

FLOOD CONTROL

CONNECTICUT RIVER BASIN

CORPS OF ENGINEERS, U.S. ARMY
 PROVIDENCE DISTRICT
 PROVIDENCE, R.I.

OCTOBER 1945

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Pertinent Data

Perspective Sketch

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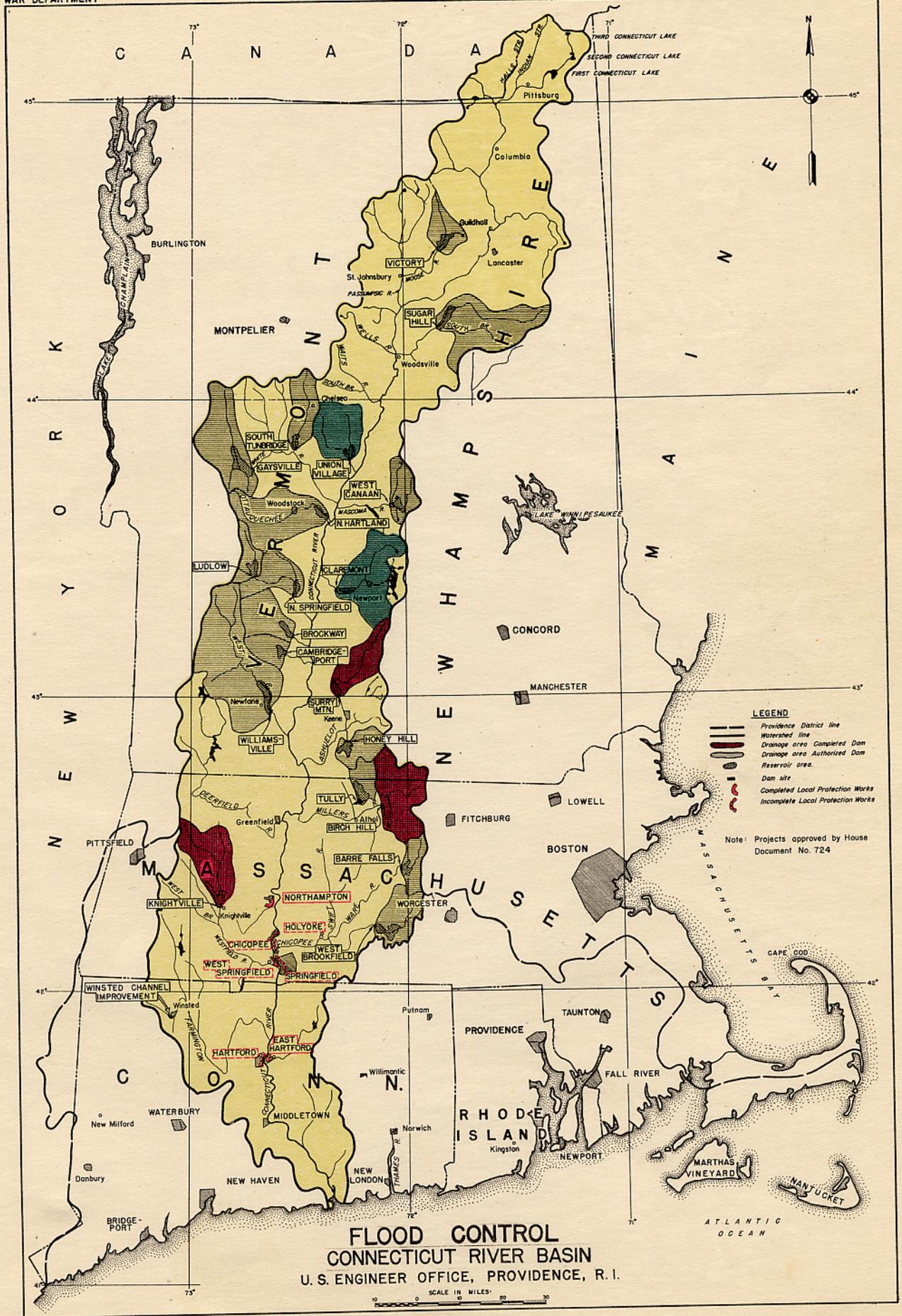
Claremont Reservoir

Pertinent Data

Perspective Sketch

Reservoir Map

Completed Works - Photographs



LEGEND

- ▬▬▬ Providence District line
- Watershed line
- ▭ Completed Dam
- ▨ Drainage area Authorized Dam
- Reservoir area
- Dam site
- Completed Local Protection Works
- Incomplete Local Protection Works

Note: Projects approved by House Document No. 724

FLOOD CONTROL
CONNECTICUT RIVER BASIN
 U. S. ENGINEER OFFICE, PROVIDENCE, R. I.

SCALE IN MILES 0 10 20 30

THE CONNECTICUT RIVER BASIN

The Connecticut River Basin extends from northern New Hampshire and the Province of Quebec to Long Island Sound. The eastern limits are the White Mountains, in New Hampshire, and the western divide lies largely in the Green Mountains of Vermont and the Berkshire Hills in Massachusetts. The greatest length of the basin is about 280 miles and its greatest width about 62 miles. The total drainage area is 11,260 square miles, distributed as follows:

Canada	115	square miles		
New Hampshire	3,096	"	"	
Vermont	3,911	"	"	
Massachusetts	2,712	"	"	
Connecticut	1,426	"	"	

The average annual rainfall varies from about 45 inches in the southern portion to about 36 inches in the northern. In the vicinity of mountain peaks in Vermont and New Hampshire, the value may be as high as 60 inches for relatively small areas. The average per cent of rainfall that appears as run-off is about 60 per cent.

PRECIPITATION - MAJOR FLOODS OF RECORD

Connecticut River Basin

Location	Precipitation-average for area shown				
	Drainage Area Above Sq. Miles	Nov. 1927 Rainfall Inches	Mar. 1936		Sept. 1938 Rainfall Inches
			Rainfall Inches	Snow Cover Inches ⁽¹⁾	
Fifteen Mile Falls	1,650	-	2.1	7.8	4.00
White River Junction	4,068	5.84	3.68	7.6	4.40
Springfield	9,587	5.7	2.8	6.3	7.3
Hartford	10,480	-	2.9	6.2 ₊	7.55
<u>Tributaries</u> ⁽²⁾					
White River	690	7.81	2.59	7.4	4.60
West River	308	8.60	4.64	7.3	7.50
Ompompanoosuc	136	7.07	3.77	-	5.35
Sugar	269	4.75	3.62	5.0	7.50
Millers	370	4.68	4.85	5.2	12.00
Chicopee	703	4.17	5.41	4.0	12.40

(1) Snow cover as of March 9 in water equivalent.

(2) At stream gaging stations.

CREST STAGES FOR MAJOR FLOODS OF RECORD

Lower Connecticut River

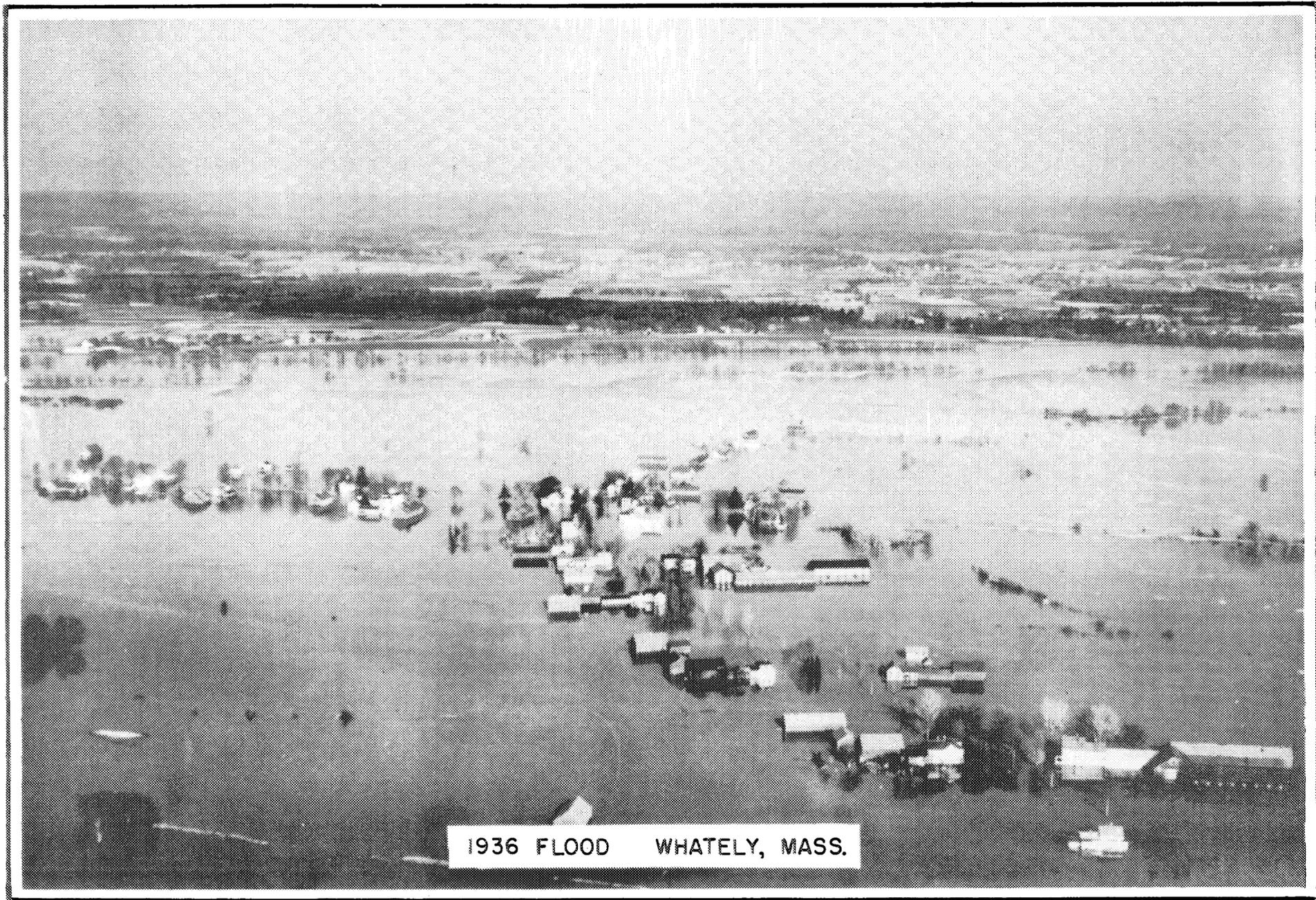
Date of Flood	Crest Stage	
	Hartford	Springfield
May 1854	29.8	22.3
April 1862	28.7	22.2
November 1927	29.0	22.4
March 1936	37.6	28.6
September 1938	35.4	25.8
Flood stage (without dikes)	16.0	20.0

STREAM FLOW DATA

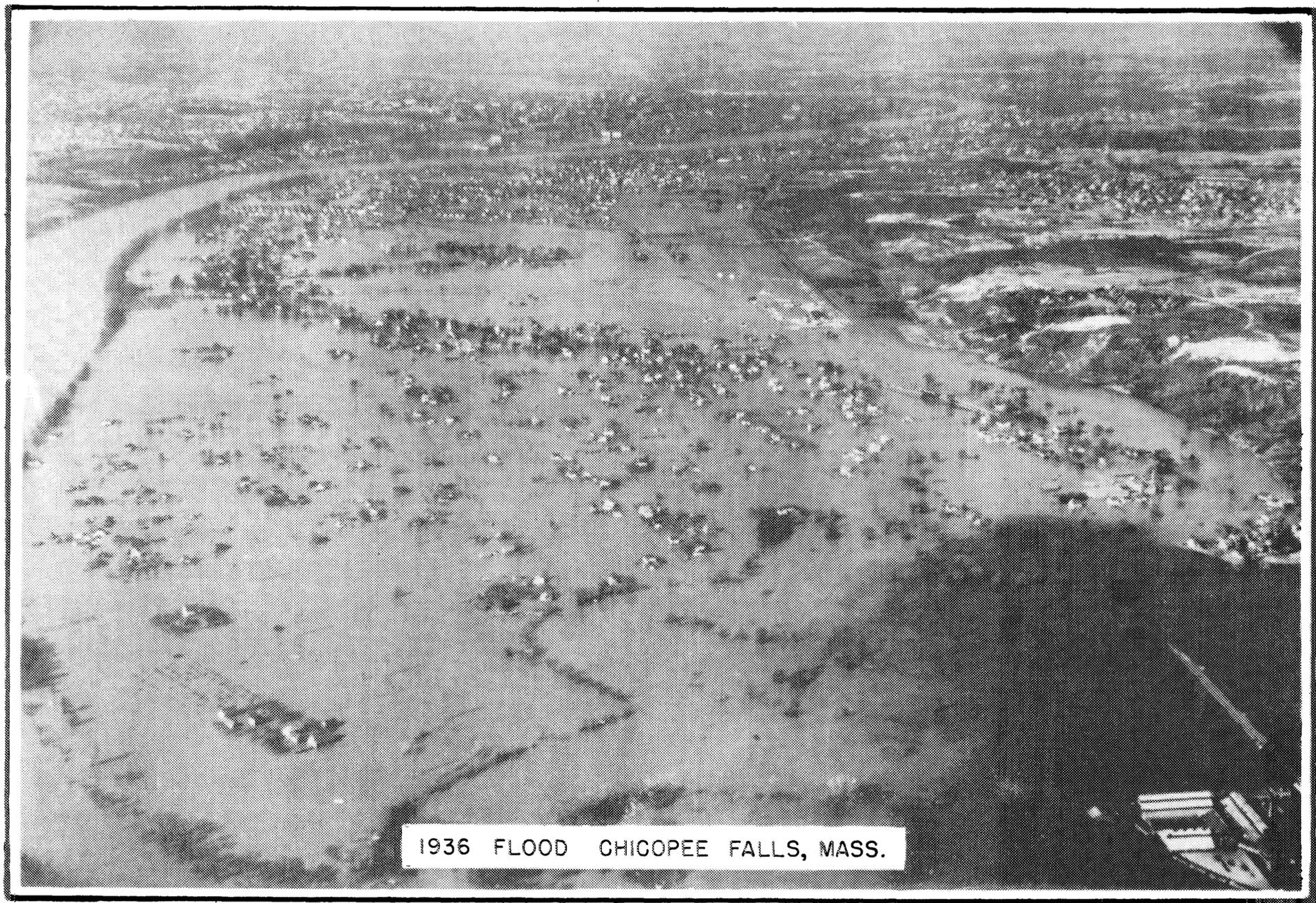
Lower Connecticut River

Condition	Discharge, cubic feet per second	
	Hartford	Springfield
Regulated low water flow	1,215 (1)	1,110 (1)
Flood stage (without dikes)	64,000	150,000
1927 flood (natural)	181,000	188,000
1936 flood (natural)	291,000	281,000
1938 flood (natural)	251,000	235,000

(1) Based on gage discharge at Thompsonville, Connecticut, 7 September 1942 prorated to Hartford and Springfield on basis of drainage areas.



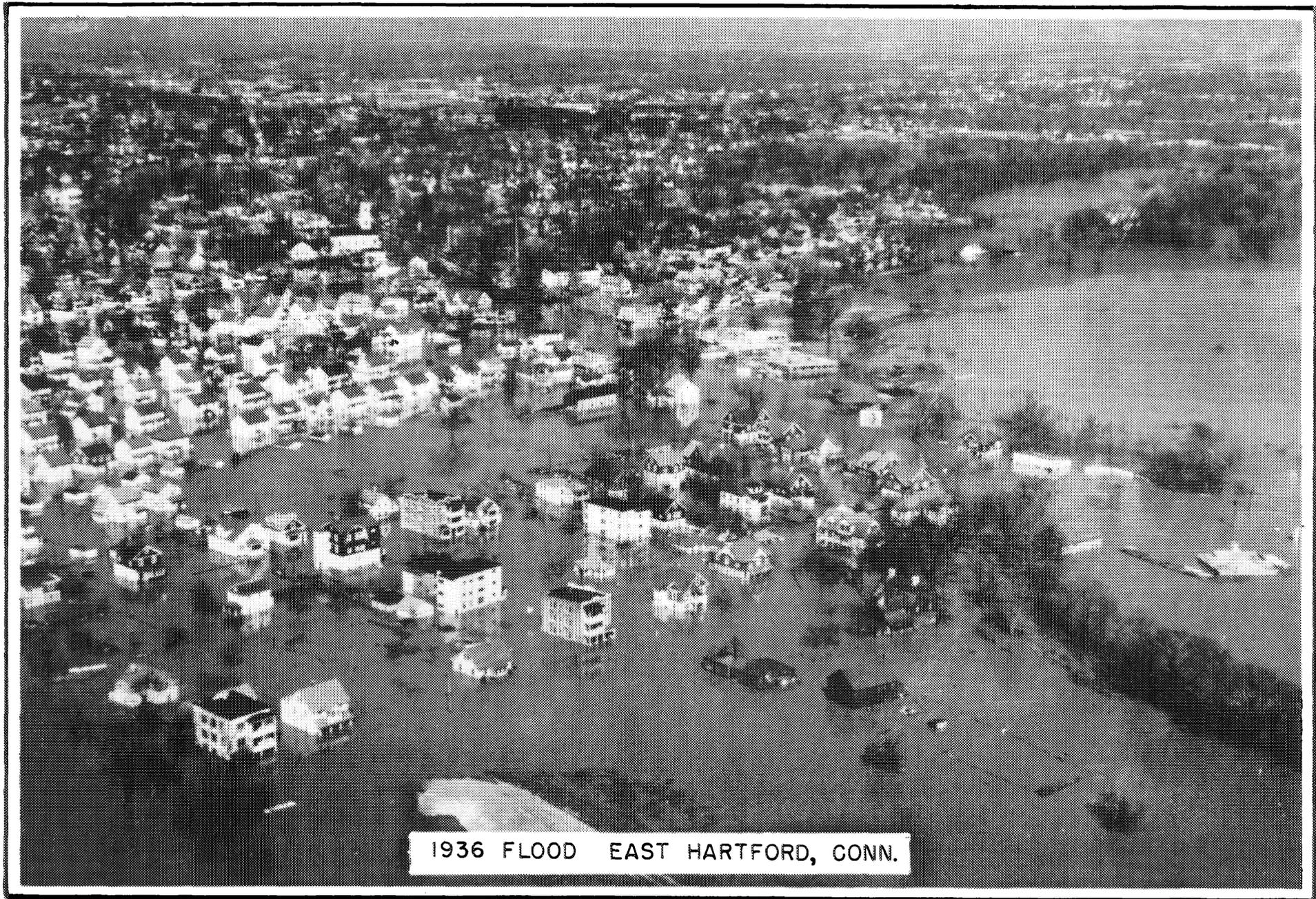
1936 FLOOD WHATELY, MASS.



1936 FLOOD CHICOPEE FALLS, MASS.



1936 FLOOD HARTFORD, CONN.



1936 FLOOD EAST HARTFORD, CONN.

CONNECTICUT RIVER BASIN FLOOD LOSSES

Floods of November 1927, March 1936, September 1938

LOCATION	FLOOD LOSSES					
	November 1927		March 1936		September 1938	
	Direct	Indirect	Direct	Indirect	Direct	Indirect
<u>Vermont</u>	\$10,981,000	\$ 9,882,000	\$ 1,765,000	\$ 1,169,000	\$ 3,809,000	\$ 3,489,000
<u>New Hampshire</u>	1,767,000	1,558,000	2,342,000	1,528,000	1,125,000	962,000
<u>Massachusetts</u>						
Northampton	)	)	622,570	596,100	316,000	264,500
Holyoke	)	)	1,111,300	1,180,300	400,000	431,500
Chicopee	) 2,157,000 ⁽¹⁾) 1,848,000 ⁽¹⁾	1,773,600	1,915,200	950,000	882,700
Springfield	)	)	3,268,300	3,520,100	687,000	596,400
West Springfield	)	)	3,045,600	3,289,600	210,000	112,400
Other	)	)	9,178,630	6,724,700	12,989,900	12,134,500
Total, Massachusetts	\$ 2,157,000	\$ 1,848,000	\$19,000,000	\$17,226,000	\$15,553,000	\$14,422,000
<u>Connecticut</u>						
Hartford	)	)	7,660,300	8,389,700	1,225,000	1,118,200
East Hartford	) 621,000 ⁽¹⁾) 526,000 ⁽¹⁾	1,356,700	1,476,700	1,008,200	766,400
Other	)	)	2,376,000	2,121,600	2,875,800	2,229,400
Total, Connecticut	\$ 621,000	\$ 526,000	\$11,393,000	\$11,988,000	\$ 5,109,000	\$ 4,114,000
GRAND TOTALS	\$15,526,000	\$13,814,000	\$34,500,000	\$31,911,000	\$25,596,000	\$22,987,000
LIVES LOST	15		5		8	

(1) Original analysis made by river basins - breakdown by localities consequently not available.

DEFINITIONS:

Direct losses are the physical damage to property and goods, measured by the cost of repair or replacement in kind, and the cost of cleanup and removal of damaged goods.

Indirect losses are the value of service or use lost or made necessary by flood conditions, not chargeable to direct losses. They include losses of business and wages, costs of relief and similar losses, both within and without the flood area, during the period of flood and subsequent rehabilitation.

THE PROPOSED CONNECTICUT RIVER BASIN RESERVOIR SYSTEM

(As published in House Document No. 724, 76th Congress, 3d Session)

STREAM	DRAINAGE AREA ABOVE MOUTH SQ. MILES	RESERVOIR	DRAINAGE AREA CONTROLLED SQ. MILES	RESERVOIR CAPACITY		ESTIMATED COST	LANDS TO BE ACQUIRED ACRES
				ACRE FEET	EQUIVALENT INCHES RUNOFF		
<u>Massachusetts:</u>							
Westfield	520	Knightville (1)	164	39,300	4.5	\$2,318,000	960
Chicopee (Quaboag)	724	West Brookfield	106	33,900	6.0	2,317,000	4,000
Chicopee (Ware)	724	Barre Falls	57	24,300	8.0	965,000	1,450
Millers (Tully)	390	Tully	50	22,150	8.3	665,000	1,100
Millers	390	Birch Hill (1)	175	49,900	5.4	3,005,000	3,200
<u>New Hampshire:</u>							
Ashuelot (South Branch)	420	Honey Hill	70	26,200	7.0	1,935,000	1,360
Ashuelot	420	Surry Mountain (1)	100	32,500	6.1	1,620,000	970
Sugar	274	Claremont	245	76,400	6.0	5,160,000	1,500
Mascoma	195	West Canaan	80	34,100(3)	8.0 (3)	2,240,000(3)	1,900
Ammonoosuc	402	Sugar Hill	246	91,600	7.0	6,530,000	1,750
<u>Vermont:</u>							
West	423	Williamsville	400	150,000	7.0	5,960,000	2,800
Saxtons	78	Cambridgeport	58	21,600	7.0	1,975,000	630
Williams	117	Brookway	101	32,300	6.0	2,944,000	820
Black	204	North Springfield	102 (2)	33,400	6.2	2,018,000	960
Black	204	Ludlow	56	23,900(4)	8.0 (4)	1,741,000(4)	1,600
Ottawaquechee	223	North Hartland	222	71,100	6.0	3,630,000	1,120
White (First Branch)	710	South Tunbridge	102	32,600	6.0	2,275,000	860
White	710	Gaysville	226	84,300	7.0	4,080,000	1,860
Companoosuc	136	Union Village	126	30,200	4.5	1,944,000	650
Passumpsic (Moose)	507	Victory	66	28,200(5)	8.0 (5)	1,023,000(5)	2,830

(1) Completed.

(2) Exclusive of drainage area above Ludlow.

(3) Exclusive of conservation storage - 19,400 acre feet; 4.5 inches; estimated additional cost \$280,000.

(4) Exclusive of conservation storage - 30,100 acre feet; 10.0 inches; estimated additional cost \$459,000.

(5) Exclusive of conservation storage - 52,800 acre feet; 15.0 inches; estimated additional cost \$392,000.

UNION VILLAGE DAM

Pertinent Data

PRINCIPAL QUANTITIES

Earth Excavation	1,967,000 cu.yds.
Rock Excavation	170,000 cu.yds.
Earth Fill in Dam	1,480,000 cu.yds.
Rock Fill in Dam	131,000 cu.yds.
Concrete	21,040 cu.yds.

RESERVOIR CAPACITY

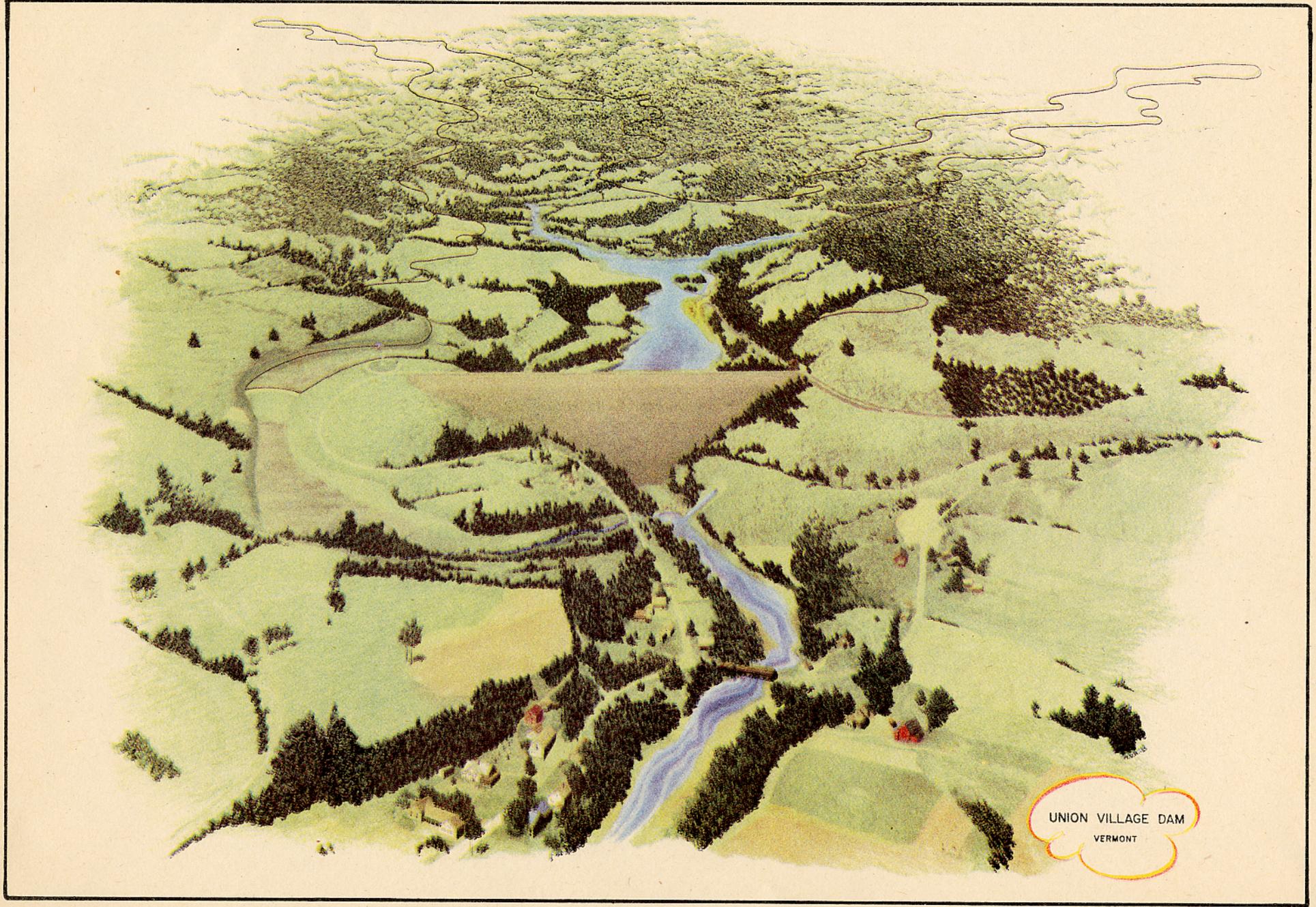
Elevation	Area of Pool Acres	Capacity Acre Feet	Corresponding Storage Inches Runoff
Recreation Pool (Elevation 460)	80	1,500	0.22
Spillway Crest (Elevation 564)	720	38,000	5.65
Reservoir will be filled to spillway crest only during major floods when it will be necessary to utilize all capacity to control river discharge at damage centers.			

EMPLOYMENT PROVIDED

On site	1,067,500 man-hours
Off site	<u>1,372,200</u> man-hours
Total	2,439,700 man-hours

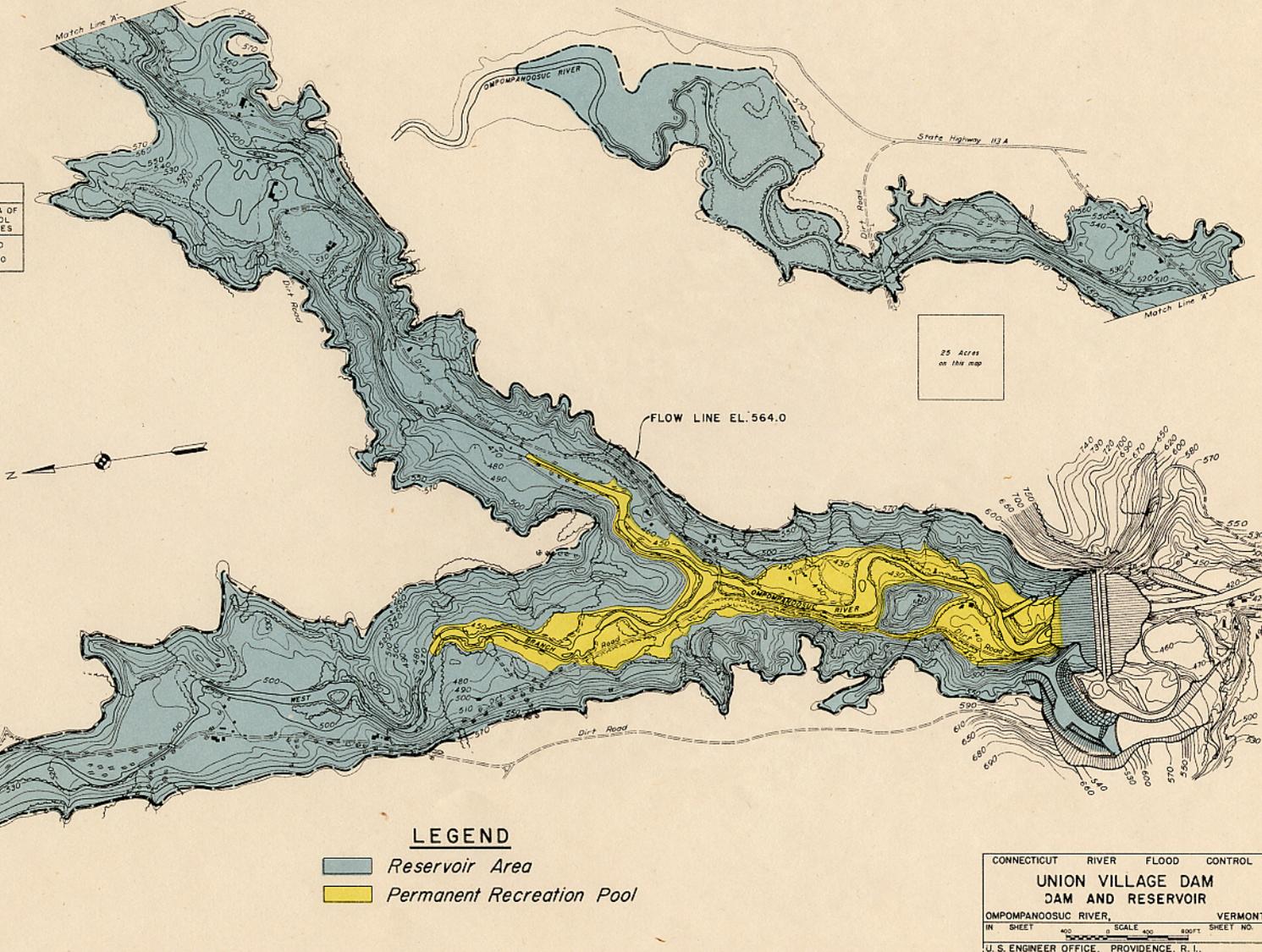
LANDS TO BE ACQUIRED

Number of farms	10
Number of dwellings	7
Area of lands to be acquired	790 acres



UNION VILLAGE DAM
VERMONT

RESERVOIR CAPACITY	
ELEVATION	AREA OF POOL ACRES
RECREATION POOL (ELEVATION 460.0)	80
SPILLWAY CREST (ELEVATION 564.0)	720



25 Acres
on this map

LEGEND

- Reservoir Area
- Permanent Recreation Pool

CONNECTICUT RIVER FLOOD CONTROL
**UNION VILLAGE DAM
 DAM AND RESERVOIR**
 OMPOMPANOOSUC RIVER, VERMONT

IN SHEET 400 SCALE 400 FOOT SHEET NO.
 U. S. ENGINEER OFFICE, PROVIDENCE, R. I.

CLAREMONT DAM

Pertinent Data

PRINCIPAL QUANTITIES

Earth Excavation	3,845,500 cu.yds.
Rock Excavation	324,400 cu.yds.
Earth Fill in Dam	3,114,000 cu.yds.
Rock Fill in Dam	262,500 cu.yds.
Concrete	12,640 cu.yds.

RESERVOIR CAPACITY

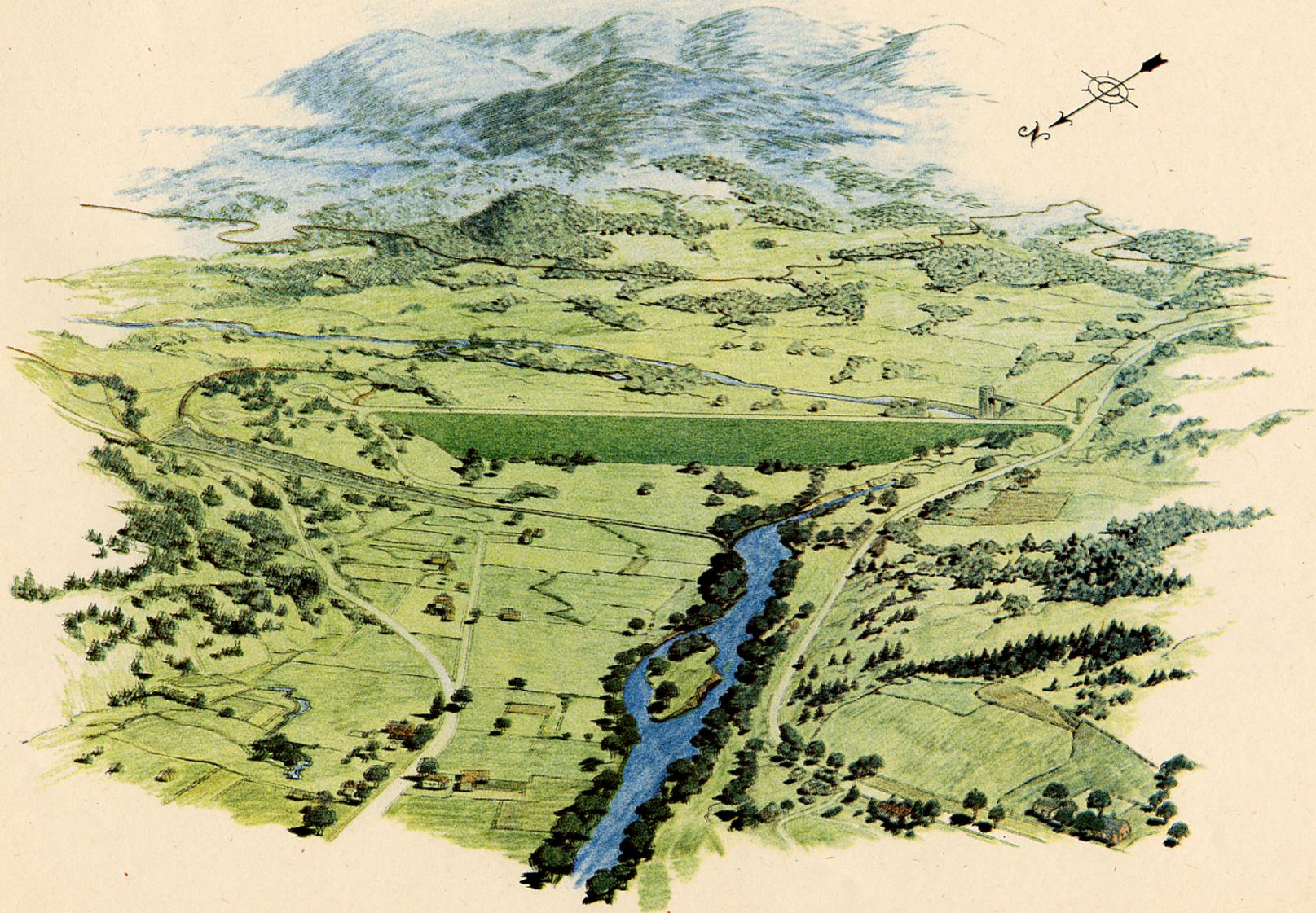
Elevation	Area of Pool In Acres	Capacity in Acre Feet	Corresponding Storage Inches Runoff
Possible Recreation Pool (Elevation 549)	380	3,160	0.25
Spillway Crest (Elevation 630)	1,420	78,300	6.0
Reservoir will be filled to spillway crest only during major floods when it will be necessary to utilize all capacity to control river discharge at damage centers.			

EMPLOYMENT PROVIDED

On site	1,542,900 man-hours
Off site	<u>1,983,200</u> man-hours
Total	3,526,100 man-hours

LANDS TO BE ACQUIRED

Number of farms	25
Number of dwellings	28
Area of lands to be acquired	1,800 acres

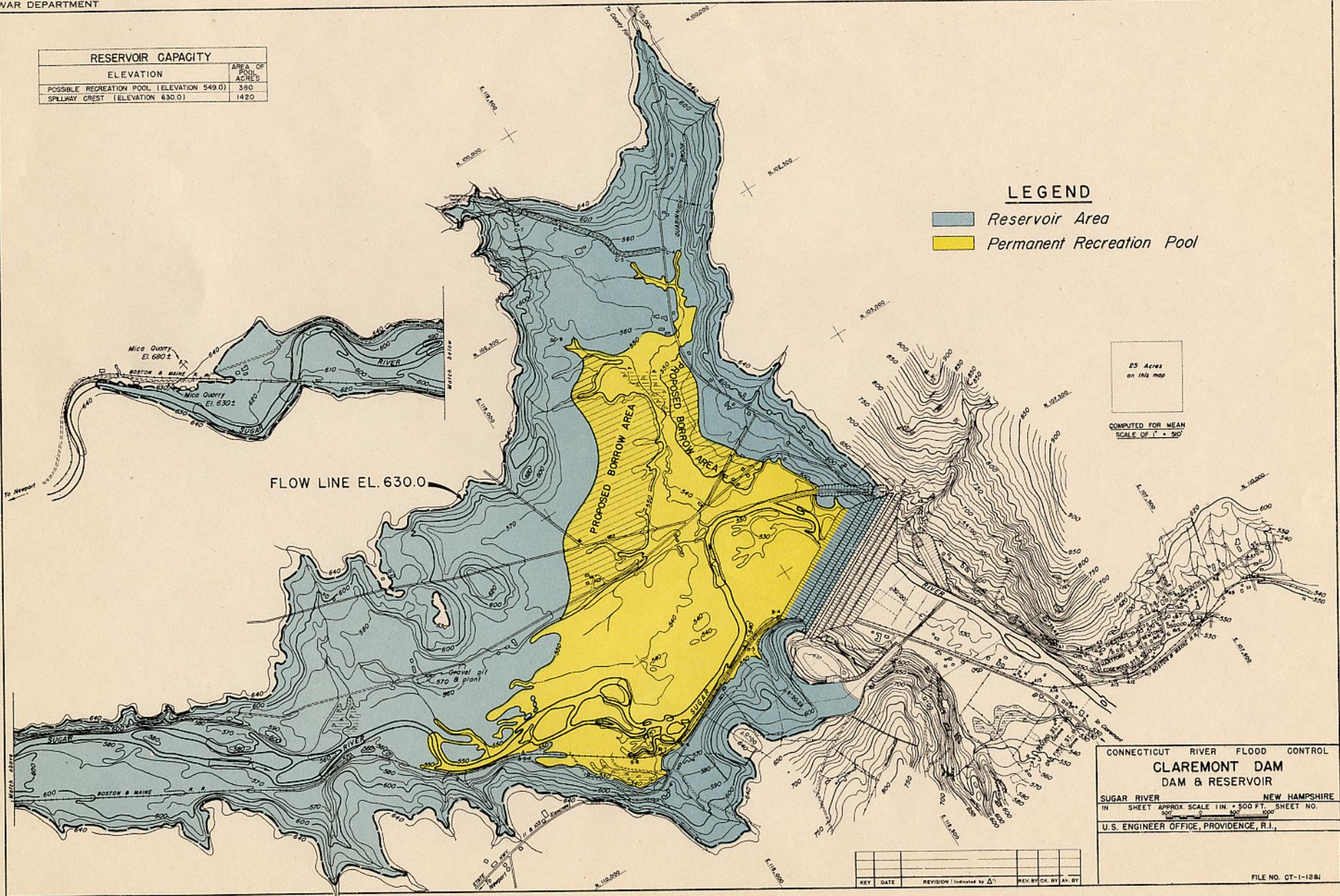


Claremont Dam

RESERVOIR CAPACITY	
ELEVATION	AREA OF POOL ACRES
POSSIBLE RECREATION POOL (ELEVATION 549.0)	390
SPILLWAY CREST (ELEVATION 630.0)	1420

LEGEND

- Reservoir Area
- Permanent Recreation Pool

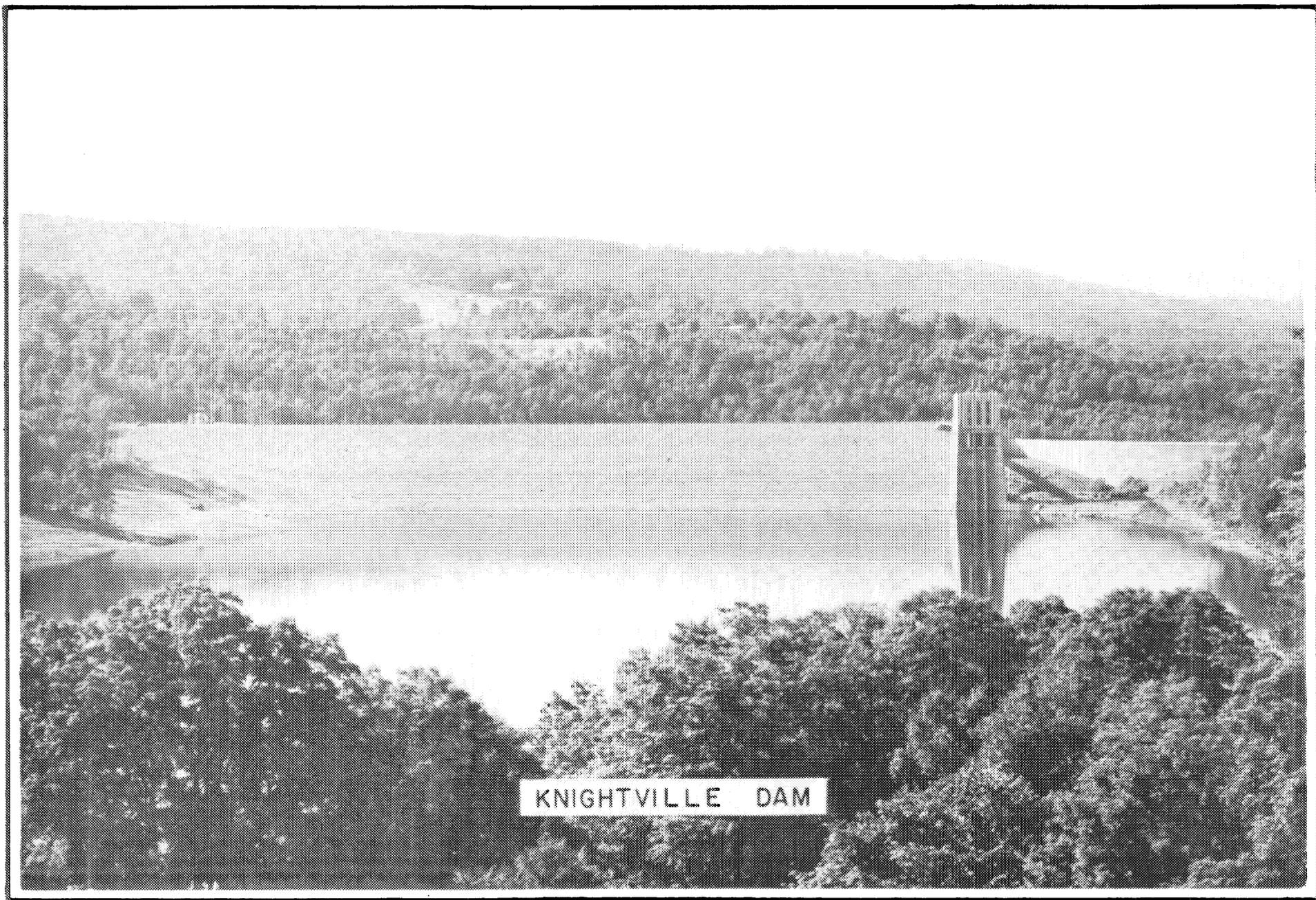


25 Acres
on this map

COMPUTED FOR MEAN
SCALE OF 1" = 500'

CONNECTICUT RIVER FLOOD CONTROL
CLAREMONT DAM
DAM & RESERVOIR
 SUGAR RIVER NEW HAMPSHIRE
 IN SHEET APPROX SCALE 1" = 500 FT. SHEET NO. _____
 U. S. ENGINEER OFFICE, PROVIDENCE, R.I.

KEY	DATE	REVISION (Indicated by Δ)	REV. BY	CHK. BY	AP. BY



KNIGHTVILLE DAM