintendent shall take proper steps to prevent restriction of bridge openings and, where practicable, shall provide for temporary raising during floods of bridges which restrict channel capacities during periods of high flows.

(2) OPERATION. Miscellaneous facilities shall be operated to prevent or reduce flooding during periods of high water. Those facilities constructed as a part of the protective works shall not be used for purposes other than flood protection without approval of the District Engineer unless designed therefor.

(Sec. 3, 49 Stat. 1571, as amended; 33 U.S.C. 701c) (9 F.R. 9999, Aug 17, 1944; 9 F.R. 10203, Aug 22, 1944)

APPENDIX D

ANNUAL REPORT FORM COVERING INSPECTIONS, TESTS, OPERATION AND MAINTENANCE PERFORMED AND REQUIRED

SUBJECT: Inspection Data, Pump Station, Lake Pulaski, Wright County, Minnesota, for the period _____ to _____.

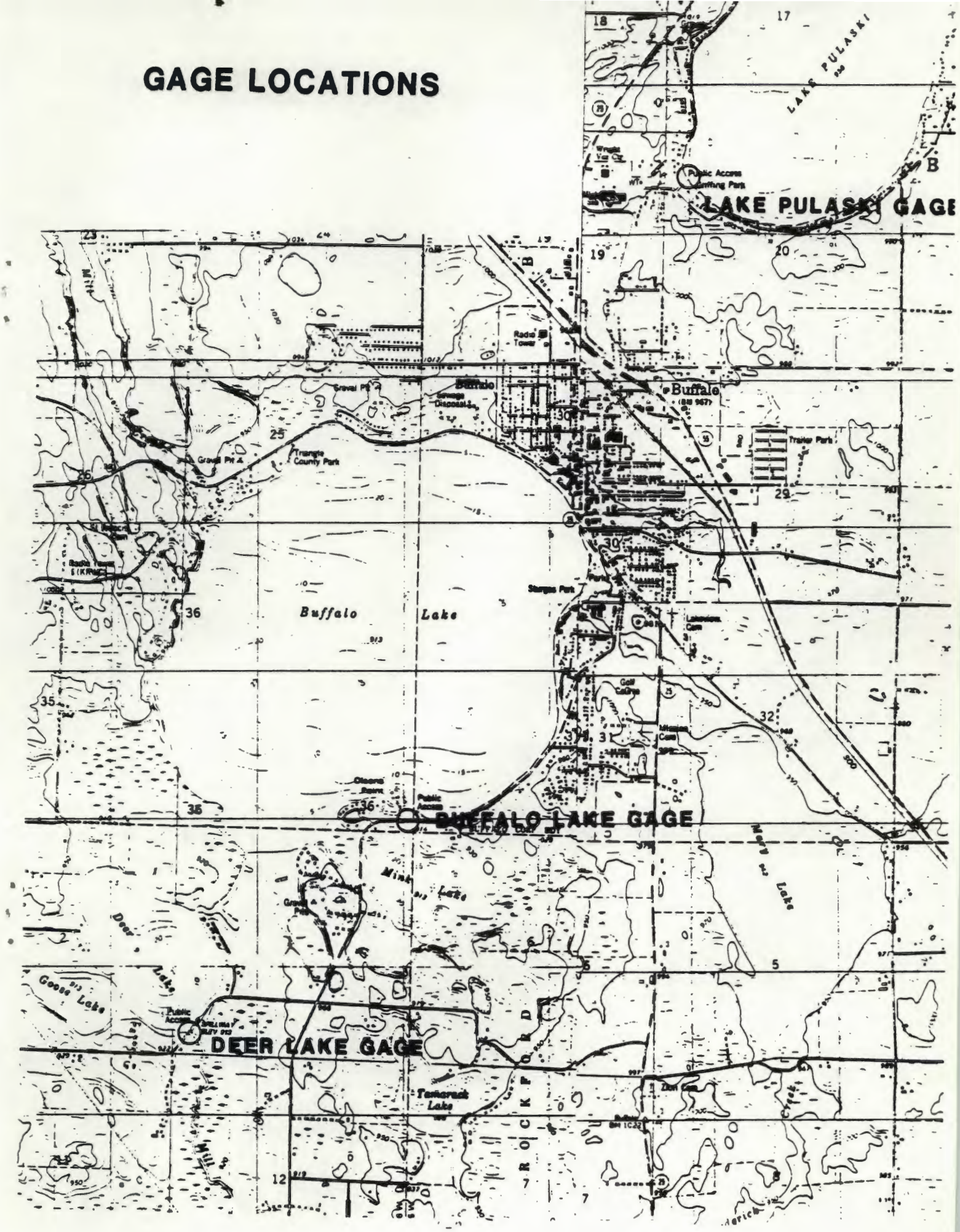
TO: Department of the Army
St. Paul District, Corps of Engineers
1421 U.S. Post Office & Custom House
St. Paul, Minnesota 55101-1479

_____
Date

Indicate deficiencies by noting location on project map on reverse side of sheet and by marking appropriate condition below. Make remarks to indicate repairs made as appropriate in the space provided.

Item location	Condition								Date of inspection	Repairs made or remarks
Pump station	Pumps	Inlet	Debris	Other (Specify)						

GAGE LOCATIONS



LAKE PULASKI - PUMP RECORDING LOG WEEK: ________ to ________

Pumping Rate: Pump 1 ________
Pump 2 ________

	Date	Reader	Time On	Time Off	Cubic Feet	Remarks
Pump 1						
Pump 2						
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LAKE PULASKI - GAGE RECORDING LOG WEEK: ________ to ________

Lake Pulaski Elevation = Stage Reading + ____________________

Buffalo Lake Elevation = Stage Reading + ____________________

Deer Lake Elevation = Stage Reading + ____________________

Date	Reader	Time	Lake	Stage Reading	Water Elevation	Weather, Lake Conditions, etc.

LAKE PULASKI - WATER QUALITY SAMPLING AND TESTING RECORD

Sample Location _____

Sampler's Name _____

Date _____ Sampling Comments: _____

Time _____ _____

Laboratory _____

	Sample 1	Sample 2	Sample 3	Geometric Mean	Ratio of Geometric Means
Fecal Coliforms					
Fecal Streptococci					

Testing Comments: _____

_____

Sample Location _____

Sampler's Name _____

Date _____ Sampling Comments: _____

Time _____ _____

Laboratory _____

	Sample 1	Sample 2	Sample 3	Geometric Mean	Ratio of Geometric Means
Fecal Coliforms					
Fecal Streptococci					

Testing Comments: _____

_____