

***MELODY LAKE
DAM REPAIRS
ASSOCIATION
VOLUNTEERS MAKE THE
DIFFERENCE***



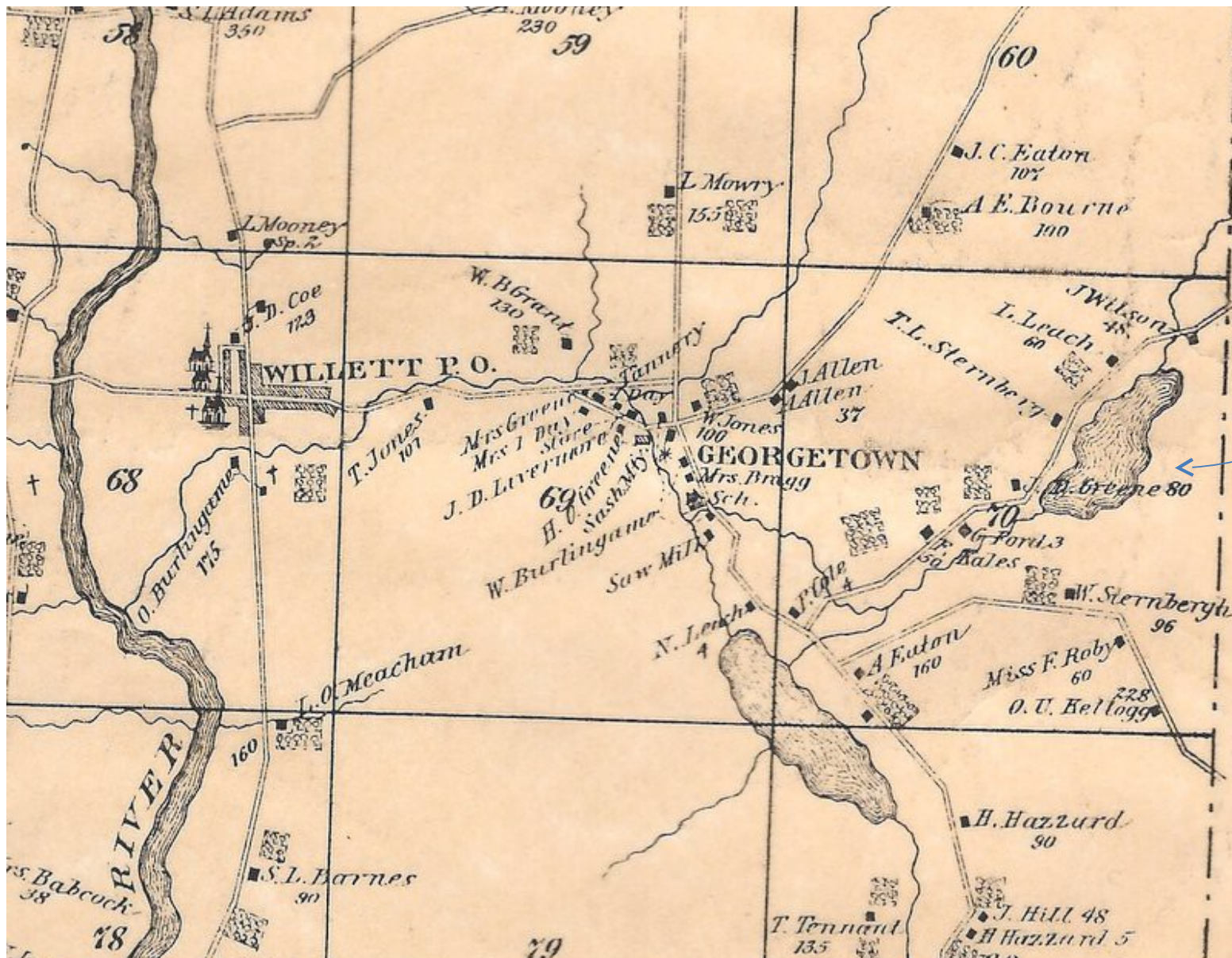
MANY TIMES IT IS NECESSARY TO SEEK THE OPINION OF AN EXPERT WHEN COMPLETING CONSTRUCTION OR MAINTENANCE ITEMS AROUND THE LAKE. YOU SHOULD MAKE IT A PRACTICE TO BECOME INVOLVED EARLY IN THE PROJECT. MOST OF THE TIME PROFESSIONALS WELCOME THE INPUT WHEN LOOKING AT VARIOUS WAYS TO COMPLETE A PROJECT. THEY MAY, HOWEVER, BE LESS APT TO APPRECIATE CHANGES AFTER THE PLANS HAVE BEEN SUBMITTED TO AND APPROVED BY THE STATE.

MONEY CAN BE SAVED BY DOING AS MUCH AS POSSIBLE BY ASSOCIATION VOLUNTEERS. MUCH OF THE TIME, DOING SOME OF THE WORK YOURSELF IS EASIER THAN TRYING TO RAISE THE MONEY NEEDED TO PAY A CONTRACTOR.

WITH THE LATEST DAM SAFETY REGULATIONS, MANY OF US WILL BE HIRING PE'S TO PERFORM REQUIRED PERIODIC DAM INSPECTIONS. THE REQUIREMENTS FOR COMPLETING THESE INSPECTIONS ARE STRAIGHTFORWARD AND USUALLY QUOTES FROM THE ENGINEERING FIRMS ARE VERY CLOSE. THE PROBLEM IS, WHEN DEFICIENCIES ARE FOUND AND REPAIRS OR MODIFICATIONS BECOME NECESSARY, THE SUGGESTED REMEDY IS NOT ALWAYS THE MOST PRACTICE OR THE MOST ACHIEVABLE.

**MELODY LAKE IS A 40+ ACRE
LAKE IN THE TOWN OF WILLET.
THE DAM WAS BUILT IN THE MID
1800'S TO PROVIDE A RELIABLE
WATER SOURCE TO THE
DOWNSTREAM MILLS IN THE
HAMLET OF GEORGETOWN.**



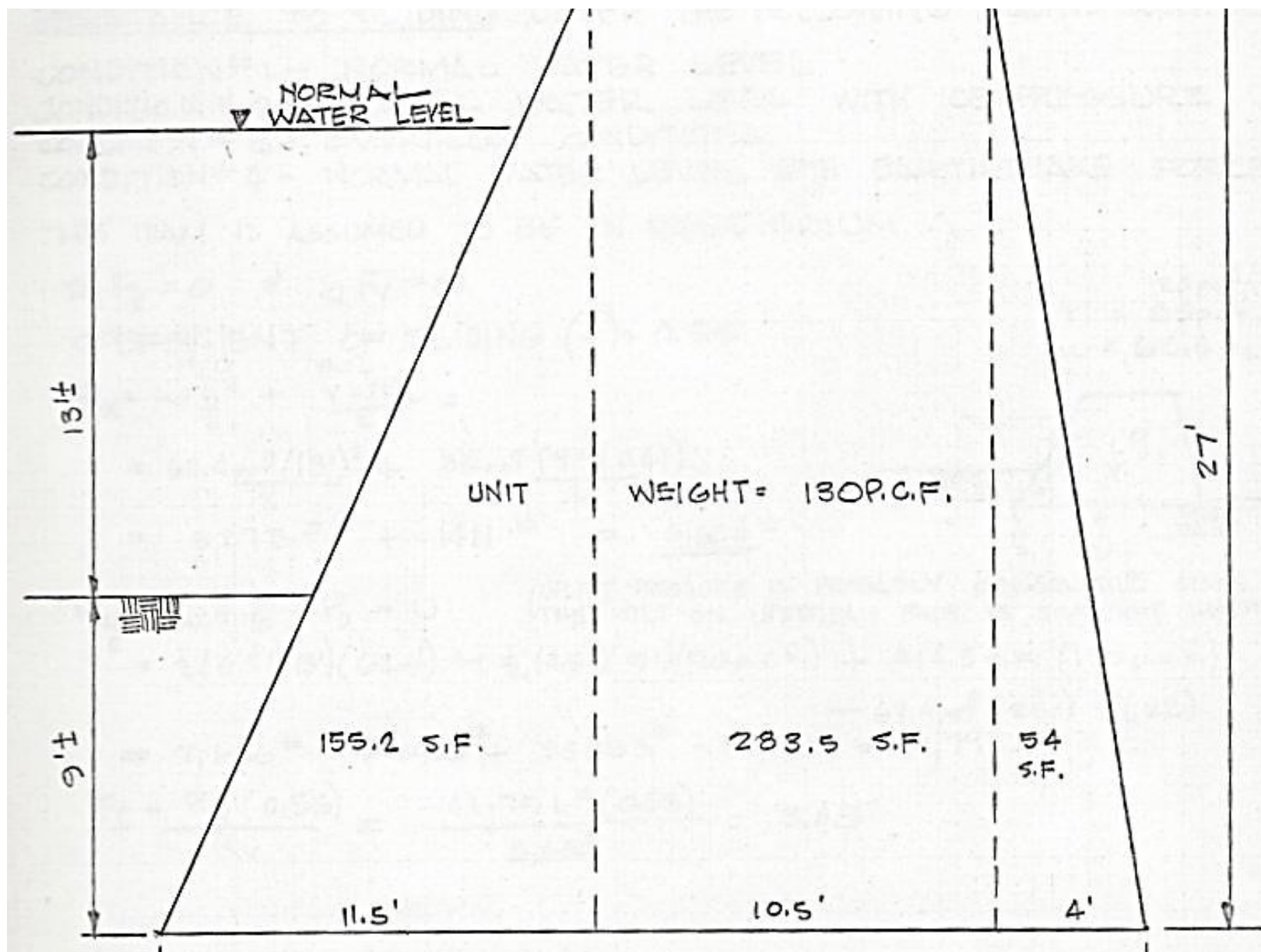


MELODY
LAKE

1876 Map of Willet, Cortland County

THE DAM IS A CLASS C, HIGH HAZARD DAM CONSTRUCTED OF DRY, LAID UP NATIVE STONE, SIMILAR TO A FARMERS STONE WALL. THE DAM IS APPROX. 27'H X 10'W (TOP) X 26'W (BASE) AND 120'L. THE DAM IS A GRAVITY TYPE DAM WITH NO KEY AND RELIES ON IT'S MASSIVE WEIGHT TO PROVIDE STABILITY AND PREVENT SLIDING.





IN OCTOBER, 1980, MELODY LAKE DAM WAS INSPECTED BY DEC AND THE ARMY CORP OF ENGINEERS AS PART OF THE NATIONAL DAM INSPECTION PROGRAM AND SEVERAL DEFICIENCIES WERE FOUND AND ORDERED TO BE CORRECTED. ALTHOUGH THERE WAS NO IMMEDIATE DANGER, IF REPAIRS WERE NOT MADE, THE DAM COULD BE ORDERED TO BE BREACHED.

SUSQUEHANNA RIVER BASIN

MELODY LAKE DAM

CORTLAND COUNTY, NEW YORK
INVENTORY NO. N.Y. 748

**PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM**



NEW YORK DISTRICT CORPS OF ENGINEERS
JANUARY, 1981

12/9/81

9 local dams classified unsafe

By PAUL SHUKOVSKY

Nine dams in Chenango, Delaware and Cortland counties have been classified as unsafe by the U.S. Army Corps of Engineers.

None of the dams are in danger of collapse, said consulting engineers who inspected the dams for the Army Corps this year. No dams in Broome or Tioga counties were cited.

"These structures are not in imminent danger of failing," said George Koch, chief of the New York Department of Environmental Conservation Dam Safety Section. "They are either earth or concrete dams where the structural integrity is questionable."

All the dams are called "hazard structures" by the Army Corps because if they

did fail, there would probably be loss of life and/or serious property destruction downstream from the dam, Koch said.

The dams designated unsafe are:

Chenango County

- Norwich Reservoir Number 2, northeast of Norwich;
- Lake Ludlow Club, northwest of Village of Tyner;
- Genegantslet Lake, north of Village of McDonough;
- Guilford Lake, west of Village of Guilford.

Delaware County

- Rexmere, Town of Harpersfield near Stamford;
- Robert L. Bishop, Town of Andes;
- William H. Luchmann, southwest of Village of Trout Creek.

Cortland County

- Stump Pond, southeast of Village of Willet;
- Melody Lake, east of Village of Willet.

The main reason the dams have been called unsafe is that their spillways are too small to handle an accumulation of water from an unusually heavy storm without the lake water overflowing the top of the dam, Koch said.

Since most of the dams are earth structures, they could be seriously eroded by water flowing over the top, Koch said.

Letters, along with copies of the engineers' report, have been sent to the owners of the dams by the DEC. The owners must either confirm or refute the unsafe assessment, Koch said. If the dam is confirmed as unsafe, corrective action must be taken,

Koch said.

Koch said the DEC has the legal power to enforce necessary corrections.

The dams were inspected as part of the Army Corps of Engineers National Dam Safety Program which is designed to identify dams which may pose hazards.

Several dams in the Northeast were classified as unsafe, needing emergency repairs. No dams were classified in the emergency category in Broome, Chenango, Tioga, Delaware or Cortland Counties.

The Norwich Board of Water Commissioners intends to study the report carefully, board chairman Albert Sullivan said, and probably order its own engineering studies. If those studies confirm that unsafe conditions exist at the Norwich dam, remedial action will be taken, he said.

THE DEFICIENCIES NOTED IN THE PHASE ONE INSPECTIONS WERE:

- 1. INADEQUATE SPILLWAY CAPACITY**
- 2. DETERIORATED CONCRETE OF UPSTREAM FACE OF DAM**
- 3. VOIDS UNDER BRIDGE PIERS**
- 4. DISPLACED STONE ON DOWNSTREAM FACE**
- 5. NO OPERABLE DRAIN**
- 6. SUBSTANTIAL LEAKAGE**
- 7. NO EMERGENCY ACTION PLAN**
- 8. LACK OF PRESCRIBED MAINTENANCE & OPERATION PROCEDURES**



MELODY LAKE DAM 1981



Upstream face of dam



Inadequate Spillway Capacity



MISSING STONE AND DETERIORATED PIERS

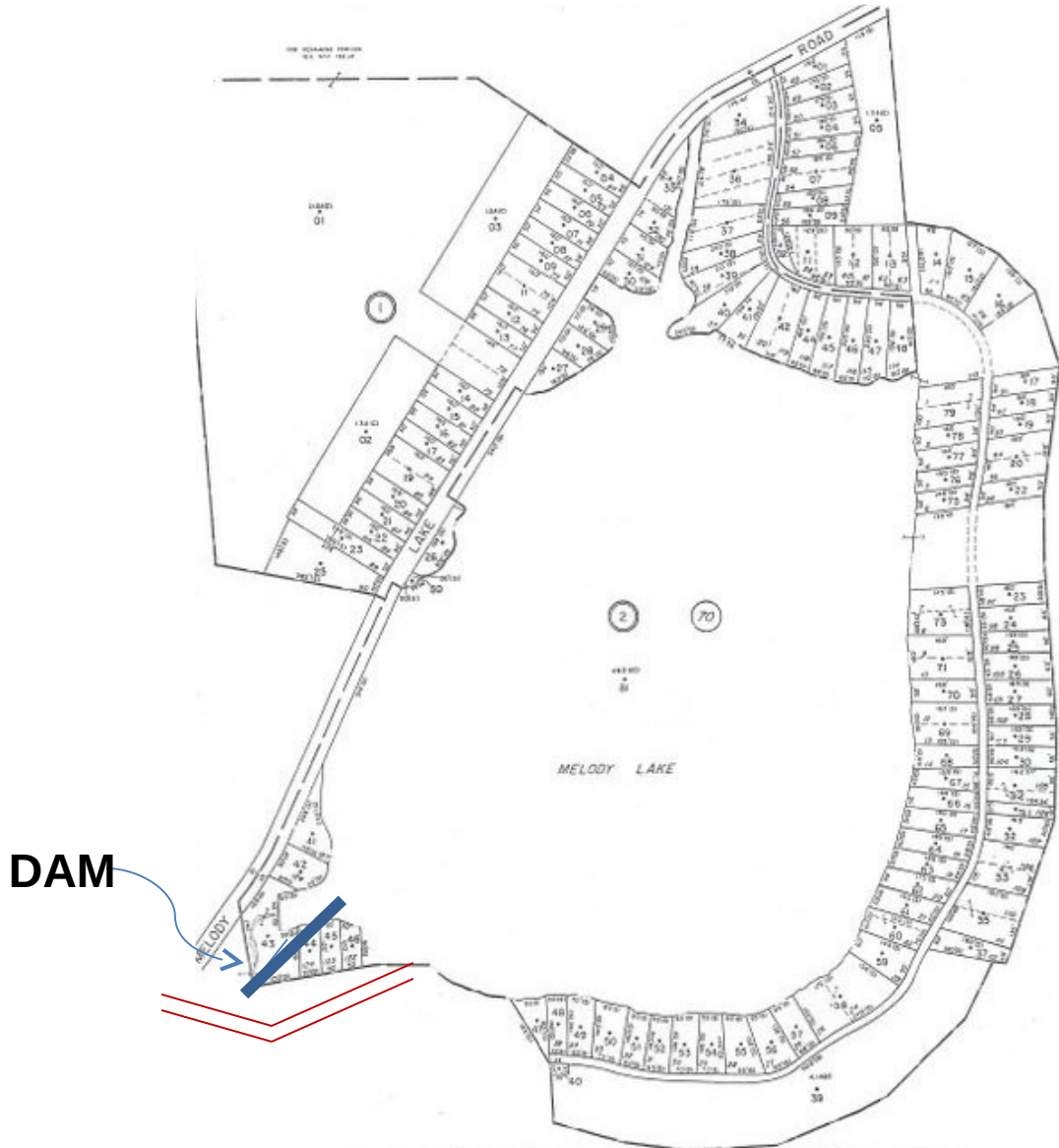
THE FOLLOWING MODIFICATIONS WERE SUGGESTED BY THE ENGINEER TO DEC AND APPROVED :

2 DRAIN PIPES ACROSS PRIVATE PROPERTY OF ASSOCIATION MEMBER

AND AN OVERFLOW CHANNEL ACROSS NON MEMBER PRIVATE PROPERTY (BOTH OF THESE PROPOSALS HAD LIMITED ACCESS DUE TO THE DEAD END OF MELODY LANE)

REMOVAL OF ALL DETERIOATED CONCRETE (SPILLWAY, PIERS, ETC.)

SINCE THESE RECOMMENDATIONS WOULD REQUIRE EASEMENTS OR OUTRIGHT PURCHASE OF PROPERTY THE TOTAL REPAIRS COULD COST AS MUCH AS \$250,000. ATTEMPTS TO RAISE FUNDS THROUGH GRANTS, FUND RAISERS, ETC PROVED UNSUCCESSFUL. LOAN REQUESTS WERE DENIED SINCE THE ASSOCIATION HAD NO GUARRANTEED SOURCE OF INCOME.



Proposed drain 12" x 250' x 2 =
500'

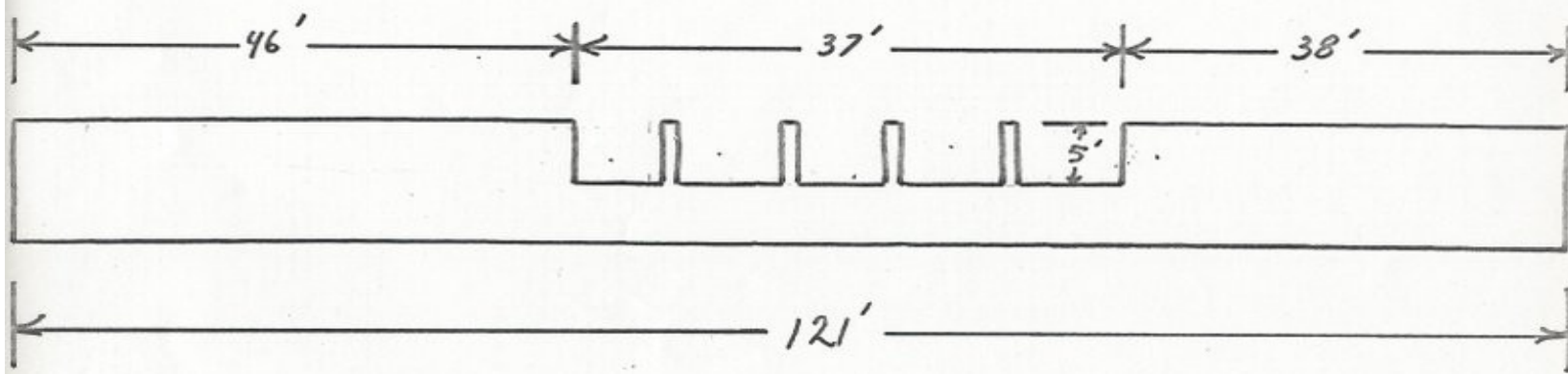
Proposed swale – 3'd x 45'w x
120'

THE ASSOCIATION FORMED A COMMITTEE WHICH SUGGESTED THE ALTERNATIVE MEANS TO CORRECT THE DEFICIENCIES:

MAKE THE EXISTING SPILLWAY ON THE DAM LARGER THEREBY ELIMINATING THE NEED FOR A LONG SWALE ACROSS PRIVATE PROPERTY. THIS WOULD ALSO ELIMINATE A LONGTERM MAINTENANCE ITEM.

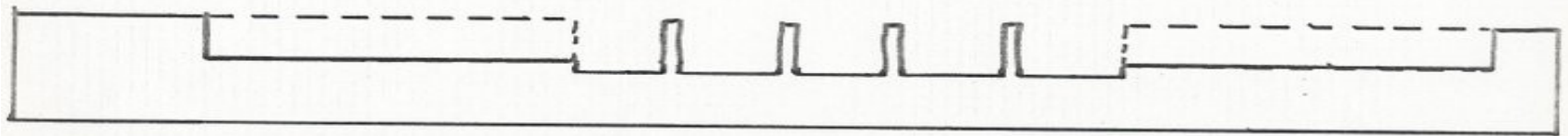
MOVE THE LOCATION OF THE DRAIN PIPES TO THE OPPOSITE SIDE OF THE DAM WHERE THERE WAS BETTER ACCESS AND THE ASSOCIATION ALREADY HAD A DAM MAINTENANCE EASMENT.

4)



Original Spillway Approx. 150 ft²

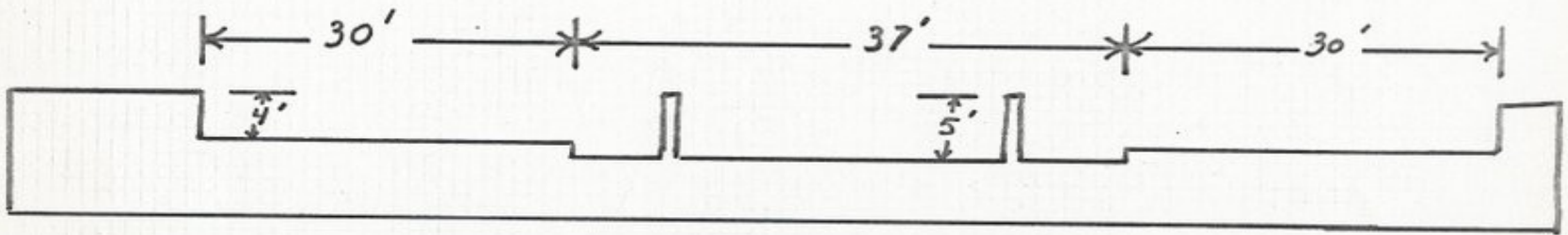
Dam with Original Spillway



Proposal to remove 30' x 4' on both sides of the spillway

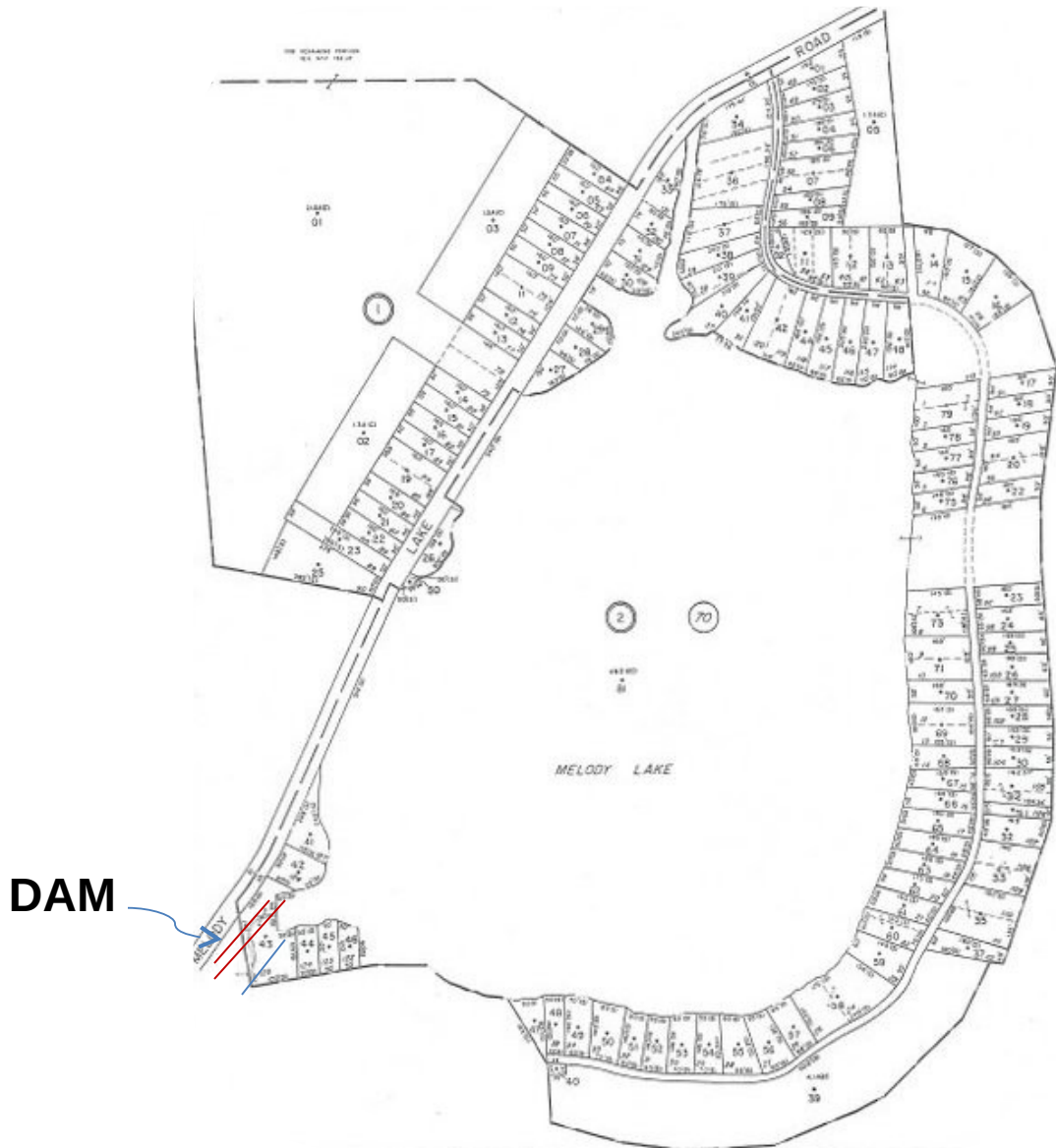
Proposed Spillway

4)



After removing both sections plus the removal of 2 piers
resulted in an additional 240 ft² for a total of 390 ft²
(an increase of 260%)

Final Spillway



Proposed drain 12" x 250' x 2 = 500'

Final drain 12" x 110' x 2 = 220'

Proposed swale – 3'd x 45'w x 120'l
Final swale – 0'



**TEST HOLES WERE DUG TO DETERMINE DEPTH OF
BEDROCK**



THESE SUGGESTIONS WERE RECOMMENDED TO DEC AND AFTER SOME GIVE AND TAKE NEGOTIATIONS, THEY WERE APPROVED. SELLING THESE IDEAS TO THE LOCAL ENGINEERING FIRM WAS NOT AS EASY. ESTIMATES BY THE ASSOCIATION WERE THAT IF WE COULD DO MUCH OF THE WORK WITH VOLUNTEER MEMBERS, THE JOB COULD BE COMPLETED FOR AROUND \$60,000. ALL PROPERTY OWNERS AROUND THE LAKE WERE ASSESSED \$600. THIS AMOUNT ADDED TO WHAT HAD ALREADY BEEN RAISED SHOULD BE ENOUGH TO COVER THE ESTIMATED \$60,000 NEEDED. IN MAY OF 1986 AS MONEY STARTED COMING IN, VOLUNTEERS STARTED CUTTING TREES DOWNSTREAM OF THE DAM. DYE TESTS WERE TAKEN TO DETERMINE SOURCE OF LEAKS



ASSOCIATION VOLUNTEERS CUTTING TREES AND BRUSH



**FIREWOOD WAS RAFFLED OFF BRINGING IN OVER
\$750**





ALL LIMBS AND BRUSH WERE CHIPPED BY VOLUNTEERS





Dye was used to determine where the leakage was coming from



SECTIONS TO BE REMOVED WERE MEASURED AND MARKED

BIDS WERE THEN SOLICITED TO INSTALL THE DRAINS. INSTALLATION OF THE DRAINS STARTED IN THE SPRING OF 1987. IN THE SUMMER OF 1987, WHEN THE DRAIN INSTALLATION WAS HALF COMPLETED, THE VALVES WERE OPENED AND THE LAKE LEVEL WAS LOWERED 7 FEET. THIS ALLOWED THE REMAINING PIPE TO BE INSTALLED AND THE FACE OF THE DAM INSPECTED.

A COFFER DAM BUILT DURING THE ORIGINAL CONSTRUCTION OF THE DAM BECAME VISIBLE FOR THE FIRST TIME.



**EXCAVATION STARTED TO INSTALL DRAIN
BY CONTRACTOR FOR \$29,280 LABOR ONLY**













VALVES WERE INSTALLED





SEEPAGE COLLARS WERE POURED BETWEEN VALVES AND LAKE



TRENCH WAS DUG FROM THE LAKE TO THE PIPE



**DRAINS WERE OPENED AND WOULD REMAIN
OPEN FOR MOST OF THE SUMMER OF 1987**





The Lake was lowered 7 feet which would allow us to inspect the upstream face of the dam



At this level, a wooden coffer dam which was constructed when the dam was built became visible

THE NEXT STEP WAS TO REMOVE THE WALKWAY AND START EXPANDING THE SPILLWAY. THIS WAS DONE BY ASSOCIATION MEMBERS. SMALL CRACKS IN THE CONCRETE FACE OF THE DAM WERE PATCHED WITH HYDRALIC CEMENT. LARGER REPAIRS WERE COMPLETED BY REMOVING OLD SECTIONS AND FORMING AND POURING NEW CONCRETE.



Upstream part of the dam to be removed for larger spillway



Cracks on the upstream face were patched with hydraulic cement





Larger sections were removed, formed and replaced





The lake would remain lowered for the remainder of the summer



Again using association volunteers, the walkway was removed



The piers were then removed





Work was then started to increase the spillway capacity



SINCE THE DAM RELIES ON ITS MASSIVE WEIGHT FOR STABILITY, DEC REQUIRED THAT ALL STONE THAT WOULD BE REMOVED SHOULD BE PLACED IN A BUTTRESS AT THE DOWNSTREAM TOE OF THE DAM TO COMPENSATE FOR THE LOSS OF WEIGHT FROM EXPANDING THE SPILLWAY. (REMOVAL OF ABOUT 110 CU. FT)



The stone that was removed for the larger spillway was placed at the downstream toe of the dam to reduce the possibility of sliding



IN THE FALL OF 1987, A CONTRACTOR WAS HIRED TO POUR THE CONCRETE SPILLWAY CAP AND PIERS WHICH WAS COMPLETED IN NOVEMBER. THE DRAINS WOULD REMAIN OPEN FOR THE WINTER TO KEEP WATER AND ICE OFF THE SPILLWAY



The larger concrete work such as spillway slabs and piers were contracted out for \$15,000 labor & material



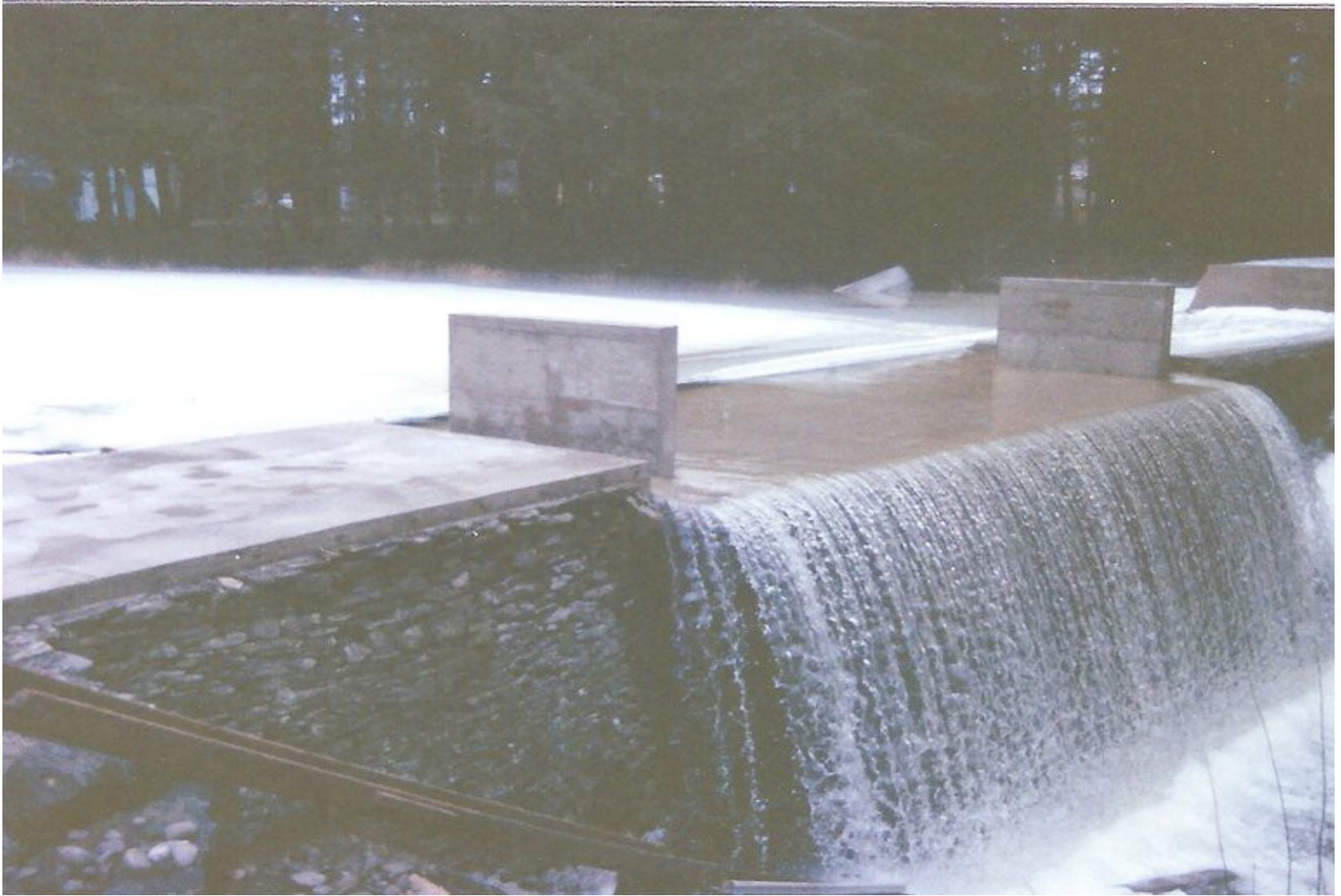




Winter would arrive and work was put on hold until Spring

DURING THIS TIME, ABOUT $\frac{3}{4}$ OF THE PROPERTY OWNERS HAD PAID THE \$600 ASSESSMENT. WITH INFORMATION FROM DEC LEGAL STAFF, AND THE NYS ATTORNEY GENERALS OFFICE, THE ASSOCIATION WAS MADE AWARE OF A RECENT NYS COURT OF APPEALS DECISION THAT WOULD POSSIBLY HELP TO GET THE REMAINING PROPERTY OWNERS TO PAY. AN ATTORNEY WAS HIRED TO CONTACT THE UNPAID MEMBERS AND SHORTLY THEREAFTER MORE THAN $\frac{1}{2}$ THOSE WOULD ALSO PAY.

IN MARCH 1988, LEGAL PROCEEDINGS WERE STARTED AND ON MARCH 22, 1988 SUMMONS WERE SERVED AND 5 MORE IMMEDIATELY PAID. BEFORE ANY COURT ACTION ACTUALLY STARTED, ALL BUT 1 PROPERTY OWNER HAD PAID.



When Spring arrived, the Lake was full and water was running over the dam





Work was started on the new walkway by Association Volunteers







A concrete pad was poured by association members on the downstream buttress





After 7 years, more than 2,500 volunteer hours and \$59,541.19 the modifications were complete. A letter was received from DEC Dam Safety stating that “inspection of the recently completed restoration work found the structure to be in satisfactory condition and in compliance with current applicable dam safety criteria” the letter went on to say: “You and your association members are to be complimented on a job well done”



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