TOWN OF OLD LYME
ROGERS LAKE DAM (CT 10505) Town Woods Road, Old Lyme, CT
DAM OPERATION & MAINTENANCE MANUAL

Preface/Useful information

- The dam is considered a Level 1 for Stream Flow Standards and Regulations (Section 26-141b) and a Class B (significant downstream hazard) by DEEP Dam Safety.
- Water level is measured using the scale(s) near the dam. When the lake is at level 2.1 on the scale the water level is equal to the level of the spillway.
- One inch of rain in a 12-hour period can raise the lake up to 3 inches.
- The primary water control element of the dam is the spillway.
    - The dam has a 31.75 inch gate controlled sluiceway. The dam and sluiceway are not designed as or considered to be flood control protection (per DEEP Dam Safety). The sluiceway is used to moderate the level of the lake during normal seasonal rainfall. For example, with the sluiceway gate fully open the lake will drop 1.5 inches in 24 hours assuming normal conditions.
- Normal conditions covered by this document include:
    - No rain in the last 48 hours.
    - Rainfall events of less than four inches.
    - Assume lake level is equal to the level of the spillway.
- Flood emergency operation plan is covered under a separate document.
- The Dam Operation & Maintenance Manual is approved and revised by the Rogers Lake Authority ("RLA")

Rogers Lake comprises 265 acres and is 66 feet deep at its deepest. The lake resides within the boundaries of the towns of Lyme and Old Lyme, and the lake is the drainage basin for an adjoining 4,819 acres of which 4,472 acres (93%) are naturally wooded or wetlands. Properties around the lake are mostly developed, and future development should be minimal because undeveloped properties are primarily large acreage of State-owned land and the Stone's Ranch Military Reservation.

I. Operational Procedure

A. Ownership and Responsibility

1. The Rogers Lake Dam is owned and maintained by the Town of Old Lyme. The level of the lake is controlled by the dam which consists of a 29-foot spillway, a gate controlled 31.75-inch diameter sluiceway, and a fish ladder. The stream at the outlet is classified as a "Class 1" or near natural stream. The Town of Old Lyme has assigned the duties for the operation of the sluiceway to the RLA. Contact information for the RLA is found in Appendix 1.

B. Weather Forecast Observation Requirements

1. The weather forecast for Old Lyme should be checked every Monday, Wednesday and Friday to check for any significant (greater than one inch) rainfall events in the next ten days.

2. The best local forecast can be found on the Internet at Weather Underground. The website address is: https://www.wunderground.com/weather/us/ct/old-lyme-eoc/KCTOLDLY6. This weather station is located near Rogers Lake at the Old Lyme EOC (Emergency Operation Center) Station. If this weather station is not online, then select another station in Old Lyme or Lyme.

3. Once this web page is open, click on the "10-Day" tab. Each day for the next ten days will be displayed with the high and low temperatures, a graphic of the forecast, and the rainfall amount expected for each day.

C. Operation

1. The lake level is to be observed every other working day of the year as a general rule. In the event of heavy rain forecasts or during heavy rain, daily observations are to be made by the sluiceway operator.

2. The optimum level of the lake is at or near the level of the spillway. Factors to be considered in managing lake levels include:

   a. Levels 6 inches over the spillway can cause flooding for some lake residents

   b. Levels 16 inches below the spillway affects the operation of some lake residents' wells,

   c. Every leap year the lake is lowered 14 inches in the fall to allow for shoreline maintenance by the residents

      - Every fourth year (Leap Year) starting in mid-September, the lake level shall be reduced approximately fourteen (14) inches below spillway crest elevation to allow lake-side owners the opportunity to repair their lake-side walls and docks. A 30 day advance notice shall be issued to the entities below. The reduced level shall not be maintained longer than thirty (30) days after the lake has been reduced to 14 inches (requires up to 6 days), after which time the slide gate shall be adjusted to maintain the 14 inch drawdown. The following entities should be notified (see Appendix 1 for contact information):
        - DEEP Fisheries Division
        - Towns of Lyme and Old Lyme
        - Yale University Department of Ecology and Evolutionary Biology
        - Rogers Lake West Shores Association
        - Downstream stakeholders

d. In the spring the level of the lake and the operation of the sluiceway is to be adjusted to support Connecticut Department of Energy and Environmental Protection ("DEEP") Fisheries Division and Yale University Department of Ecology and Evolutionary Biology researchers in the operation of the fish ladder at the dam and the two downstream fish ladders.

The fish ladder is opened to allow for the migration of Alewives to the Lake. The migration is subject to temperature and is generally during March through May. The sluiceway should be closed during this time to prevent fish from attempting to swim through it as the number of fish is counted. The sluice gate should not be opened more than half way (1'6" on the gauge) to prevent washout of the fish ladder at Upper Mill Pond. If the sluice gate is opened it should be at least 10" on the gauge to achieve enough turbulence to discourage passage of fish through sluiceway. The sluice gate will be opened per the following guidelines if a rain event of over one inch is expected. A lake level of 2.3 feet to 2.5 feet (on the gauge at the spillway) should be maintained while the fish ladder is in operation.

e. Forecasted precipitation in excess of one inch over the next 24 to 48 hours.

The lake drains an area just under 20 times the size of the lake. To help prevent local flooding the sluiceway may be opened to drawn down the lake prior to anticipated rainfall. In general, 1 inch of rainfall raises the lake level ~3 inches in 24 hours without the sluiceway being open. Waterflows from the drainage basin can take up to 4 days to reach the lake. The level of the lake should be monitored daily during and after a storm.

The following table reflects the estimated time to the lower lake level. This assumes that the lake is at the level of the spillway to start and there is no additional rainfall.

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Time to Lower Lake Level (in days)

Gauge on Shaft	CFS	1/10 foot	2/10 foot	3/10 foot	4/10 foot	5/10 foot
3"	0.47	27.62	55.23	82.85	110.46	138.08
4"	1.37	9.56	19.11	28.67	38.23	47.78
6"	3.81	3.44	6.88	10.32	13.76	17.20
8"	5.77	2.27	4.54	6.81	9.08	11.35
10"	7.92	1.66	3.31	4.97	6.62	8.28
1'0"	9.88	1.33	2.65	3.98	5.31	6.64
1"2"	12.70	1.03	2.06	3.10	4.13	5.16
1'4"	14.09	0.93	1.86	2.79	3.72	4.65
1'6"	15.07	0.87	1.74	2.61	3.48	4.35
1'10"	25.69	0.51	1.02	1.53	2.04	2.55
2'2"	30.64	0.43	0.86	1.28	1.71	2.14
2'6"	34.06	0.38	0.77	1.15	1.54	1.92
Full open	34.91	0.38	0.75	1.13	1.50	1.88

Note: When the fish ladder is operational, opening the sluiceway more than 1 foot 6 inches can cause flooding downstream. Downstream stakeholders should be notified.

f. DEEP regulations regarding minimum downstream water flow.

DEEP regulations (Section 26-141b-1 to 26-141) govern the minimum outflow of the dam. Using information from the United States Geological Survey Streamstats program the minimum out flow required is .961 cubic feet per second (cfs) or the natural inflow to the lake whichever is lower. Seepage around the dam has been estimated by Nathan L Jacobson & Associates, Inc[1] to be .320 cfs. The remaining .641 cfs can be achieved by opening the gate to 3.5 inches on the gauge.

g. At all times, the slide gate wheel shall be secured with chain and padlock. The padlock key is held by the Town of Lyme and RLA.

II. Maintenance Procedures

A. Minor Maintenance

1. The Public Works Department is responsible for minor maintenance as is necessary to keep the trash rack clear, removing debris or brush that may accumulate in the area of the spillway and immediately downstream from the dam. Slide gate wheel should be lubricated yearly or as required.

[1] Engineering Report on Proposed Repairs to Rogers Lake Dam June 2012

B. Major Maintenance

1. Any situations requiring major maintenance shall be brought to the immediate attention of the Selectman's Office. Such situations shall include spalling and cracking of concrete walls, sluiceway or spillways, erosion of embankments, serious dislodgement of immediate downstream rip-rap, major leaking as opposed to minor weeping of dam face, etc.

2. Upon receipt of any information of a major situation, the Selectman's office shall require an immediate survey by professional engineers to assess the cause and make recommendations for corrections.

The following Appendixes provide information for dam operations.

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APPENDIX 1
Contact Information

Rogers Lake Authority – Sluiceway Operators

Dennis Overfield	dennisoverfield@sbcglobal.net	Cell: 203-520-8980
Mark Hastings	hastmark@gmail.com	Cell: 203-434-3285
Dick Smith	rogerslake2@comcast.net	Cell: 860-625-4084

Local and State Officials

Town of Old Lyme

Tim Griswold, First Selectman	Office: 860-434-1605, ext. 211 Cell: 860-662-4001
David Roberge, Emergency Management Director	Office: 860-434-1605, ext. 231 Cell: 860-662-1339
Tom Swaney, Fire Chief	Office: 860-434-2424
Edward Adanti, Superintendent of Public Works	Office: 860-434-2461 Cell: 860-662-4003
State Office of Emergency Management (24 hours)	Office: 860-566-3180
Matthew Weber, Resident State Trooper	Office: 860-434-1986
CTDEEP Flood Emergency Operations Center, normal hours: After hours, CTDEEP Dispatch Center:	Office 860-424-3706 Office: 860-424-3333

Town of Lyme

Steven Mattson, First Selectman	Office: 860-434-7733

Rogers Lake West Shores Association

David Evers, President	Home: 860-434-3149 Cell: 860-985-8472

Contacts when fish ladder is operational

Andrew MacDonald (Yale) Andrew.macdonald@yale.edu	Cell: 203-812-9580
Kevin Job (DEEP Fisheries) kevin.job@ct.gov	Cell: 860-447-4370

Downstream Stakeholder – DEEP fish ladder

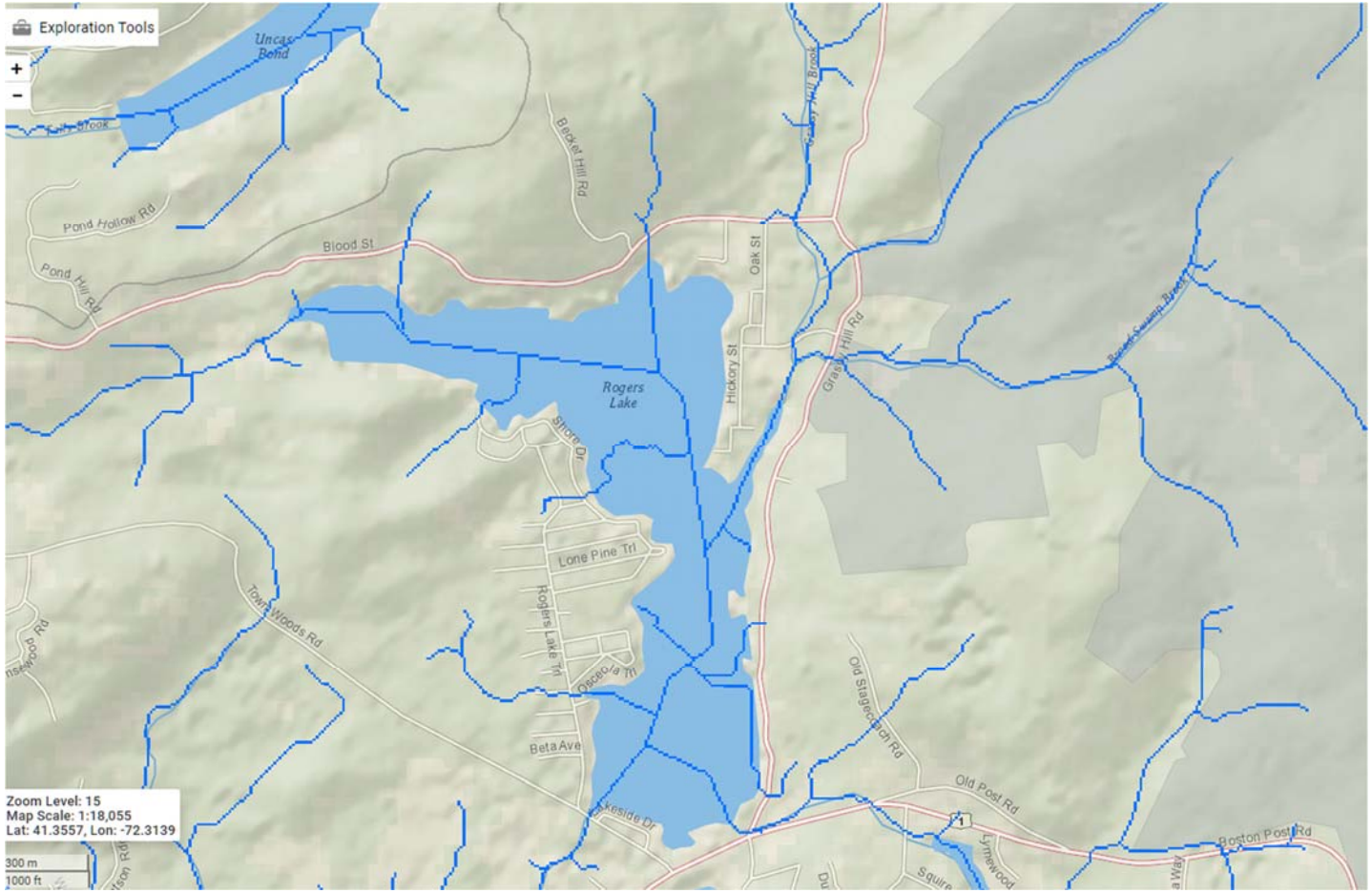
Richard O'Connor richard.oconnor.ct@gmail.com	Main: 860-836-3224

APPENDIX 2

Rogers Lake Dam and Fish Ladder

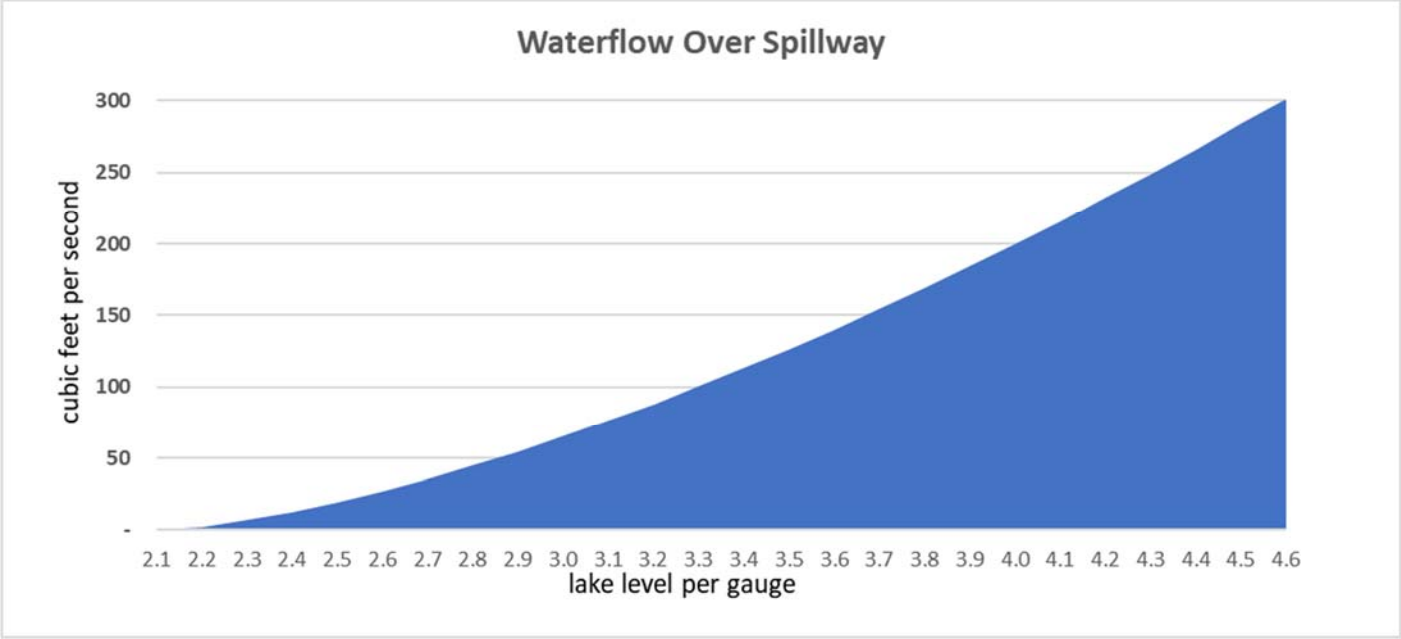
APPENDIX 3

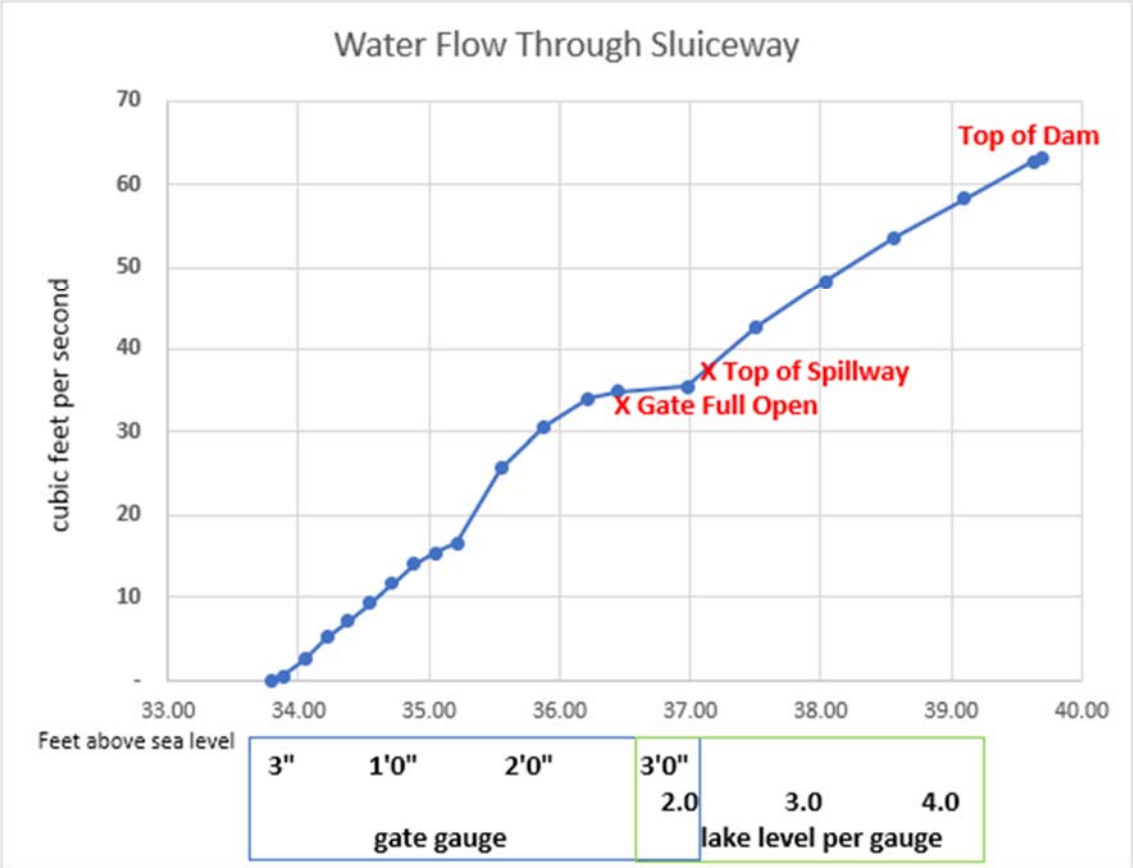
Stream Flows to Rogers Lake



(For Reference Only)

APPENDIX 4
Dam and Sluiceway Waterflow Rates





Note: Water flow increases as the lake level rises, the higher water level increases water pressure

APPENDIX 5
Schedule of Revisions

Revision Date	Date of Revision Approval	Description of Changes
11-11-2020	11-11-2020	Original Document
11-19-2020		Revision of tables and charts
2-6-2021		Page 1 – designation of RLA as sluiceway operator Page 6 - update of contact information Page 10 – Addition of Schedule of Revisions