DELAWARE RIVER BASIN

PLEASURE LAKE DAM
SULLIVAN COUNTY, NEW YORK
INVENTORY NO. 345

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

APPROVED FOR PUBLIC RELEASE;
DISTRIBUTION UNLIMITED

CONTRACT NO. DACW-51-78-C-0024

NEW YORK DISTRICT CORPS OF ENGINEERS

SEPTEMBER 1978
Honorable Hugh L. Carey
Governor of New York
Albany, New York 12224

Dear Governor Carey:

Reference is made to my letter of 2 October 1973 in which clarification of the guidelines used by this office in assessing dams with "seriously inadequate spillways" under the National Program of Inspection of Dams was outlined.

The following dams in your state have been assessed as having seriously inadequate spillways, with capability to pass safely only the percentage of the probable maximum flood as noted in each report. In accordance with revised criteria they are now to be assessed as unsafe:

<table>
<thead>
<tr>
<th>I.D. No.</th>
<th>NAME OF DAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>N.Y. 345</td>
<td>Pleasure Lake Dam</td>
</tr>
<tr>
<td>N.Y. 670</td>
<td>Hyosotis Lake Dam</td>
</tr>
<tr>
<td>N.Y. 54</td>
<td>Tarrytown Waterworks Dam</td>
</tr>
</tbody>
</table>

The classification of "unsafe" applied to a dam because of a seriously inadequate spillway is not meant to connote the same degree of emergency as would be associated with an "unsafe" classification applied for a structural deficiency. It does mean, however, that based on an initial screening, and preliminary computations, there appears to be a serious deficiency in spillway capacity so that if a severe storm were to occur, overtopping and failure of the dam would take place, significantly increasing the hazard to loss of life downstream from the dam.

Consequently, it is advisable to implement the recommendations previously furnished in the reports for the above-mentioned dams as soon as practicable.

Sincerely yours,

CLARK H. BARBERO
Colonel, Corps of Engineers
District Engineer

cc: Barbero, Descenza
Tarrobino (NAD), Exec Ofc
Enggr File, George Koch, NYS DEC
DISCLAIMER NOTICE

THIS DOCUMENT IS BEST QUALITY PRACTICABLE. THE COPY FURNISHED TO DDC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.
**Phase I Inspection Report**  
Delaware River Basin  
Pleasure Lake Dam  
Sullivan County, New York  

**Author(s):** Eugene O'Brien, P.E.  

**Performing Organization Name and Address:**  
Tippetts-Abbett-McCarthy-Stratton  
345 Park Avenue  
New York, New York 10021  

**Controlling Office Name and Address:**  
Department of the Army  
26 Federal Plaza / New York District, CoE  
New York, New York 10007  

**Monitoring Agency Name and Address:**  
National Dam Safety Program  
Pleasure Lake Dam (W-315),  
Delaware River Basin, Sullivan County, New York. Phase I  

**Security Classification of this Report:** UNCLASSIFIED  

**Abstract:**  
This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization. Pleasure Lake Dam was judged to be unsafe-non-emergency due to a seriously inadequate spillway.
DELAWARE RIVER BASIN

PLEASURE LAKE DAM
SULLIVAN COUNTY, NEW YORK
INVENTORY NO. 345

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

Prepared by: TIPPETTS-ABBETT-McCARTHY-STRATTON

NEW YORK DISTRICT CORPS OF ENGINEERS
SEPTEMBER 1978
# DELAWARE RIVER BASIN
## PLEASURE LAKE DAM
### INVENTORY NO. 345
#### PHASE I INSPECTION REPORT

## CONTENTS

<table>
<thead>
<tr>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASSESSMENT</td>
</tr>
<tr>
<td>OVERVIEW PHOTOGRAPH</td>
</tr>
<tr>
<td>1 PROJECT INFORMATION</td>
</tr>
<tr>
<td>1.1 GENERAL</td>
</tr>
<tr>
<td>a. Authority</td>
</tr>
<tr>
<td>b. Purpose of Inspection</td>
</tr>
<tr>
<td>1.2 DESCRIPTION OF THE PROJECT</td>
</tr>
<tr>
<td>a. Description of Dam and Appurtenances</td>
</tr>
<tr>
<td>b. Location</td>
</tr>
<tr>
<td>c. Size Classification</td>
</tr>
<tr>
<td>d. Hazard Classification</td>
</tr>
<tr>
<td>e. Ownership</td>
</tr>
<tr>
<td>f. Use of Dam</td>
</tr>
<tr>
<td>g. Design and Construction History</td>
</tr>
<tr>
<td>h. Normal Operating Procedures</td>
</tr>
<tr>
<td>1.3 PERTINENT DATA</td>
</tr>
<tr>
<td>a. Drainage Area</td>
</tr>
<tr>
<td>b. Discharge at Dam Site</td>
</tr>
<tr>
<td>c. Elevation</td>
</tr>
<tr>
<td>d. Reservoir</td>
</tr>
<tr>
<td>e. Storage</td>
</tr>
<tr>
<td>f. Dam</td>
</tr>
<tr>
<td>g. Spillway</td>
</tr>
<tr>
<td>h. Sluice Gates</td>
</tr>
<tr>
<td>2 ENGINEERING DATA</td>
</tr>
<tr>
<td>2.1 DESIGN</td>
</tr>
<tr>
<td>2.2 CONSTRUCTION RECORDS</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.3</td>
<td>OPERATION RECORDS</td>
<td>5</td>
</tr>
<tr>
<td>2.4</td>
<td>EVALUATION OF DATA</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>VISUAL OBSERVATIONS</td>
<td>6</td>
</tr>
<tr>
<td>3.1</td>
<td>FINDINGS</td>
<td>6</td>
</tr>
<tr>
<td>a.</td>
<td>General</td>
<td>6</td>
</tr>
<tr>
<td>b.</td>
<td>Dam</td>
<td>6</td>
</tr>
<tr>
<td>c.</td>
<td>Appurtenant Structures</td>
<td>7</td>
</tr>
<tr>
<td>d.</td>
<td>Downstream Channel</td>
<td>8</td>
</tr>
<tr>
<td>e.</td>
<td>Reservoir Area</td>
<td>8</td>
</tr>
<tr>
<td>3.2</td>
<td>EVALUATION OF VISUAL OBSERVATIONS</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>OPERATIONAL AND MAINTENANCE PROCEDURES</td>
<td>9</td>
</tr>
<tr>
<td>4.1</td>
<td>PROCEDURES</td>
<td>9</td>
</tr>
<tr>
<td>4.2</td>
<td>MAINTENANCE OF THE DAM</td>
<td>9</td>
</tr>
<tr>
<td>4.3</td>
<td>MAINTENANCE OF OPERATING EQUIPMENT</td>
<td>9</td>
</tr>
<tr>
<td>4.4</td>
<td>WARNING SYSTEMS IN EFFECT</td>
<td>9</td>
</tr>
<tr>
<td>4.5</td>
<td>EVALUATION</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>HYDROLOGIC/HYDRAULIC</td>
<td>10</td>
</tr>
<tr>
<td>5.1</td>
<td>DRAINAGE BASIN CHARACTERISTICS</td>
<td>10</td>
</tr>
<tr>
<td>5.2</td>
<td>SPILLWAY</td>
<td>10</td>
</tr>
<tr>
<td>5.3</td>
<td>RESERVOIR CAPACITY</td>
<td>10</td>
</tr>
<tr>
<td>5.4</td>
<td>FLOODS OF RECORD</td>
<td>11</td>
</tr>
<tr>
<td>5.5</td>
<td>OVERTOPPING POTENTIAL</td>
<td>11</td>
</tr>
<tr>
<td>5.6</td>
<td>EVALUATION OF HYDROLOGY/HYDRAULICS</td>
<td>11</td>
</tr>
<tr>
<td>6</td>
<td>STRUCTURAL STABILITY</td>
<td>12</td>
</tr>
<tr>
<td>6.1</td>
<td>EVALUATION OF STRUCTURAL STABILITY</td>
<td>12</td>
</tr>
</tbody>
</table>
a. Visual Observations 12
b. Design and Construction Data 12
c. Operating Records 12
d. Post-Construction Changes 12
e. Seismic Stability 12
f. Structural Stability During Overtopping 12

7 ASSESSMENT/REMEDIAL MEASURES 13

7.1 DAM ASSESSMENT 13
a. Safety 13
b. Adequacy of Information 13
c. Necessity for Additional Investigations 14

7.2 REMEDIAL MEASURES 14

APPENDICES

A. DRAWINGS
B. PHOTOGRAPHS
C. ENGINEERING DATA CHECKLIST
D. VISUAL INSPECTION CHECKLIST
E. HYDROLOGIC DATA AND COMPUTATIONS
PHASE I REPORT
NATIONAL DAM SAFETY PROGRAM

Name of Dam: PLEASURE LAKE DAM (I.D. No. 345)
State Located: NEW YORK STATE
County Located: SULLIVAN COUNTY
Stream: DELAWARE RIVER BASIN
Date of Inspection: AUGUST 30, 1978

ASSESSMENT

Examination of the available documents and visual inspection of the Pleasure Lake Dam and appurtenant structures did not reveal any conditions which are unsafe.

Using the Corps of Engineers screening criteria for initial review of spillway adequacy, it has been determined that the dam would be overtopped for all storms exceeding approximately 21 percent of the PMF and 53 percent of the SPF. The spillway is, therefore, adjudged as seriously inadequate and the dam is assessed as unsafe, non-emergency.

The classification of "unsafe" applied to a dam because of a seriously inadequate spillway is not meant to connote the same degree of emergency as would be associated with an "unsafe" classification applied for a structural deficiency. It does mean, however, that based on an initial screening, and preliminary computations, there appears to be a serious deficiency in spillway capacity so that if a severe storm were to occur, overtopping and failure of the dam would take place, significantly increasing the hazard to loss of life downstream from the dam.

It is, therefore, recommended that within three months from the date of notification to the Governor of the State of New York, owners engage the services of a professional consultant to determine by more sophisticated methods and procedures the adequacy of the spillway. At the same time, the structural adequacy of the dam during overtopping should be fully evaluated to determine whether mitigating remedial measures are necessary. Borings may be necessary to determine the geometry, extent and condition of the downstream masonry section of the dam which is not visible. Within twelve months of the date of notification to the governor, appropriate remedial measures should have been completed. In the interim, a detailed emergency operation plan and warning system should be promptly developed. Also, during periods of unusually heavy precipitation, around-the-clock surveillance should be provided.
No remedial measures are required to assure the safety of the dam at the present time; however, certain measures are recommended as follows:

- Flatten and riprap the upstream slope
- Remove debris and vegetation from toe of dam
- Finish grade auxiliary emergency spillway
- Repair spillway and sluiceway pointing
- Prepare O & M manual and establish program of periodic inspections
- Monitor dam area adjacent to sluiceways for settlements.

Eugene O'Brien, P. E.
New York No. 29823

Approved By: Col. Clark H. Benn
New York District Engineer

Date: 1978 November 22
GENERAL OVERVIEW OF MASONRY - EARTH FILL DAM AND SPILLWAY
VICINITY MAP
PLEASURE LAKE DAM
CONTOUR MAP
PLEASURE LAKE DAM

SCALE 1:24000

CONTOUR INTERVAL 10 FEET
(DATUM IS MEAN SEA LEVEL)
SECTION 1 - PROJECT INFORMATION

1.1 GENERAL

a. Authority
The Phase I Inspection reported herein was authorized by the DEPARTMENT OF THE ARMY, NEW YORK DISTRICT, CORPS OF ENGINEERS by letter dated 31 March 1978, in fulfillment of the requirements of the National Dam Inspection Act, Public Law 92-367, 8 August 1976.

b. Purpose of Inspection
The purpose of this inspection and report is to investigate and evaluate the existing conditions of subject dam in order to: identify deficiencies and hazardous conditions; determine if they constitute hazards to human life or property; and notify the State of New York of these results along with recommendations for remedial measures where necessary.

1.2 DESCRIPTION OF THE PROJECT

a. Description of Dam and Appurtenances
Pleasure Lake Dam is a masonry gravity dam with an earthfill extension on the upstream slope. The length of the dam is about 470 feet and the maximum height is 30 feet; the crest width varies from 17 to 34 feet. The horizontal alignment of the embankment generally follows an east-west trend. A single lane gravel roadway on the crest of the dam provides access to and from numerous lakeside homes. Roadway traffic crosses a steel and wood bridge which spans two sluiceways and a spillway near the center of the dam. According to the personnel contacted and documents reviewed, the dam is constructed on a timber crib of 12 x 12 inch Hemlock planks.

The upstream earthfill surface has a slope of 1 on 1. The downstream masonry slope is also 1 on 1 with the stone placed in regular but stepped courses. The average stone dimensions are 2 feet long, 2 feet wide and 6 inches high.

The two 4-foot long sluiceways are located adjacent to an emergency spillway at the maximum dam section. The sluiceway training walls are fitted with stoplog guides at the head of each sluiceway. These concrete
capped training walls also provide support for a gatehouse located above the stoplogs on the downstream crest of the dam.

The emergency spillway is 25 feet long and 35 feet wide at the crest. The training walls, spillway channel and spillway chute are all concrete capped.

An auxiliary emergency spillway is cut into the east abutment of the embankment. This auxiliary spillway has a 250 foot long trapezoidal channel with a bottom width of about 21 feet and side slopes of about 1(V) on 4(H). The exit slope is approximately 1(V) on 20(H).

Flow from the reservoir is regulated by the two multi-level stoplog gates. By adjusting the height of these gates, water can be discharged either through the sluiceways or over the emergency spillway. The reservoir elevation can also be lowered to 4.5 feet below the emergency spillway crest by complete removal of the stoplogs. Floor openings in the gatehouse provide access for gate adjustments.

The project has no low level outlet. Reportedly the reservoir has not been drained by any other method.

b. Location
The dam is located at the south end of Pleasure Lake on Sheldrake Stream, a tributary to the Neversink River. The dam is approximately 1 mile north of Thompsonville, the nearest downstream community.

c. Size Classification
The dam is less than 40 feet high, has a reservoir less than 1000 acre-feet and is therefore classified as a "small" dam.

d. Hazard Classification
The dam is in the "high" hazard potential category because of the close vicinity of the downstream community.

e. Ownership
Pleasure Lake Dam is owned by the Fallsburg Fishing and Boating Club, Inc. of South Fallsburg. Day-to-day operation and maintenance is managed by the same. The dam was purchased in 1940 from the D&H Canal Company, who owned the dam since 1905.

Ownership prior to 1905 is unknown.
f. Use of Dam
The impoundment provided by the dam is used solely for recreational purposes of the local residents.

g. Design and Construction History
The original design computations, specifications or construction drawings could not be located. It is reported the dam was built about 1875. Names of those responsible for its design or construction could not be determined.

The present owner has instituted several major repair and modification programs. In 1952, repairs were made to the sluiceways and spillway. The wooden stoplog guides were replaced with steel channels, and the masonry surfaces of the sluiceway and spillway channels were resurfaced with concrete. Masonry joints were cleaned and pointed. In 1978, other modifications were made following the recommendations of a recent inspection of a local engineer. Earth was placed on the upstream slope of the embankment increasing the crest width by 8 to 10 feet. The auxiliary emergency spillway was regraded. This spillway was originally cut to provide for additional discharge capacity during the storm of October 1955.

h. Normal Operating Procedures
There is no established minimum downstream discharge requirement. Normally the stoplogs are adjusted such that water discharged primarily over the emergency spillway. Should the reservoir elevation increase 5 to 13 inches above the emergency spillway crest, water will flow over the stoplogs and the auxiliary emergency spillway respectively.

1.3 PERTINENT DATA

a. Drainage Area sq mi 13.1

b. Discharge at Dam Site, cfs
Maximum known flood at site Unknown
Emergency spillway, pool at top of dam (El 1213) 1130
Sluice gates, pool at top of dam (El 1213) 390
Auxiliary emergency spillway, pool at top of dam (El 1213) 1160
Total project discharge capacity 2680

c. Elevation (feet above MSL)
Top of dam 1213+
Spillway crest, emergency 1207+
Spillway crest, auxiliary emergency 1206+
Stream bed at centerline of dam 1181+
d. **Reservoir**
   Length, miles 1.5
   Surface area at El 1207, sq mi 0.34

e. **Storage**, acre-feet
   Top of spillway crest (El 1207) unknown
   Surcharge storage between El 1207 and El 1213 1517

f. **Dam**
   Type: Masonry downstream section with an earth embankment upstream section.
   Length: 470 ft±
   Height: 30 ft±
   Top width: 17 to 34 ft
   Side slopes: 1(V): 1(H) Upstream and Downstream
   Zoning: Unknown

g. **Spillway**
   **Emergency Spillway**
   Type: Broad-crested, ungated
   Length: 25 ft
   Crest: El 1207

   **Auxiliary Emergency Spillway**
   Type: Trapezoidal channel, no sill, ungated
   Length: 21 ft
   Crest: El 1208
   Downstream Channel: 200 ft long excavated channel

h. **Sluice Gates**
   Two 4 foot long multi level stoplog gates.
   Bottom elevation of gate is 1202 1/2+ feet.
   The project has no low level outlet.
SECTION 2 - ENGINEERING DATA

2.1 DESIGN

There are no design data or specific design memoranda available for the project features.

2.2 CONSTRUCTION RECORDS

No original construction records are available for the project.

2.3 OPERATION RECORDS

There are no records of operation at the dam. The available written records of the maintenance work performed consists of:

a. Proposed Dam Repairs, Specifications (2 pages, May, 1952) and Drawings (Sheet #1, June, 1950 and Sheet #2, March, 1952)

b. List of Improvements Made to Fallsburg Fishing and Boating Club Dam (1 page, June, 1978)

There does not exist a formal operation and maintenance manual for the project. Records of reservoir elevation and rainfall are not kept but the dam is visually inspected daily by a caretaker.

2.4 EVALUATION OF DATA

Existing information was made readily available by personnel of the Fallsburg Fishing and Boating Club Inc.

The available data reviewed is considered adequate for this Phase I inspection and evaluation of safety.
SECTION 3 - VISUAL OBSERVATIONS

3.1 FINDINGS

a. General

A visual inspection of the Pleasure Lake Dam was made on 30 August, 1978. The weather was sunny with temperatures approaching 85°F. The last rainfall reportedly occurred two nights prior to the inspection. At the time of inspection, the reservoir level was approximately 3 inches above the emergency spillway crest.

b. Dam

The embankment appears to be in generally fair condition. The entire embankment is devoid of vegetation except for minor weeds and some trees located on the extreme west upstream slope.

Crest alignment is generally good with only a few depressions created by traffic. An overlay of 65 tons of crushed rock rolled on to the crest road about 10 weeks before the inspection elevates only the road surface about 6 to 12 inches. The horizontal and vertical alignment of the embankment were good. It was observed that the downstream edge of the masonry crest, east of the gatehouse shows some curvature; however, no recent movement is apparent.

There are several areas of sloughing and erosion along the upstream slope. It is reported 35,000 cubic yards of fill was also recently dumped on the upstream slope increasing the crest width an average of 8 to 10 feet. The soil, a mixture of boulders, gravel, sand, silt and clay was obtained from a borrow area west of the embankment. No controls for compaction were established although the fill was reportedly rolled by a front end loader during placement. The new upstream slope is not sodded and as a result there are many runoff gullies. The slope from the crest to the waterline is steep and has no riprap or other slope protection. The owner has, however, placed logs at the waterline with the intention to reduce wave runup and erosion. Several boulders and smaller cobbles, which are constituents of the borrow material were observed randomly placed along the slope.

A longitudinal crack about 20 feet long is located on the crest, about two feet upstream of the roadway edge and approximately 40 feet west of the bridge. The crack appears to be caused by settlement of the fill placed in 1978.
There is some bulging of the downstream slope; however, there are indications that no movement has occurred recently. Several of the masonry stones on the slope have split but their breakage does not follow any pattern.

Settlement of the embankment has occurred adjacent to the west sluiceway training wall. Seepage was observed at the toe of the embankment near the location where the settlement occurred. The leakage is estimated at 5± gpm. The clear water and limonite stained algae growth tend to indicate that the seepage is an old condition. There are several damp areas along the western toe of the dam; however, no visible seepage was visible at these locations. No seepage was observed along the eastern embankment toe.

The downstream toe area is moderately to heavily vegetated with shrubs, weeds and small saplings. Larger trees have been cleared for a distance of 30 to 40 feet beyond the toe. It is reported that this area is periodically cleared of brush using physical and chemical methods. The last cutting was reportedly last year.

The slopes downstream of the toe generally slope towards the spillway; however, many large piles of debris (mainly consisting of tree trunks, brush and soil) create an irregular surface of mounds and depressions. Accumulation of water from runoff in these depressions appears probable.

C. Appurtenant Structures

The sluiceways and emergency spillway appear to be in generally fair condition. The approach channels to the sluiceways and emergency spillway are clear of aquatic growth. There was evidence of some minor cracking and some missing pointing along the concrete training wall surfaces. Slight leakage was observed between the masonry and gunite surface on the east wall of the west sluiceway.

The spillway crest and chute appear to be in good condition. Some minor erosion of the gunite surface is noted. The spillway chute is covered by gunite placed in an overlapped manner.

A removable fish screen is located at the entrance of the emergency spillway. The east end of the spillway was observed to be 2-3 inches lower than that of the west end; there was no evidence of distress or movement of the spillway.

The auxiliary emergency spillway is an unfinished channel cut into natural ground at the east end of the dam. Some minor depressions and erosion gullies from runoff are noted. The gravel crest roadway crosses the channel near its entrance, the road surface being approximately 6 to 8 inches
above the channel floor. It appears some seed has been planted and grass is beginning to grow.

d. Downstream Channel
The channel downstream of the emergency spillway tailrace is the Sheldrake Stream. The channel is a natural stream with only minimal vegetation and overhanging trees. Present conditions do not impede the discharge of the flow observed. The auxiliary emergency spillway discharges into the Sheldrake Stream about 300 feet downstream of the dam.

e. Reservoir Area
In the upstream vicinity of the dam, there was no evidence of sloughing, potentially unstable slopes or other unusual conditions which would adversely affect the dam.

3.2 EVALUATION OF VISUAL OBSERVATIONS

Visual observations made during the course of the inspection did not indicate any serious problems which would adversely affect the safety of the dam or immediate remedial action.

A monitoring program should be established to determine if there is any continuing movement in the displacements (vertical settlement, bulges and crest curvature).

The upstream slope should be flattened and riprapped.

The downstream toe area should have the heavy brush and debris removed and then be regraded to slope toward the spillway channel.

The auxiliary emergency spillway channel should be finish-graded and seeded.
SECTION 4 - OPERATIONAL AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

There is no specified required release of water. It is reported the reservoir elevation and release over the emergency spillway at the time of inspection were about normal.

4.2 MAINTENANCE OF THE DAM

There is no operation and maintenance manual for the project. The dam is visited daily by a caretaker who visually examines the dam and other project features. There is no formally established program of inspection visits by other personnel.

Because of the recent modifications to the upstream slope it is difficult to assess the past adequacy of the embankment maintenance. The lack of upstream slope protection maintenance, grass and a riprap is considered less than adequate. Maintenance on the downstream slope is adequate. The maintenance of the slopes downstream of the dam toe, because of the piled debris and heavy vegetation, is less than adequate.

No regular maintenance procedures are established for the masonry structures and spillways.

Maintenance of the roadway and bridge appears to be adequate.

4.3 MAINTENANCE OF OPERATING EQUIPMENT

The stoplogs and operating equipment appear to be operable insofar as was visible. New stoplogs are available and stored in the gatehouse.

4.4 WARNING SYSTEMS IN EFFECT

There is no warning system in effect or in preparation.

4.5 EVALUATION

The maintenance of the Pleasure Lake Dam is considered less than adequate in the following areas:

a. Lack of slope protection on the upstream dam surface and the auxiliary emergency spillway.
b. Control of debris and vegetation on the slope downstream of the dam toe.
c. No formal operation and maintenance manuals for the project.
SECTION 5 - HYDROLOGIC/HYDRAULIC

5.1 DRAINAGE BASIN CHARACTERISTICS

Pleasure Lake is located on Sheldrake Stream, a tributary of Neversink River in the Delaware River Basin, south of South Fallsburg in Sullivan County. For this analysis, the drainage area's contributing to the following five lakes, Loch Sheldrake, Evans Lake, Morningside Lake, Alta Lake and an unnamed Lake downstream of Alta Lake, were not included. Total area omitted was about 4 square miles or approximately 32% of the entire drainage area. The remaining land area of 8.6 square miles was further divided into two sub-basins. Sub-basin A, north of the lake is 5.3 square miles with a length to width ratio of about 7. Sub-basin B, west of the Lake is 3.3 square miles in area and roughly square shaped.

The physical features of both basins are otherwise similar with rolling hills and wide valleys, interspersed with small lakes and swamps.

5.2 SPILLWAY

Discharge from Pleasure Lake is passable through the following:

a. The emergency spillway centrally located on the dam. This spillway is a rectangular-shaped concrete structure, with a channel width of 25 feet and a crest at El. 1207, 6.0 feet below the top of the dam.

b. Two sluiceways, located adjacent to the primary spillway are 4 feet wide and at crest El. 1202.5. Stoplogs are usually placed in the sluiceways to maintain the lake at El. 1207.

c. An auxiliary emergency spillway, located at the eastern end of the dam, with a bottom width of 21 feet, side slopes of about 1(V):4(H), and a crest at El. 1208.

The computed spillway capacities with the lake surface at El. 1213, equivalent to the top of the dam, are as follows:

a. Emergency spillway 1130 cfs
b. Sluice gates 390 cfs
c. Auxiliary emergency spillway 1160 cfs

Total outflow capacity at El. 1213 - 2680 cfs.

5.3 RESERVOIR CAPACITY

The normal capacity of Pleasure Lake is unknown, however, it is
estimated that the surcharge storage between spillway crest (El. 1207) and
top of dam (El. 1213) is 1517 acre-feet, which is equivalent to about 2 inches
of runoff over the entire drainage basin. The area of the lake at El. 1207 is
0.34 square miles (219.5 acres), 2.6% of the drainage basin area.

5.4  FLOODS OF RECORD

There are no flood records available.

5.5  OVERTOPPING POTENTIAL

The overtopping potential was evaluated by comparing the Probable
Maximum Flood (PMF) and the Standard Project Flood (SPF) with the total pro-
ject discharge capacity.

The Probable Maximum 6-hour rainfall over 13 square miles for the
Pleasure Lake area was taken from Weather Bureau sources and distributed, in
a probable storm sequence, as indicated in a publication of the World Meteoro-
logical Organization.

The rainfall excess was determined, using the Soil Conservation
Services curve number method. A triangular unit hydrograph was developed
and subsequently used to compute the flood runoff hydrograph for the land area.
The runoff resulting from the Probable Maximum Precipitation falling directly
on the lake surface was added to the computed flood hydrograph to form the in-
flow hydrograph and resulted in a peak inflow of 13955 cfs.

The potential of the water overtopping the dam was investigated on
the basis of the available surcharge storage and spillway discharge capacities
to meet a potential emergency inflow. It was assumed that the stoplogs in both
sluiceways were up to El. 1207 and that the lake level was also at El. 1207.

5.6  EVALUATION OF HYDROLOGY/HYDRAULICS

The Probable Maximum Flood, routed through the lake, caused the
lake surface to rise to an elevation of 1215.9, 2.9 feet above the top of the dam.
The peak discharge over the dam was 12772 cfs. The PMF peak outflow is about
4.7 times the combined outflow capacity.

The Standard Project Flood (1/2 PMF) routed through the lake re-
sulted in a peak discharge of 5038 cfs and a maximum lake elevation of 1214.0,
1.0 foot above the top of the dam. The SPF peak outflow is about 1.9 times
the combined outflow capacity.

On the basis of this investigation the project discharge capacity is
considered to be seriously inadequate.
6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations
Visual observations did not indicate any serious structural problems with the embankment or spillway. The deficiencies described in Section 3 require attention and measures to improve these deficiencies are given in Section 7.

b. Design and Construction Data
No design computations or other data pertaining to the structural stability of the dam have been located.

On the basis of the performance experience, the visual inspection, as well as engineering judgment, the dam at present appears to be structurally adequate.

c. Operating Records
There are no operating records available.

d. Post-Construction Changes
It is reported the dam was built about 1875. Post-construction records consist of drawings and specifications used for repairs made in 1952 to the sluiceways and emergency spillway. These repairs included concrete capping of the sluiceway and emergency spillway training walls and crests and replacing the wooden stoplog guides with steel guides.

In 1978 modifications made to the dam include increasing the crest width 8-10 feet by adding fill to the upstream slope. During this operation the original upstream riprap was covered. The auxiliary emergency spillway originally cut in 1955 was regraded. Other minor changes were made to the embankment and crest road.

e. Seismic Stability
The dam is located in Seismic Zone No. 1 and, in accordance with recommended Phase I guidelines, does not warrant seismic analyses.

f. Structural Stability During Overtopping
Inasmuch as there exist no details on the full geometry and extent of the masonry section which forms the downstream face of the combined earth-masonry dam, it cannot be determined at the present time whether the safety of the dam will be adequate if overtopping in the range of 3.5 to 6.7 feet, as described in Section 5, were to occur.
SECTION 7 - ASSESSMENT/REMEDIAL MEASURES

7.1 DAM ASSESSMENT

a. Safety

Examination of the available documents and visual inspection of the Pleasure Lake Dam and appurtenant structures did not reveal any conditions which are unsafe.

Using the Corps of Engineers screening criteria for initial review of spillway adequacy, it has been determined that the dam would be overtopped for all storms exceeding approximately 21 percent of the PMF and 53 percent of the SPF. The spillway is, therefore, adjudged as seriously inadequate and the dam is assessed as unsafe, non-emergency.

The classification of "unsafe" applied to a dam because of a seriously inadequate spillway is not meant to connote the same degree of emergency as would be associated with an "unsafe" classification applied for a structural deficiency. It does mean, however, that based on an initial screening, and preliminary computations, there appears to be a serious deficiency in spillway capacity so that if a severe storm were to occur, overtopping and failure of the dam would take place, significantly increasing the hazard to loss of life downstream from the dam.

It is, therefore, recommended that within three months from the date of notification to the Governor of the State of New York, owners engage the services of a professional consultant to determine by more sophisticated methods and procedures the adequacy of the spillway. At the same time, the structural adequacy of the dam during overtopping should be fully evaluated to determine whether mitigating remedial measures are necessary. Borings may be necessary to determine the geometry, extent and condition of the downstream masonry section of the dam which is not visible. Within twelve months of the date of notification to the governor, appropriate remedial mitigating measures should have been completed. In the interim, a detailed emergency operation plan and warning system should be promptly developed. Also, during periods of unusually heavy precipitation, around-the-clock surveillance should be provided.

b. Adequacy of Information

The information and data available were adequate for performance of this investigation.

The information and data available with regards to operation and maintenance of the project is considered less than adequate in the following areas:

1. Record drawings of the project
2. Operation and maintenance manuals
3. Records of inspections.

-13-
c. **Necessity for Additional Investigations**

Additional investigations are necessary to evaluate the adequacy of the spillways and to determine remedial mitigating measures as recommended in Section 7.1a.

7.2 **REMEDIAL MEASURES**

No remedial measures are required to assure the safety of the dam at this time. However, certain measures to provide for continued dam safety are recommended as follow:

a. The upstream earth slope should be flattened and riprapped. A bedding layer of suitable material should be placed between the earthfill and the riprap. The remainder of the slope should be seeded. The longitudinal crack observed along the upstream slope should be repaired prior to flattening and seeding the slope.

b. The heavy brush and debris should be removed from the downstream toe area.

c. The slope downstream of the toe area should be regraded to prevent runoff accumulations.

d. The auxiliary emergency spillway should be finish-graded and seeded.

e. Loose and missing pointing at sluiceways and emergency spillway should be repaired.

f. An operation and maintenance manual should be prepared and a program of periodic inspections established for the project features.

g. A monitoring program should be established to determine if there is any continuing movement in the displacements, (i.e., vertical settlement, bulges and crest curvature) described in Section 3. The damp areas also described in Section 3 should be identified as either runoff or seepage. In areas where seepage is identified, a systematic program of observation and monitoring of changes in the pattern and quantity of the seepage should be initiated.
APPENDIX A

DRAWINGS
NOTE: DRAWING BASED ON ROUGH FIELD MEASUREMENTS MADE DURING VISUAL INSPECTION
PLEASURE LAKE DAM
PLAN AND SECTION

SCALE - NTS   DATE - AUG/1978
Old frame gate house
10 x 15'

2:1 Slope 12" to 18" riprap

Concrete placed

Capstone

Earthfill

Masonry

Typical section D-D
Scale 1" = 10'0"
PLEASURE LAKE

470' long

Spillway
Concrete resurfaced in 1936

Concrete face placed in 1936

Concrete Apron ed in 1936

15' roadway

Massive Masonry Retaining Wall

-PLAN-
Scale 1 in = 20 ft.

Center & Side piers
Massive squared stone

West Abut't Wall
(East Wall S)

84' 0"

5' 3"

El. 106'

Needles (6" rails), bonded thru ctr. wall & into side walls.
(bond now largely lost by erosion of adjacent stone)

10' x 16' Timber piers
Masonry sidewalk

El 105

El 100

Reinf. concrete surfacing in 1936

Concrete face in 1936

Section C-C at Spillway
Scale 1" = 10'-0"

Existing Dam - Principal construction present condition as of
Designation - 163-1090 Delaware
See plan dated July 19
For presently proposed
Concrete, placed in 1936.

Timber foundation, detail not known, no displacement and seems sound and in original condition.

Section A-A
Scale 1" = 10.0"

Details and notes recently examined.
Watershed
Approved Aug 10, 1936.
Repairs and additions see sheet 2.
Bond of needles into walls mostly lost by erosion of stones.

SECTION B-B
Scale 1"=10'-0"
Concrete surfacing (1936)

Side wall bulges about 4" (not recent), 12' to 20' down stream from sluice board.

STATE OF NEW YORK
DEPARTMENT OF PUBLIC WORKS
DIVISION OF CONSTRUCTION
ALBANY, N. Y., May 15, 1936

This plan for Re-construting dam No. 156.3, 159.7 Delaware River watershed is hereby approved under the provisions of Section 948 of the Conservation Law.

Examined and recommended to the Chief Engineer for approval.

H. Clark
ASSOCIATE CIVIL ENGINEER

APPROVED

CHIEF ENGINEER
Department of Public Works

Henry Le... Deputy Chief Engineer

This Sheet #1 is a tracing of sheet #1 of plans of E.M. Wilbur C.E. and is for information on present dam structure.

Olney Bonden C.E.

THIS PAGE IS BEST QUALITY PRACTICABLE
FROM COPY PUBLISHED TO DTD
STATE OF NEW YORK
DEPARTMENT OF PUBLIC WORKS
DIVISION OF CONSTRUCTION
ALBANY, N. Y., May 16, 1932

This plan for reconstructing dam No. 153 DelaWillare River watershed is hereby approved under the provisions of Section 948 of the Conservation Law.

Examined and recommended to the Chief Engineer for approval.

H. Clark
ASSOCIATE CIVIL ENGINEER

APPROVED

CHIEF ENGINEER
Department of Public Works

Henry Lee, Jr.
Deputy Chief Engineer

This Sheet *1 is a tracing of Sheet #1 of plans of E.M. Wilbur CE and is for information on present dam structure.

Owen Gordon C.E.

FALLSBURG FISHING & BOATING CLUB
SOUTH FALLSBURG N.Y.
PROPOSED REPAIRS - DAM
Scale - as indicated.

E.M. Wilbur CE
Fort Jefferson N.Y.

June 10, 1950

Sheet 1
All accessible masonry joints down to bottom of waterway - clean out, open up as required and point up leaving smooth flush joints.

Minimum of 2’ of gunite concrete on entire apron.

Gunite Concrete

Existing Concrete Apron placed in 1936

Existing Timber Pile foundation. Detail not known.

Sec. A-1

Old Gate House to Remain as is.
Proposed Dam Repair
Pleasure Lake
Fallsburg Fishing and Boating Club
South Fallsburg, N.Y.
Scales as shown. March, 1952.
Survey and Plans by: Olney Brothers
N.Y. State Lic. #12270. Liberty, N.Y.
Sheet #2.
SPECIFICATIONS FOR REPAIRS TO SLUICE WAY OF

THE FALLSBURGH FISHING & BOATING CLUB
IN THE TOWN OF FALLSBURGH, SULLIVAN
COUNTY, NEW YORK.

GENERAL CONDITIONS AND WORK TO BE DONE

The mass concrete for back-up wall in sluice way and the concrete cut-off wall on front of spillway, are to be constructed as shown on plans made by Olney Gordon, C.E. and approved by New York State Department of Public Works on May 12, 1982.

Spillway Section:

The surface of the spillway is to be chipped out to a depth of 12", and also all other disintergrated concrete removed below that depth down to sound concrete. A minimum of 4" of "first class 1:2:4 concrete is first to be placed plus 2" of gunite on top of same. 6" x 6" wire mesh reinforcing is to be placed 2" from the spillway surface.

Red lead to be used on sluiceway guides.

3 Railroad rails are to be placed in the front center of the spillway at least 12" above the concrete surface, and with slots placed in the wing walls opposite so that flash boards to height of 6" can be used in the summer.

The wall section of the spillway are to have all disintergrated concrete chipped out and replaced with first class concrete with not less than 3" of concrete at any point.

Gunite is to be used on the spillway apron.

All broken concrete in the floor of the sluiceway is to be removed by Contractor.

REPAIRS OF MASONRY PIER OF SLUICEWAYS

This work is to be done with gunite to be used on the upstream side of the sluiceway masonry piers.

All accessible masonry joints are to be cleaned out, opened up as required, and pointed up, leaving smooth flush in joints.

Old timber guides are to be replaced by steel guides set in concrete.

Masonry side walls to be cleaned out all accessible joints to be pointed up.

All other work shown on the aforementioned plans is to be completed in accordance with said plans.

Contractor to furnish all labor, equipments and materials for performing the aforesaid work.
SPECIFICATIONS FOR REPAIRS TO

OF

THE FALLSBURGH FISHING & BOATING CLUB
IN THE TOWN OF FALLSBURGH, SULLIVAN
COUNTY, NEW YORK.

GENERAL CONDITIONS AND WORK TO BE DONE

The mass concrete for back-up wall in sluice ways and the concrete
out-off wall on front of spillway, are to be constructed as shown on
plans made by Olney Borden, C.E. and approved by New York State
Department of Public Works on May 17, 1952.

Spillway Section:

The surface of the spillway is to be chipped out to a depth of
12", and also all other disintegrated concrete removed below that
depth down to sound concrete. A minimum of 4" of "first class 1:2:4
concrete is first to be placed plus 2" of gunite on top of same.
6" x 6" wire mesh reinforcing is to be placed 2" from the spillway
surface.

Red lead to be used on sluiceway guides.

3 Railroad rails are to be placed in the front center of the
spillway at least 12" above the concrete surface, and with slots
placed in the wing walls opposite so that flash boards to height
of 6" can be used in the summer.

The wall section of the spillway are to have all disintegrated
concrete chipped out and replaced with first class concrete with not
less than 3" of concrete at any point.

Gunite is to be used on the spillway apron.

All broken concrete in the floor of the sluiceway
is to be removed by Contractor.

REPAIRS OF MASONRY PIERS OF SLUICeways

This work is to be done with gunite to be used on the
upstream side of the sluiceway masonry piers.

All accessible masonry joints are to be cleaned out, opened
up as required, and pointed up, leaving smooth flash m joints.

Old timber guides are to be replaced by steel guides set
in concrete.

Masonry side walls to be cleaned out all accessible
joints to be pointed up.

All other work shown on the aforementioned plans is to be
completed in accordance with said plans.

Contractor to furnish all labor, equipments and materials
for performing the aforesaid work.
SPECIFICATIONS

These specifications are intended to supplement and clarify the plan. All work incidental to completion of structures as shown or described on plan and/or specifications, obviously intended and necessary for a complete and finished job, is to be supplied by the contractor, whether or not specifically shown or described.

CLEANING SURFACES

All surfaces bonding to new work are to be thoroughly cleaned of all mud, slime, moss, etc. before placing new work. Where concrete is to be poured at floor and in lower levels of the outlet suitable provision is to be made to divert and bypass any running leakage, until concrete has set.

If conditions are such that concrete must unavoidably be placed in water, the water must be stillled, with no current, the concrete shall be placed in large charge sks, spouted or dumped close to the bottom, and kept together to avoid separation of materials. A tremie shall be used, if necessary to accomplish this.

Mixing and Placing

Concrete shall be mixed at least two (2) minutes after all ingredients are in the mixer. The mix is to be as dry as handling conditions will permit, and in no case shall more than seven (7) gallons of water be used per bag of cement.

Each batch shall be in place within 20 minutes after water has been added.

Concrete shall be thoroughly worked and spaded into the forms according to good practice.

Cement shall be new stock, of standard manufacture acceptable to the Engineer, and shall be kept dry and protected while in storage before used.

Sand shall be clean, sharp and well graded, without perceptible clay or organic matter.

Coarse Aggregate shall be clean, hard, well graded broken stone or washed gravel, with maximum size limited according to nature of the work.

Cleaning Up

Upon completion of the work, all waste material shall be removed and the site left in a neat and presentable condition.

Laws

All work shall be done in accordance with laws and ordinances of any public agencies having jurisdiction.
IMPROVEMENTS MADE TO FALLSBURG FISHING AND BOATING CLUB DAM

LAW ENFORCED BY TENNESSEE CONSTRUCTION CORP.

SUPERVISED BY LEONARD REYNOLDS, SOUTH FALLSBURG

MADE 30 FT. RUNAROUND ON EAST SIDE OF DAM, WHEN WATER RAISES 13 INCHES
ON 25 FT. SPILLWAY WATER WILL START FLOWING THROUGH RUNAROUND TO
RELIEVE PRESSURE ON DAM.

FILLED IN 12 FT. IN FRONT OF SPILLWAY TO TOP OF CONCRETE ABUTMENTS
WITH ABOUT 800 YARDS OF DIRT.

FILLED IN FACE OF DAM WITH ABOUT 35,000 YARDS OF DIRT PACKED AND ROLLED.

INCREASED WIDTH OF ROAD OVER DAM BY 8 TO 10 FEET.

BACK FILLED GRAVEL UNDER LOWER SPILLWAY DECK.

PUT 65 TONS OF CRUSHER RUN ON NEW RUNAROUND AND ROAD ON EAST SIDE OF DAM.

PUT 25 YARDS OF OLD BLACKTOP ON HILL ON WEST SHORE ROAD.

WORK STARTED MAY 30th., COMPLETED JUNE 15th. 1978.
PHOTOGRAPHS

APPENDIX B
2) CREST OF DAM LOOKING EAST

3) UPSTREAM SLOPE LOOKING WEST, NOTE LOGS AT WATERLINE
4) DOWNSTREAM SLOPE LOOKING EAST, NOTE AUXILIARY EMERGENCY SPILLWAY TO RIGHT OF AUTO

5) SPILLWAY AND SLUICEWAYS
6) SPILLWAY CHUTE AND DOWNSTREAM CHANNEL

7) APPROACH CHANNEL TO STOPLOG GATES
10) ABUTMENT WEST OF SLUICEWAYS, NOTE VERTICAL SETTLEMENT IN MASONRY

11) SEEPAGE (IN CENTER OF PHOTO) LOCATED AT SETTLEMENT NEAR WEST ABUTMENT OF SLUICEWAYS
13) EAST VIEW ALONG DOWNSTREAM CRESTM
NOTE CURVATURE ALONG GREAT EDGE.

12) DEBRIS AND VEGETATION AT DOWNSTREAM TOE,
NOTE BULGES ON MASONRY FACE ABOVE LOG,
PILE AND BUSHES.
14) EARTH AND DEBRIS MOUND ON EAST EMBANKMENT TOE
15) UPSTREAM VIEW OF AUXILIARY EMERGENCY SPILLWAY

16) DOWNSTREAM VIEW OF AUXILIARY EMERGENCY SPILLWAY AND CHANNEL
ENGINEERING DATA CHECKLIST

APPENDIX C
**CHECKLIST**

**ENGINEERING DATA**

**DESIGN, CONSTRUCTION, OPERATION**

**PHASE I**

**NAME OF DAM:** Pleasure Lake

**ID #** 345

<table>
<thead>
<tr>
<th>ITEM</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS-BUILT DRAWINGS</td>
<td>None</td>
</tr>
<tr>
<td>REGIONAL VICINITY MAP</td>
<td>U.S. Geodetic - Monticello, NY</td>
</tr>
</tbody>
</table>

**CONSTRUCTION HISTORY**

Built about 1895, the dam was owned by the D&H Canal Company in 1905 but no earlier records were available. The Fallsburg Fishing and Boating Club have owned the dam since 1940.

**TYPICAL SECTIONS OF DAM**

None

**OUTLETS---PLAN**

Proposed Dam Repair: Sheet #1 June 1930

Proposed Dam Repair: Sheet #2 March 1932

**-DETAILS**

**-CONSTRAINTS**

None

**-DISCHARGE RATING**

None

**RAINFALL/RESERVOIR RECORDS**

None

---

**THIS PAGE IS BEST QUALITY PRACTICABLE**

**FROM COPY FURNISHED TO DDQ**
ITEM | REMARKS
--- | ---
DESIGN REPORTS | None

GEOLOGY REPORTS | None

DESIGN COMPUTATIONS | None
HYDROLOGY & HYDRAULICS | None
DAM STABILITY | None
SEE PAGE STUDIES | None

MATERIALS INVESTIGATIONS | None
BORING RECORDS | None
LABORATORY | None
FIELD | None

POST-CONSTRUCTION SURVEYS OF DAM | None

BORROW SOURCES: The fill used for the extension of the riprap in 1978 reportedly came from the area west of the reservoir.
<table>
<thead>
<tr>
<th>ITEM</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MONITORING SYSTEMS</td>
<td>Daily visual inspection only.</td>
</tr>
<tr>
<td>MODIFICATIONS</td>
<td>Repairs to drainage works and conduit lining. Additional seal placed on upstream union. Ready for repair of newly damaged conduit capacity.</td>
</tr>
<tr>
<td>HIGH POOL RECORDS</td>
<td>None</td>
</tr>
<tr>
<td>POST CONSTRUCTION ENGINEERING STUDIES AND REPORTS</td>
<td>None</td>
</tr>
<tr>
<td>PRIOR ACCIDENTS OR FAILURE OF DAM</td>
<td>None Required</td>
</tr>
<tr>
<td>DESCRIPTION REPORTS</td>
<td>Maximum high water reportedly occurred during the storm of October 1955. At that time, water was breaking on the dam crest. To prevent overtopping, the auxiliary emergency spillway was dug.</td>
</tr>
<tr>
<td>MAINTENANCE OPERATION RECORDS</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Downstream the area vegetation was highly ...</td>
</tr>
<tr>
<td></td>
<td>No records of gate operations are kept.</td>
</tr>
</tbody>
</table>

THIS PAGE IS BEST QUALITY PRACTICABLE
FROM COPY PUBLISHED TO DDC
<table>
<thead>
<tr>
<th>ITEM</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPILLWAY PLAN</td>
<td>(Emergency Spillway only)</td>
</tr>
<tr>
<td></td>
<td>SECTION</td>
</tr>
<tr>
<td></td>
<td>Proposed Dam Repairs - Sheet #1 June 1950</td>
</tr>
<tr>
<td></td>
<td>- Sheet #2 March 1952</td>
</tr>
<tr>
<td></td>
<td>DETAILI</td>
</tr>
<tr>
<td></td>
<td>OPERATING EQUIPMENT</td>
</tr>
<tr>
<td></td>
<td>Proposed Dam Repairs - Sheet #1 June 1950</td>
</tr>
<tr>
<td></td>
<td>- Sheet #2 March 1952</td>
</tr>
<tr>
<td></td>
<td>PLANS &amp; DETAILS</td>
</tr>
<tr>
<td></td>
<td>The project has no low level outlets.</td>
</tr>
</tbody>
</table>
VISUAL INSPECTION CHECKLIST

APPENDIX D
VISUAL INSPECTION CHECKLIST

1. Basic Data
   a. General
      Name of Dam: Pleasant Lake Dam
      Hazard Category: High
      County: Sullivan
      ID# 345
      Stream Name: Sheldrake Stream
      Tributary of: Sangwon River
      Location: Sullivan County
      Nearest Town (P.O.): Thompsonville
      Longitude: 74° 38' 35" W
      Latitude: 41° 41' N
      Other Directions: Dam is 1 mile north of Thompsonville on an Sheldrake Stream
      Date of Insp: Aug 30, 1979
      Weather: Sunny
      Haze: Temperature: 85°F
   b. Inspection Personnel
      Harvey Fedman - Team Captain
      State Technical Engineer, Glen Gaynor - Mechanical Engineer
      Two of TAMS - New York Office
   c. Persons Contacted
      Paul A. Schulman, President of Club
      Leonard Roessler
      Kenneth C. Curtis
   d. History:
      Date Constructed: 1929
      Present Owner: Building Fishing & Hunting Club Inc.
      Designed by: Miller
      Constructed by: Miller
      Recent History: Repaired in 1975 by local

2. Technical Data
   Type of Dam: Stone Masonry Crest Drainage Area: 8400 ft²
   Acres: 140 Acres
   Height: 30 ft
   Length: 500 ft
   Upstream Slope: 1:4 on 1:4
   Downstream Slope: 1:4 on 1:4
   Crest Width: 17 ft on 34 ft
   Freeboard at Spillway Crest: 5 ft
### Upstream Slope
- Recently dumped and dozer-rolled earth

1. Undesirable Growth or Debris: Major vegetation at west abutment, some debris in form of logs.
2. Sloughing, Subsidence, or Depressions: Slope uneroded, steep, sloughing, cracking, and gullied.
3. Slope Protection: None; owner has placed logs at slope and waterline contact.
   - (a) Condition of Riprap: N/A
   - (b) Durability of Individual Stones: N/A
   - (c) Adequacy of Slope Protection Against Waves and Runoff: Not adequate
   - (d) Gradation of Slope Protection - Localized Areas of Fine Material: N/A
4. Surface Cracks: None

### Downstream Slope
- Stone Masonry - 2x2x6" blocks

1. Undesirable Growth or Debris: Minimal; some gross, some vegetation at abutment.
Low Level Control: (Type and Size)  
Valve Condition  
Emergency Spillway Type (Material)  Concrete  Width 25 feet  
Side Slopes  Vertical  
Height (Crest to Top)  6 feet  
Exit Slope  1V on 1H  
Exit Length  60 feet  
Ponded Surface Area  220+ Acres  
Capacity (Normal Level)  Unknown  Acre Feet  
Capacity Emergency Spillway Level  V  Acre Feet  

3. Embankment  
a. Crest  
(1) Vertical Alignment  
(2) Horizontal Alignment  
(3) Longitudinal Surface Cracks  
(4) Transverse Surface Cracks  
(5) General Condition of Surface  
(6) Miscellaneous  

Cost elevated for approach to spillway bridge
(2) Sloughing, Subsidence, or Depressions; Abnormal Bulges or Non-Uniformity
Two areas approx 200 ft² appear as bulges about 12" seem to be old movements.

(3) Surface Cracks on Face of Slope Adjacent to right (west)
Tunnel wall there appears to be a settlement which has caused a vertical displacement of stories approx 3".

(4) Surface Cracks or Evidence of Heaving at Embankment Toe
None

(5) Wet of Saturated Areas or Other Evidence of Seepage on Face of Slope; Evidence of "Piping" or "Boils"
Leakage approx 5-10 gpm at right (west) tunnel wall at toe; water clear; appears caused by seepage along metal.
Several other damp areas at toe, no rising water may be present.

(6) Fill Contact with Outlet Structure
Good

(7) Condition of Grass Slope Protection
None

d. Abutments
(1) Erosion of Contact of Embankment with Abutment from Surface Water Runoff, Upstream or Downstream
None

(2) Springs or Indications of Seepage Along Contact of Embankment with the Abutments
None
(3) Springs or Indications of Seepage in Areas a Short Distance Downstream of Embankment - Abutment Tie-In

---

None

---

e. Area Downstream of Embankment, Including Tailrace Channel

---

None

---

(1) Localized Subsidence, Depressions, Sinkholes, Etc. None

---

(2) Evidence of "Piping" or "Boils" None

---

(3) Unusual Presence of Lush Growth, such as Swamp Grass, etc. Forest area cut about 20-40 feet below toe

---

(4) Unusual Muddy Water in Downstream Channel None

---

(5) Sloughing or Erosion None

---

(6) Surface Cracks or Evidence of Heaving Beyond Embankment, Toe None

---
(7) Stability of Tailrace Channel Sideslopes  
Good

(8) Condition of Tailrace Channel Riprap  
None

(9) Adequacy of Slope Protection Against Waves, Currents and Surface Runoff
Adequate

(10) Miscellaneous

f. Drainage System  
None

(11) Condition of Relief Wells, Drains and Appurtenances

(2) Unusual Increase or Decrease in Discharge from Relief Wells

4. Instrumentation

(1) Monumentation/Surveys  
None
2. Observation Wells

3. Weirs

4. Piezometers

5. Reservoir

a. Slopes: Relatively flat, appears stable
b. Sedimentation: Indeterminate

6. Spillways (See Miscellaneous on next page)

a. Principal Spillway: Inlet Condition
   General Remarks (include information such as recently repaired, potential for debris accumulation, special items of note, etc.)
   Two sluiceways filled with 4.5 ft. of floodwater, condition good

b. Emergency Spillway: General Condition Good

Tree Growth: No

Erosion: Minor erosion of facing surface

Other Observations: Spillway east slightly tilted, so that west side is about 3 inches higher than east side.

7. Structural (if required) See Attached Appendix
8. Downstream Channel

Natural still with boulders 10 yards clear for approx 200 ft. Names boys and is natural creek.

a. Condition (obstructions, debris, etc.) See above

b. Slopes good

c. Approximate No. Homes and Population

Villages about 1 mile downstream of relatively poor valley

7.0. Inspector: Auxiliary emergency spillway constructed in line of alignment (east) about 22 ft wide, upward and about 13 inches above elevation of 65 feet of primary spillway. Channel open for about 120 feet and converges with primary spillway channel about 200 feet W/S of primary spillway

Harvey J. Salina
TEAM CAPTAIN
STRUCTURAL INSPECTION CHECKLIST
PHASE I DAM INSPECTION

1. Concrete Surfaces: Granite surface on spillway and lower portions of training walls. Condition good with some cracking.

2. Structural Cracking: Minor


4. Junctions with Abutments or Embankments: Spillway floor wall contact on cast wall slightly open.

5. Drains - Foundation, Joint, Face: None


7. Seepage or Leakage: Center sluice-way wall has minor leakage about 9 feet above chute tee.

8. Monolith Joints - Construction Joints: Upstream approach slab to spillway has open construction joints.

10. Abutments: Good except for noted leakage on east grout wall (see paragraph 3.c. 5 of mom checklist)

11. Control Gates: Flash boards (2 sets)

12. Approach and Outlet Channels: Good

13. Stilling Basin: None; correct upon

14. Intake Structure: No

15. Settlement: As noted in 3

16. Stability: Not applicable
   a. Overturning
   b. Sliding
   c. Seismic

17. Instrumentation: None
   a. Alignment
   b. Uplift
   c. Seismic

18. Miscellaneous
TAMS

Job No. 1487-14
Project Inspection Pleasure Lake

Subject

---

A Sub-basin A

\[ L_{CA_1} = 1.89 \text{ miles} \]

\[ L_1 = 4.73 \text{ miles} \]

\[ A_1 = 5.3 \text{ sq. miles} \]

\[ t_p = C_t \left( \frac{L_1 - L_{CA_1}}{L_{CA_1}} \right)^{0.8} = 3.86 \text{ hrs} \]

\[ t_n = \frac{t_p}{5.5} = 0.70 \text{ hrs} \]

\[ q_p = \frac{640 C_p}{t_p} = 103.63 \text{ cfs/mile}^2 \]

\[ Q = 103.63 \times 5.3 = 549 \text{ cfs} \]

B Sub-basin B

\[ L_{CA_2} = 0.76 \text{ miles} \]

\[ L_2 = 1.93 \text{ miles} \]

\[ A_2 = 3.3 \text{ sq. miles} \]

\[ t_p = C_t \left( \frac{L_2 - L_{CA_2}}{L_{CA_2}} \right)^{0.8} = 2.84 \text{ hrs} \]

\[ t_n = \frac{t_p}{5.5} = 0.4 \text{ hrs} \]

\[ q_p = \frac{640 C_p}{t_p} = 178.57 \text{ cfs/mile}^2 \]

\[ Q = 178.57 \times 3.3 = 589 \text{ cfs} \]

Lake Area 219.5 acres.
TAMS

Job No. 19A7-14
Project DAM INSPECTION - PRESSURE LAKE
Subject ELEVATION VS. AREA

<table>
<thead>
<tr>
<th>ELEVATION (FT)</th>
<th>ACREA (ACRE)</th>
<th>ACREA (HOURS)</th>
<th>ACREA (Ft)</th>
<th>TIME (HRS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1207</td>
<td>21.5</td>
<td>224.8</td>
<td>224.5</td>
<td>0</td>
</tr>
<tr>
<td>1208</td>
<td>230.0</td>
<td>236.0</td>
<td>236.0</td>
<td>0</td>
</tr>
<tr>
<td>1209</td>
<td>24.0</td>
<td>247.0</td>
<td>247.0</td>
<td>0</td>
</tr>
<tr>
<td>1210</td>
<td>25.0</td>
<td>258.0</td>
<td>258.0</td>
<td>0</td>
</tr>
<tr>
<td>1211</td>
<td>264.0</td>
<td>279.0</td>
<td>279.0</td>
<td>0</td>
</tr>
<tr>
<td>1212</td>
<td>270.0</td>
<td>281.0</td>
<td>281.0</td>
<td>0</td>
</tr>
<tr>
<td>1213</td>
<td>281.0</td>
<td>292.0</td>
<td>292.0</td>
<td>0</td>
</tr>
<tr>
<td>1214</td>
<td>293.0</td>
<td>304.0</td>
<td>304.0</td>
<td>0</td>
</tr>
<tr>
<td>1215</td>
<td>305.0</td>
<td>315.0</td>
<td>315.0</td>
<td>0</td>
</tr>
<tr>
<td>1216</td>
<td>317.0</td>
<td>326.0</td>
<td>326.0</td>
<td>0</td>
</tr>
<tr>
<td>1217</td>
<td>328.0</td>
<td>339.0</td>
<td>339.0</td>
<td>0</td>
</tr>
<tr>
<td>1218</td>
<td>340.0</td>
<td>350.0</td>
<td>350.0</td>
<td>0</td>
</tr>
<tr>
<td>1219</td>
<td>351.0</td>
<td>361.0</td>
<td>361.0</td>
<td>0</td>
</tr>
<tr>
<td>1220</td>
<td>362.0</td>
<td>372.0</td>
<td>372.0</td>
<td>0</td>
</tr>
</tbody>
</table>

Date 9/26/78
By
Ch’k. by

Sheet 3 of
TAMS

Job No. 196114
Project DAM INSPECTION - PLEASURE LAKE
Subject

Sheet A of
Date 9/26/70
By 66
Ch’k. by

DAM STORAGE & ELEVATION

SOUTHWEST UNEQ (HI)
<table>
<thead>
<tr>
<th>ELEVATION</th>
<th>AREA (in²)</th>
<th>ANGLE</th>
<th>WIDTH</th>
<th>H</th>
<th>%</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>1208</td>
<td>-</td>
<td>-</td>
<td>21</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>1209</td>
<td>25</td>
<td>25</td>
<td>20</td>
<td>1.5</td>
<td>71.4</td>
<td></td>
</tr>
<tr>
<td>1210</td>
<td>35</td>
<td>58</td>
<td>31</td>
<td>1.5</td>
<td>224.7</td>
<td></td>
</tr>
<tr>
<td>1211</td>
<td>4</td>
<td>35</td>
<td>45</td>
<td>2.2</td>
<td>93.4</td>
<td></td>
</tr>
<tr>
<td>1212</td>
<td>40</td>
<td>145</td>
<td>53</td>
<td>2.1</td>
<td>316.8</td>
<td></td>
</tr>
<tr>
<td>1213</td>
<td>57</td>
<td>205</td>
<td>61</td>
<td>3.9</td>
<td>102.0</td>
<td></td>
</tr>
<tr>
<td>1214</td>
<td>41</td>
<td>266</td>
<td>61</td>
<td>4.4</td>
<td>174.6</td>
<td></td>
</tr>
<tr>
<td>1215</td>
<td>21</td>
<td>527</td>
<td>61</td>
<td>5.4</td>
<td>237.1</td>
<td></td>
</tr>
<tr>
<td>1216</td>
<td>122</td>
<td>240</td>
<td>61</td>
<td>7.5</td>
<td>291.9</td>
<td></td>
</tr>
<tr>
<td>1217</td>
<td>122</td>
<td>571</td>
<td>61</td>
<td>9.2</td>
<td>357.5</td>
<td></td>
</tr>
</tbody>
</table>

**GIVEN**

- **H**: 7.5
- **G**: 237.1

---

**CONSTRUCTION LEVEL**

| 1216' | 7.5 |
| 1215' | 5.4 |
| 1214' | 4.4 |
| 1213' | 3.9 |
| 1212' | 2.1 |
| 1211' | 1.5 |
| 1210' | 1.5 |
| 1209' | 2.2 |
| 1208' | -   |
### TAMS

**Job No.** 1487-1A  
**Project** PLUS POOLS  
**Subject** COMPLAINTS

---

**Assume Water Spilling Over Dam - Spillway Frequency**  
**Max Use + Power Dam 452'**  
**Emergency Spillway Determined by Last Phase**  
**Water Spilling Channel #1 921' Dam 312'**

<table>
<thead>
<tr>
<th>Elevation</th>
<th>H. Spill</th>
<th>H. Dam</th>
<th>Q. Spill</th>
<th>Q. Dam</th>
<th>R. Decline</th>
<th>R. Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1207'</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1208'</td>
<td>1</td>
<td>11.2</td>
<td>11.2</td>
<td>11.2</td>
<td>11.2</td>
<td>11.2</td>
</tr>
<tr>
<td>1209'</td>
<td>2</td>
<td>21.5</td>
<td>21.5</td>
<td>21.5</td>
<td>21.5</td>
<td>21.5</td>
</tr>
<tr>
<td>1210'</td>
<td>3</td>
<td>42.0</td>
<td>42.0</td>
<td>42.0</td>
<td>42.0</td>
<td>42.0</td>
</tr>
<tr>
<td>1211'</td>
<td>4</td>
<td>63.5</td>
<td>63.5</td>
<td>63.5</td>
<td>63.5</td>
<td>63.5</td>
</tr>
<tr>
<td>1212'</td>
<td>5</td>
<td>85.0</td>
<td>85.0</td>
<td>85.0</td>
<td>85.0</td>
<td>85.0</td>
</tr>
<tr>
<td>1213'</td>
<td>6</td>
<td>106.0</td>
<td>106.0</td>
<td>106.0</td>
<td>106.0</td>
<td>106.0</td>
</tr>
<tr>
<td>1214'</td>
<td>7</td>
<td>127.0</td>
<td>127.0</td>
<td>127.0</td>
<td>127.0</td>
<td>127.0</td>
</tr>
<tr>
<td>1215'</td>
<td>8</td>
<td>148.0</td>
<td>148.0</td>
<td>148.0</td>
<td>148.0</td>
<td>148.0</td>
</tr>
<tr>
<td>1216'</td>
<td>9</td>
<td>169.0</td>
<td>169.0</td>
<td>169.0</td>
<td>169.0</td>
<td>169.0</td>
</tr>
<tr>
<td>1217'</td>
<td>10</td>
<td>190.0</td>
<td>190.0</td>
<td>190.0</td>
<td>190.0</td>
<td>190.0</td>
</tr>
<tr>
<td>1218'</td>
<td>11</td>
<td>211.0</td>
<td>211.0</td>
<td>211.0</td>
<td>211.0</td>
<td>211.0</td>
</tr>
<tr>
<td>1219'</td>
<td>12</td>
<td>232.0</td>
<td>232.0</td>
<td>232.0</td>
<td>232.0</td>
<td>232.0</td>
</tr>
</tbody>
</table>

*Note: Flow rate at 12'.
TAMS

Job No. 143-14

Project

Subject

Date 2/22/78

By

Ch’k by

Sheet 1 of ______

2000-2400

- 1207

1208

1209

1210

1211

1212

1213

1214

1215

1216

1217

1218

1219

ELEV H. (ft)

4 6 8 10 12 14 16 18 20 22 24

2 4 6 8 10 12 14 16 18 20 22 24

X - 0.55

Y - 11.12

P WF - 112 CN - 79
TAMS

Job No. 1487-14
Project Inspection: Pleasure Land
Subject

Date Sep 27, 1978
By D & C
Chk. by

Sheet 8 of

Probable Maximum 6 Hour Rainfall over 10 sq.m.

\[ Q = \frac{P}{0.6} \]

Reduced by 30% (EC 1110-2-27) = 19.6'

LOCATION

\[ \text{Location: } L = 74^\circ 27' 40'' \]

\[ \text{H} = 41^\circ 41' \]

\[ \text{15%/urban, 75%/agriculture} = 12 \text{ Pct.} \]

\[ \text{50%/Forest} = 12 \text{ Pct.} \]

\[ \text{10%/Furrowed} = 10 \text{ Pct.} \]

\[ \text{Rest} = 10 \text{ Pct.} \]

\[ H = 10 + 70 + 77 \]

\[ C = \frac{C_0}{C_0 - 10 + 1200 - 10} \]

\[ C = 8.6 \]

\[ C = \frac{(1 - C_{0})^{1}}{1 + C_{0} - 1} \]
### 547-16 PLEASURE LAKE DAM INSPECTION
### SULLIVAN COUNTY
### STREETWAY ADEQUACY TEST

#### FULL MVE

<table>
<thead>
<tr>
<th>Input Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting Elev. (ft.)</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>1207.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reservoir Elev. (ft.)</th>
<th>Reservoir Storage (ACFT)</th>
<th>Reservoir Outflow (CFT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1207.00</td>
<td>0.0000</td>
<td>0.00</td>
</tr>
<tr>
<td>1208.00</td>
<td>224.5000</td>
<td>187.00</td>
</tr>
<tr>
<td>1209.00</td>
<td>440.0000</td>
<td>354.00</td>
</tr>
<tr>
<td>1210.00</td>
<td>777.0000</td>
<td>571.00</td>
</tr>
<tr>
<td>1211.00</td>
<td>955.0000</td>
<td>1297.00</td>
</tr>
<tr>
<td>1212.00</td>
<td>1211.0000</td>
<td>1552.00</td>
</tr>
<tr>
<td>1213.00</td>
<td>1416.0000</td>
<td>1894.00</td>
</tr>
<tr>
<td>1214.00</td>
<td>1634.0000</td>
<td>2211.00</td>
</tr>
<tr>
<td>1215.00</td>
<td>1851.0000</td>
<td>2527.00</td>
</tr>
<tr>
<td>1216.00</td>
<td>2111.0000</td>
<td>2842.00</td>
</tr>
<tr>
<td>1217.00</td>
<td>2425.0000</td>
<td>3150.00</td>
</tr>
<tr>
<td>1218.00</td>
<td>2751.0000</td>
<td>3456.00</td>
</tr>
<tr>
<td>1219.00</td>
<td>3119.0000</td>
<td>3760.00</td>
</tr>
</tbody>
</table>

Note: The table provides the starting and ending elevations, time intervals, and storage coefficients for the reservoir. The outflow coefficients are calculated based on these inputs.
<table>
<thead>
<tr>
<th>ELEV (FT.)</th>
<th>INTERVAL TIME (HOURS)</th>
<th>STARTING TIME</th>
<th>ENDING TIME</th>
<th>INTG TIME</th>
<th>INTG OP TON</th>
<th>GATE</th>
<th>PLOT</th>
<th>STORAGE</th>
<th>OUTFLOW</th>
<th>INFLOW</th>
<th>TOLL</th>
<th>TOLC</th>
<th>BREAK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1297.00</td>
<td>0.25</td>
<td>8.40</td>
<td>8.55</td>
<td>NO</td>
<td>YES</td>
<td>1.00</td>
<td>1.00</td>
<td>0.500</td>
<td>1.000</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RESERVOIR ELEV (FT.)</th>
<th>STORAGE (ACRES)</th>
<th>OUTFLOW (CFS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1297.00</td>
<td>0.000</td>
<td>0.00</td>
</tr>
<tr>
<td>1296.35</td>
<td>2923.000</td>
<td>423.40</td>
</tr>
<tr>
<td>1295.59</td>
<td>1207.000</td>
<td>797.00</td>
</tr>
<tr>
<td>1294.56</td>
<td>759.000</td>
<td>1095.00</td>
</tr>
<tr>
<td>1293.06</td>
<td>454.000</td>
<td>1180.00</td>
</tr>
<tr>
<td>1292.60</td>
<td>300.000</td>
<td>1035.00</td>
</tr>
<tr>
<td>1291.60</td>
<td>300.000</td>
<td>900.00</td>
</tr>
<tr>
<td>1290.50</td>
<td>342.600</td>
<td>2021.00</td>
</tr>
</tbody>
</table>