

310 CMR: DEPARTMENT OF ENVIRONMENTAL PROTECTION

10.58: continued

d. Notwithstanding 310 CMR 10.58(2)(a)1.a. through c., the issuing authority shall find that any stream is intermittent based upon a documented field observation that the stream is not flowing. A documented field observation shall be made by a competent source and shall be based upon an observation made at least once per day, over four days in any consecutive 12 month period, during a non-drought period on a stream not significantly affected by drawdown from withdrawals of water supply wells, direct withdrawals, impoundments, or other human-made flow reductions or diversions. Field observations made after December 20, 2002 shall be documented by field notes and by dated photographs or video. Field observations made prior to December 20, 2002 shall be documented by credible evidence. All field observations shall be submitted to the issuing authority with a statement signed under the penalties

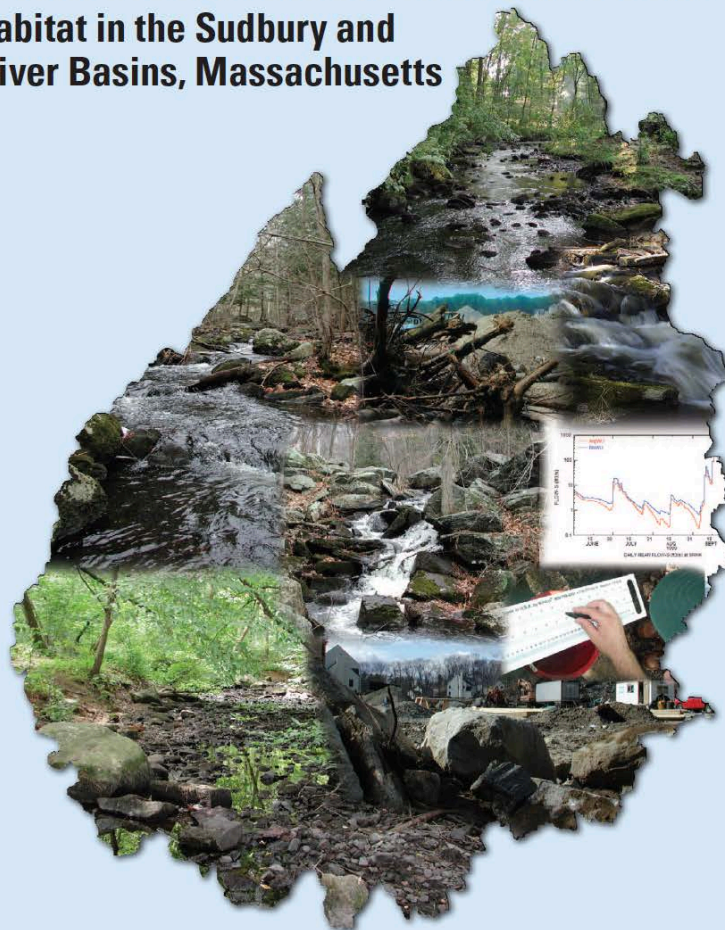
310 CMR: DEPARTMENT OF ENVIRONMENTAL PROTECTION

10.58: continued

f. Rivers include perennial streams that cease to flow during periods of extended drought. Periods of extended drought for purposes of 310 CMR 10.00 shall be those periods, in those specifically identified geographic locations, determined to be at the "Advisory" or more severe drought level by the Massachusetts Drought Management Task Force, as established by the Executive Office of Energy and Environmental Affairs and the Massachusetts Emergency Management Agency in 2001, in accordance with the Massachusetts Drought Management Plan (MDMP). Rivers and streams that are perennial under natural conditions but are significantly affected by drawdown from withdrawals of water supply wells, direct withdrawals, impoundments, or other human-made flow reductions or diversions shall be considered perennial.

Prepared in cooperation with the
Massachusetts Executive Office of Environmental Affairs
Department of Conservation and Recreation

Effects of Water Use and Land Use on Streamflow and Aquatic Habitat in the Sudbury and Assabet River Basins, Massachusetts



Scientific Investigations Report 2010–5042

U.S. Department of the Interior
U.S. Geological Survey

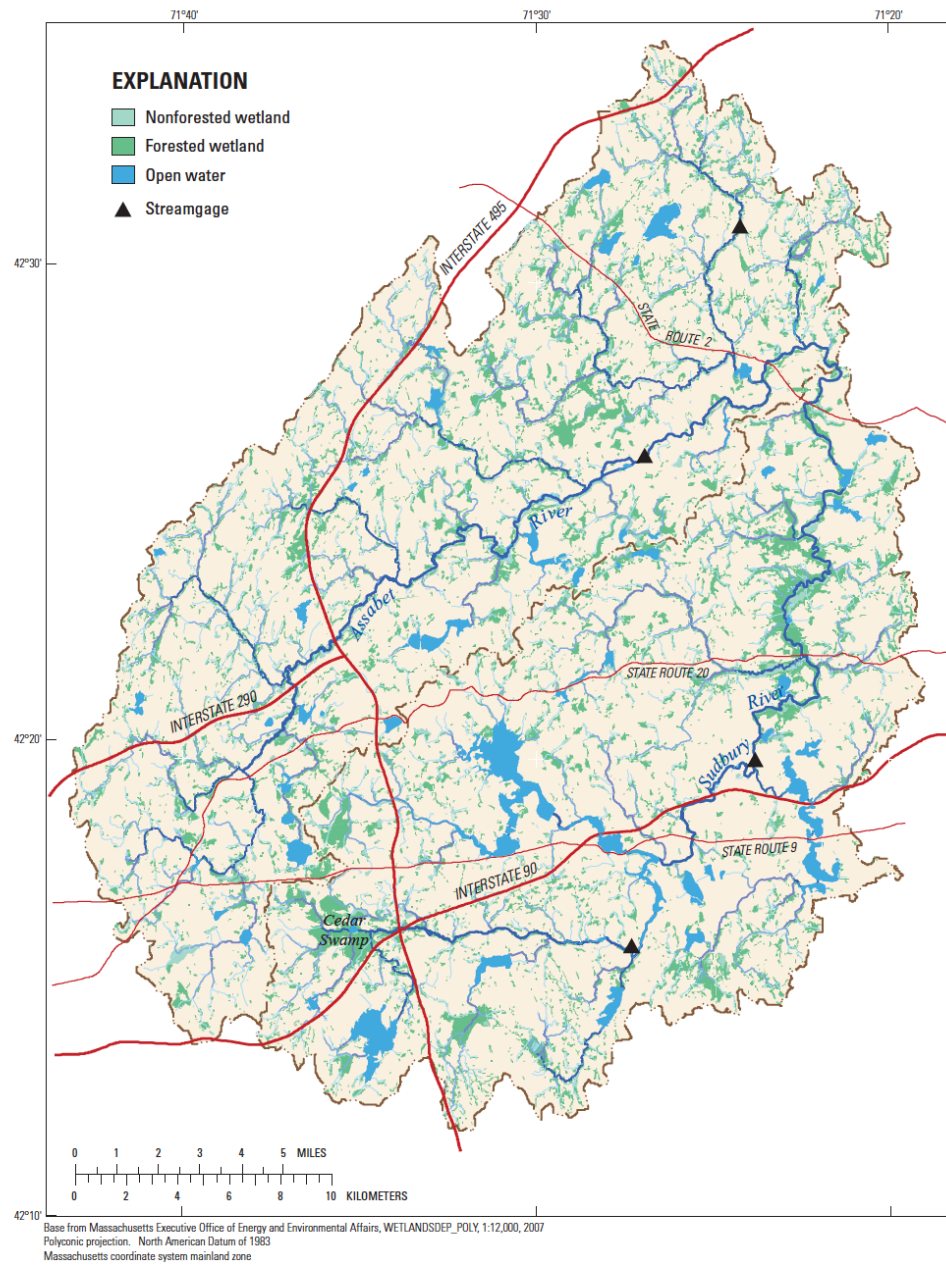


Figure 4. Forested and nonforested wetlands in the Sudbury and Assabet River Basins, Massachusetts.



Figure 1. Towns, streamgages, and climate stations in and near the Sudbury and Assabet River Basins, Massachusetts.

Effects of Water Use and Land Use on Streamflow and Aquatic Habitat in the Sudbury and Assabet River Basins, Massachusetts

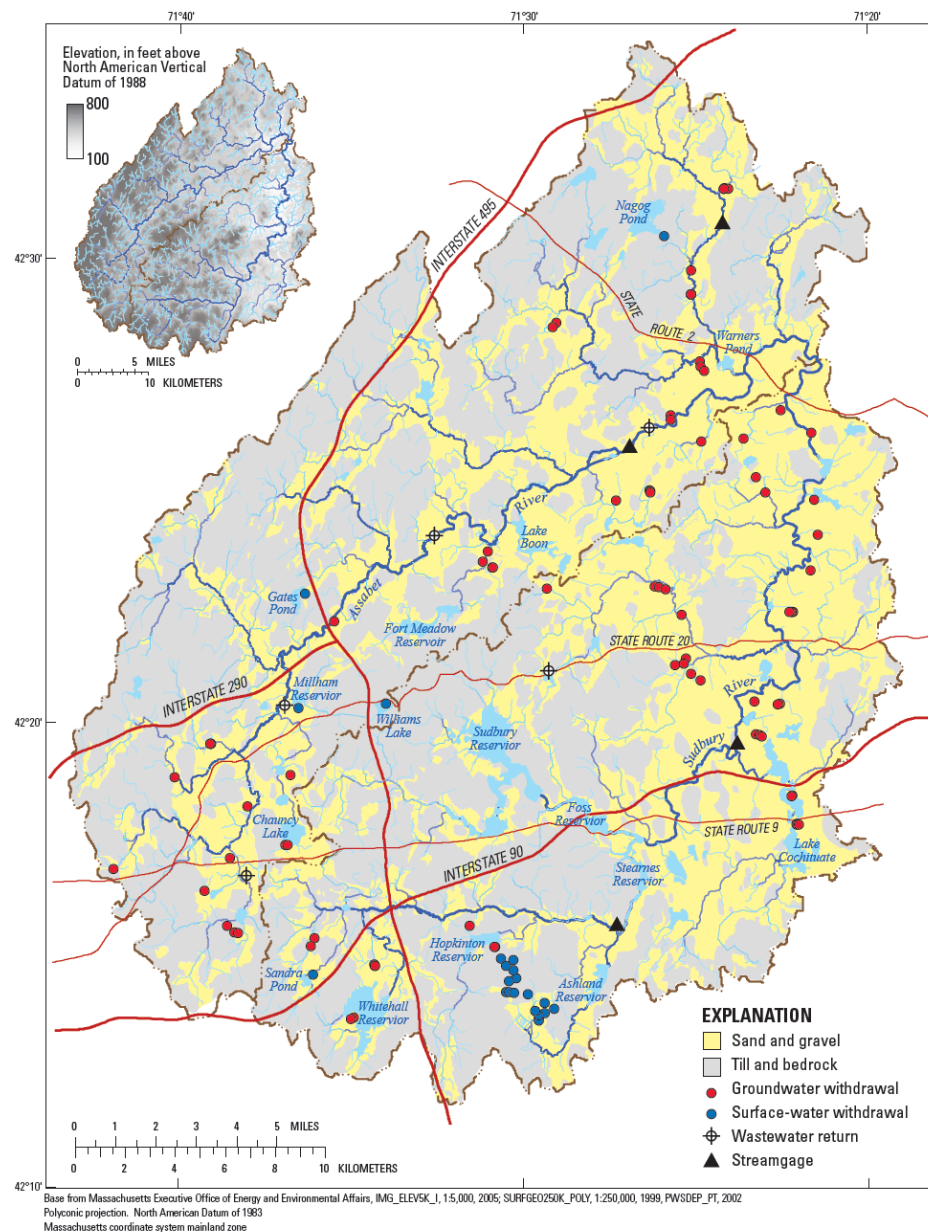


Figure 3. Elevation, simplified surficial geology, and major water withdrawals and return flows in the Sudbury and Assabet River Basins, Massachusetts.

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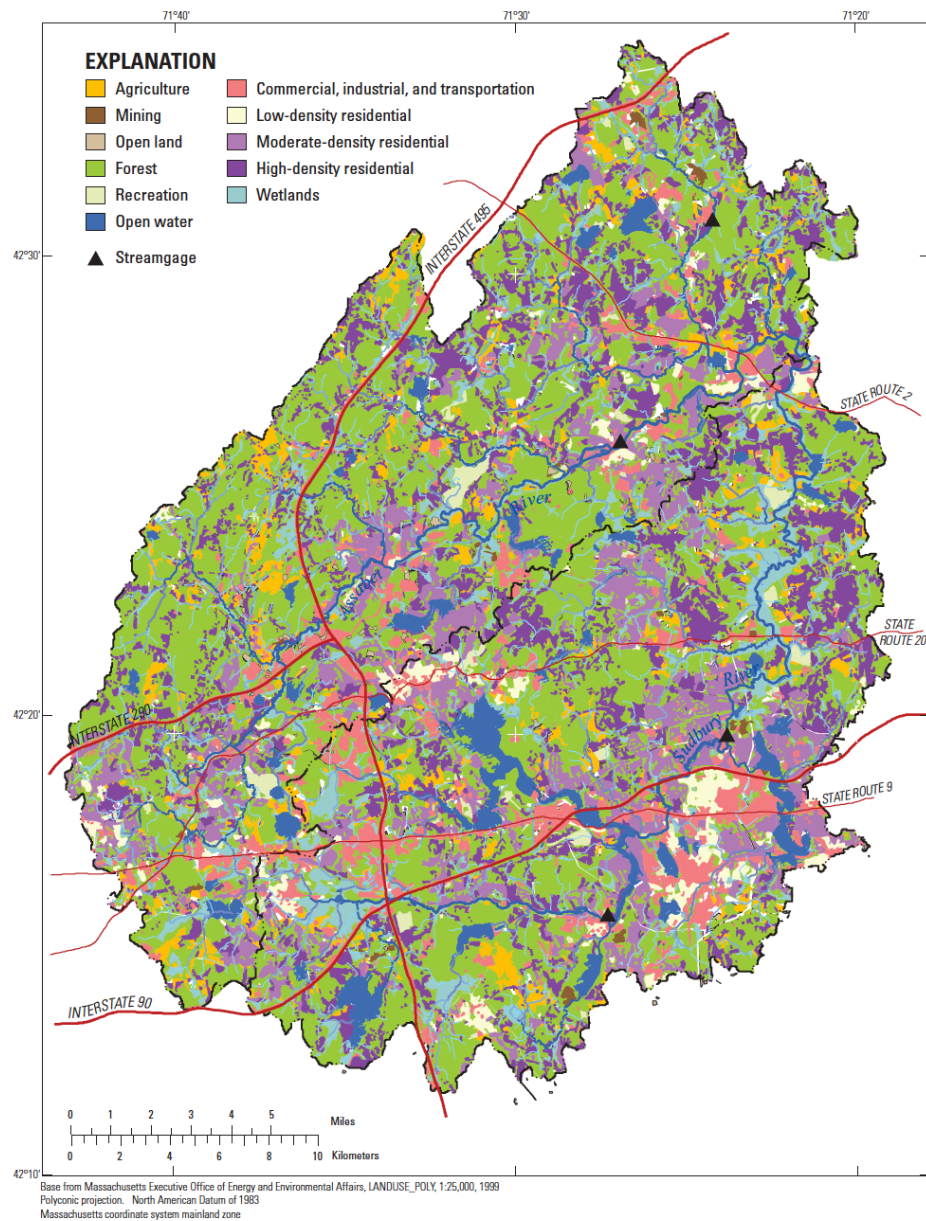
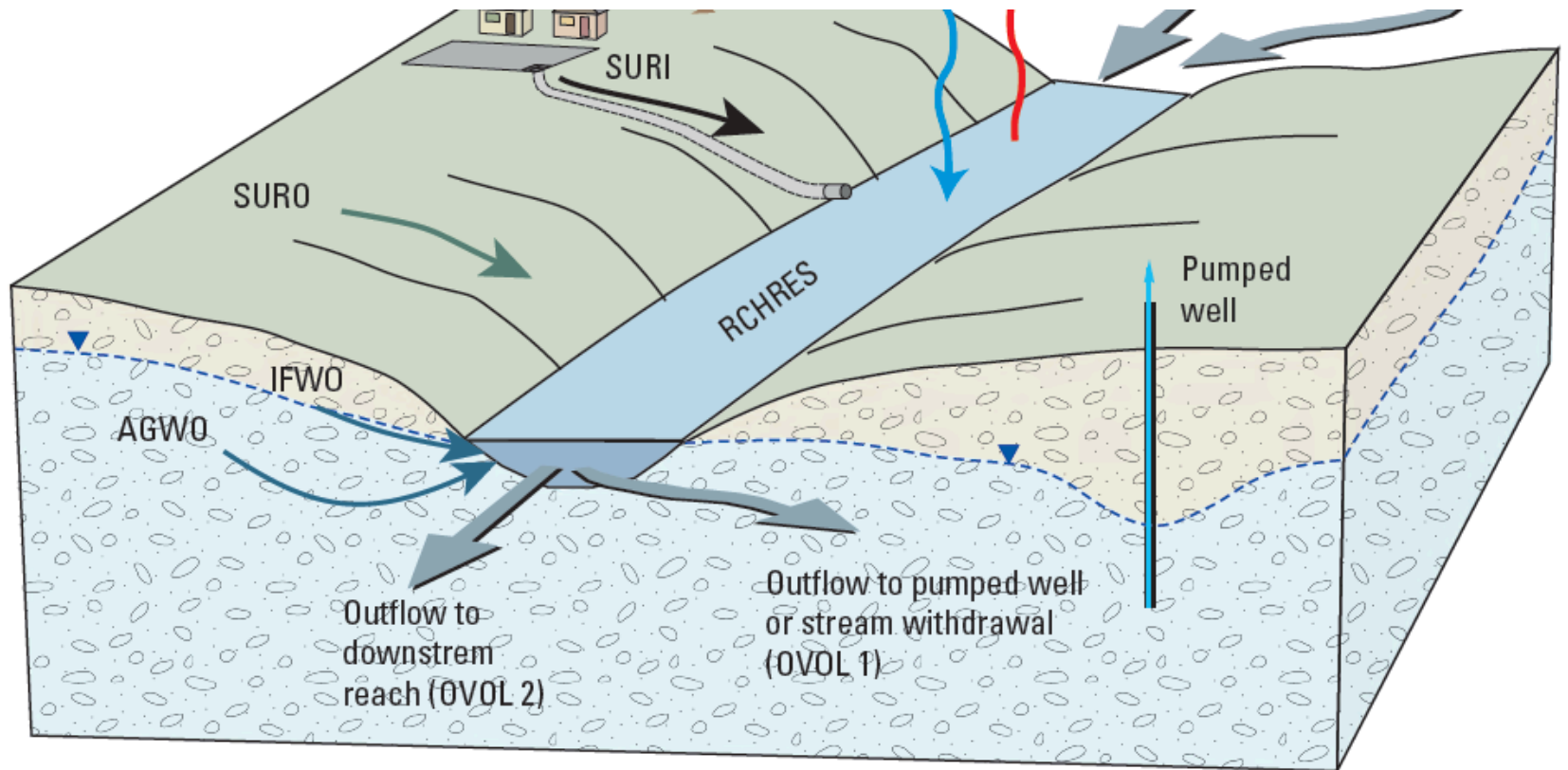


Figure 5. Land use classified from 1997 aerial photography in the Sudbury and Assabet River Basins, Massachusetts.

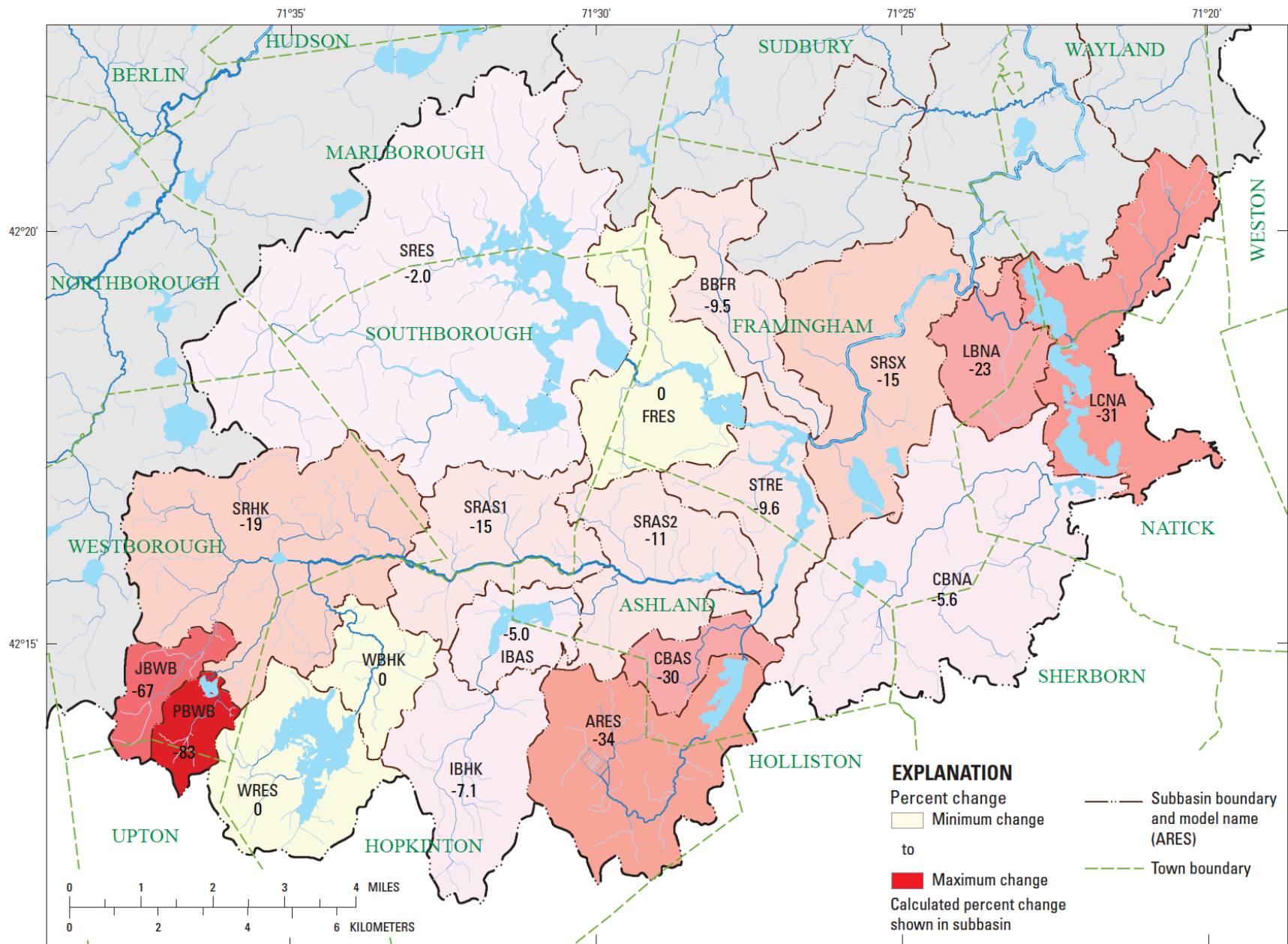


EXPLANATION

SURI—Surface runoff from impervious areas

RCHRES—Stream reach or reservoir segment

1	Westborough	GW	Hopkinton Rd. well	1012	2012	7	0.263	2328000-01G
2	Westborough	SW	Sandra Pond	1021	--	--	0.774	2328000-01S
3	Hopkinton	GW	McIntyre GP wells 4 and 5	1031	2031	768	0.234	2139000-04G, -05G
5	Hopkinton	GW	Fruit St. GP wells 1, 2, 3	1051	2051	62	0.482	2139000-01G, -02G, -03G
5	Westborough	GW	Industry well	1052	2052	1,250	0.008	21432803
8	Hopkinton	GW	Nursery (isolated irrigation ponds) 15, 16, 17, 18	1081	2081	2,500	0.001	21413902
8	Ashland	GW	Howe St. well 4, 5, 6, 8, 9	1082	2082	809	1.435	3014000-04G, -5G, -06G, -08G, -09G
9	Hopkinton	GW	Nursery (isolated irrigation pond) 14	1091	2091	3,000	0.001	21413902
10	Hopkinton	SW	Nursery (in-stream ponds and canals) 2, 3, 4, 6, 9, 13	1101	--	--	0.003	21413902
10	Hopkinton	GW	Nursery (isolated irrigation ponds) 1, 5, 7, 8,10, 11	1102	2102	250	0.013	21413902
17	Natick	GW	Springvale well 1	1171	2171	565	0.354	3198000-01G
17	Natick	GW	Springvale wells 3, 4, 5	1173	2173	405	1.254	3198000-02G, -07G, -08G
17	Natick	GW	Evergreen wells 1 and 2	1172	2172	450	1.317	3198000-09G, -10G
31	Hudson	GW	Cranberry bog well	1311	2311	509	0.558	2141000-02G
31	Sudbury	GW	Hop Brook well and well 3	1312	2312	79	0.253	3288000-01G, 03G
31	Sudbury	GW	Well 8	1313	2313	302	0.152	3288000-08G
31	Sudbury	GW	Well 10	1314	2314	203	0.099	3288000-10G
32	Sudbury	GW	Well 2A	1321	2321	885	0.210	3288000-02G
32	Sudbury	GW	Well 4	1322	2322	400	0.149	3288000-04G
32	Sudbury	GW	Well 6	1323	2323	538	0.494	3288000-06G
32	Sudbury	GW	Well 7	1324	2324	217	0.301	3288000-07G
32	Sudbury	GW	Well 9	1325	2325	217	0.269	3288000-09G
33	Concord	GW	Jennie Dugan well	1331	2331	394	0.267	3067000-01G
33	Concord	GW	Well 1	1332	2332	333	0.675	3067000-02G



From U.S. Geological Survey and MassGIS data sources,
 Massachusetts State Plane Coordinate System, Mainland Zone
 Polyconic projection

Figure 21. Percent change in the simulated long-term (1960–2004) median of the August mean streamflows with average 1993–2003 withdrawals (AVGWU) relative to no withdrawals (NOWU) in the upper Sudbury River Basin, Massachusetts.

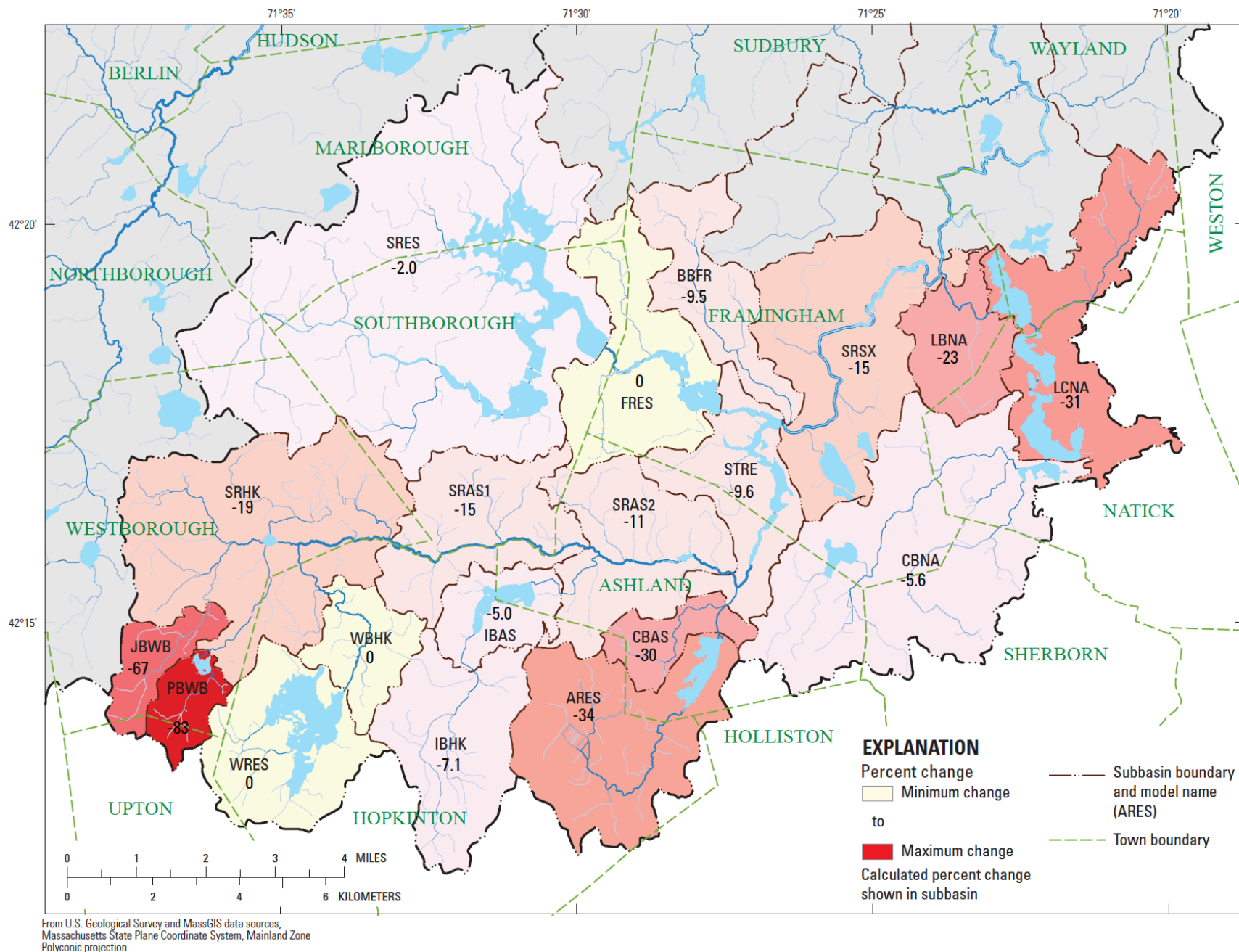
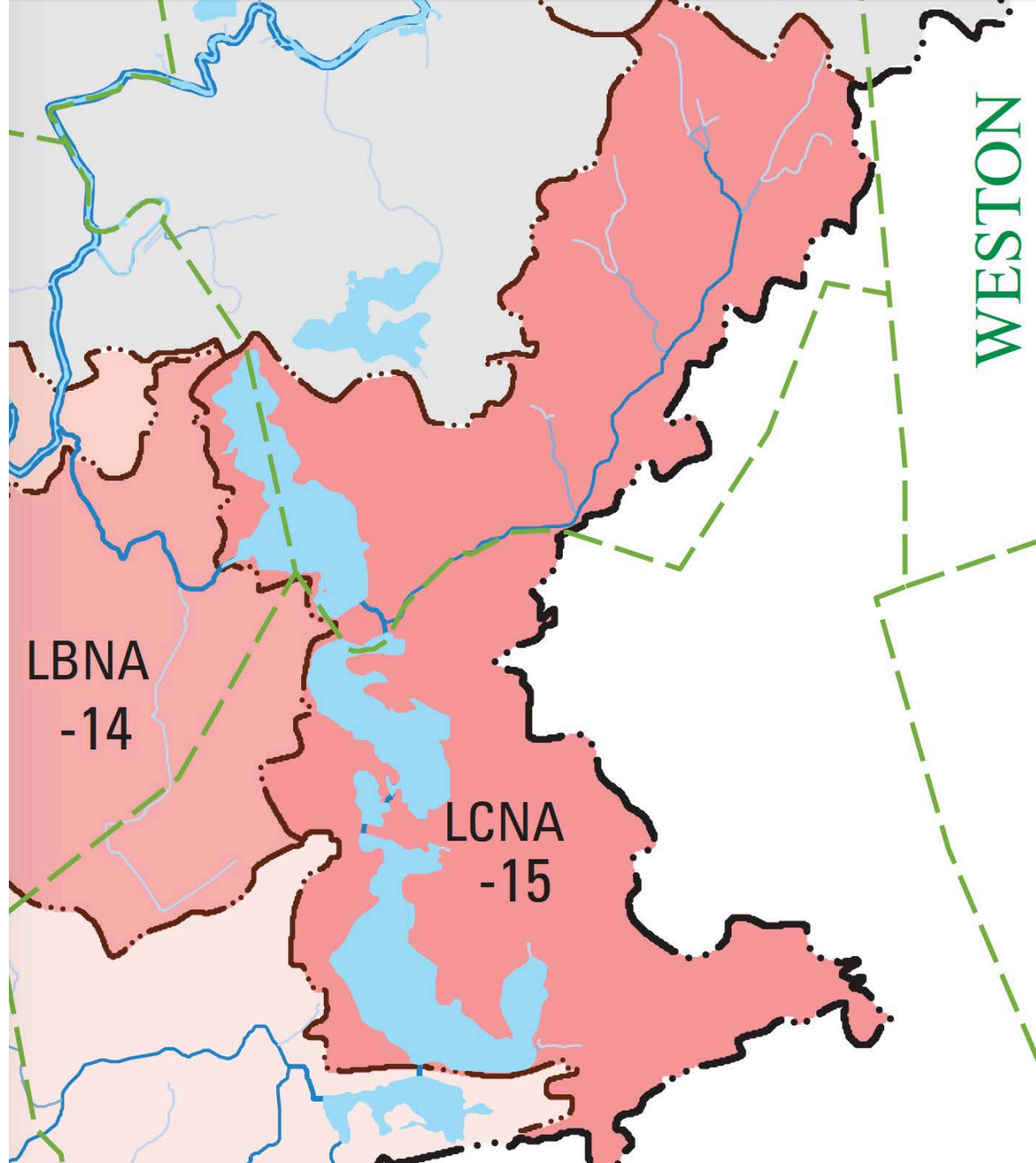
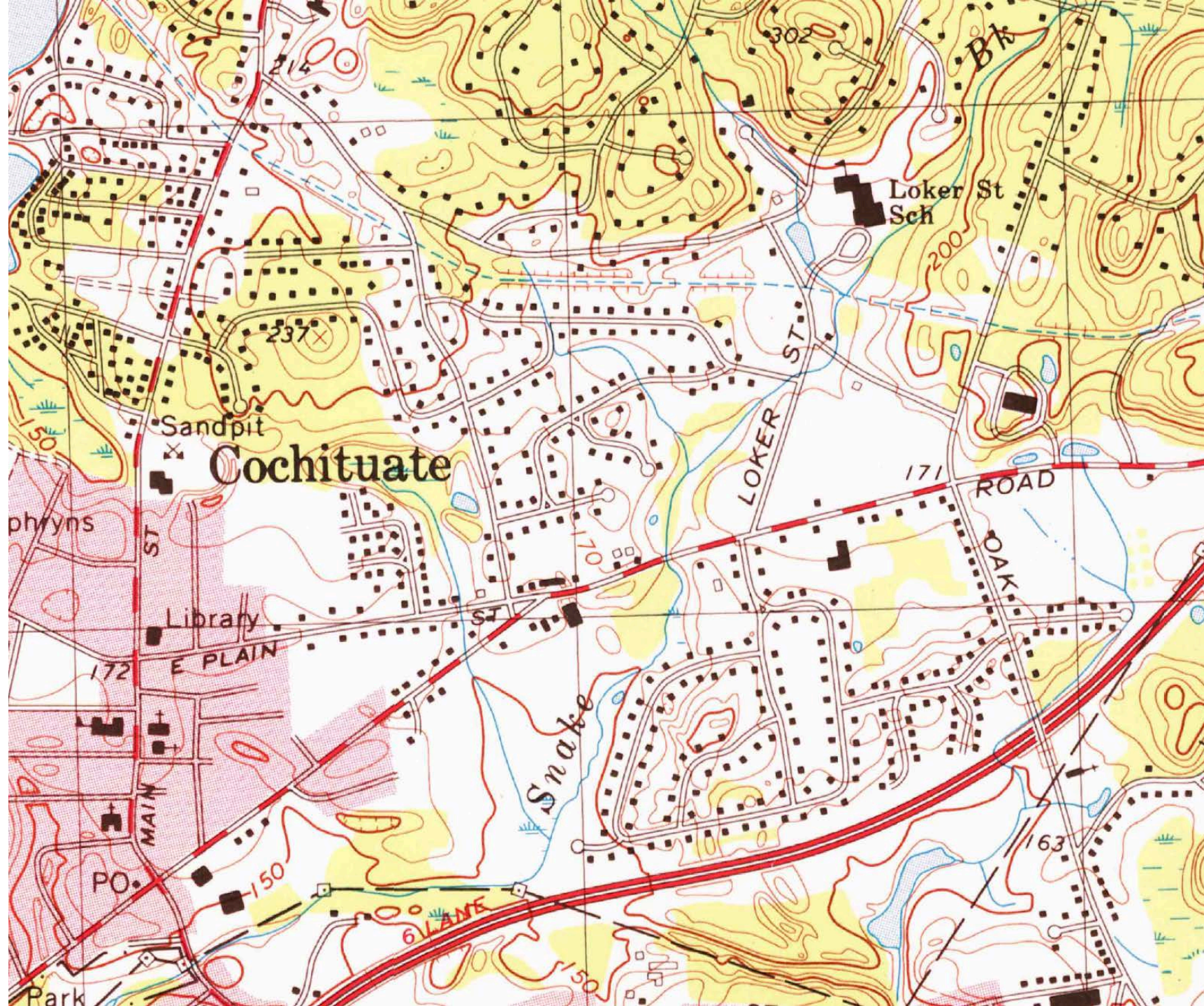
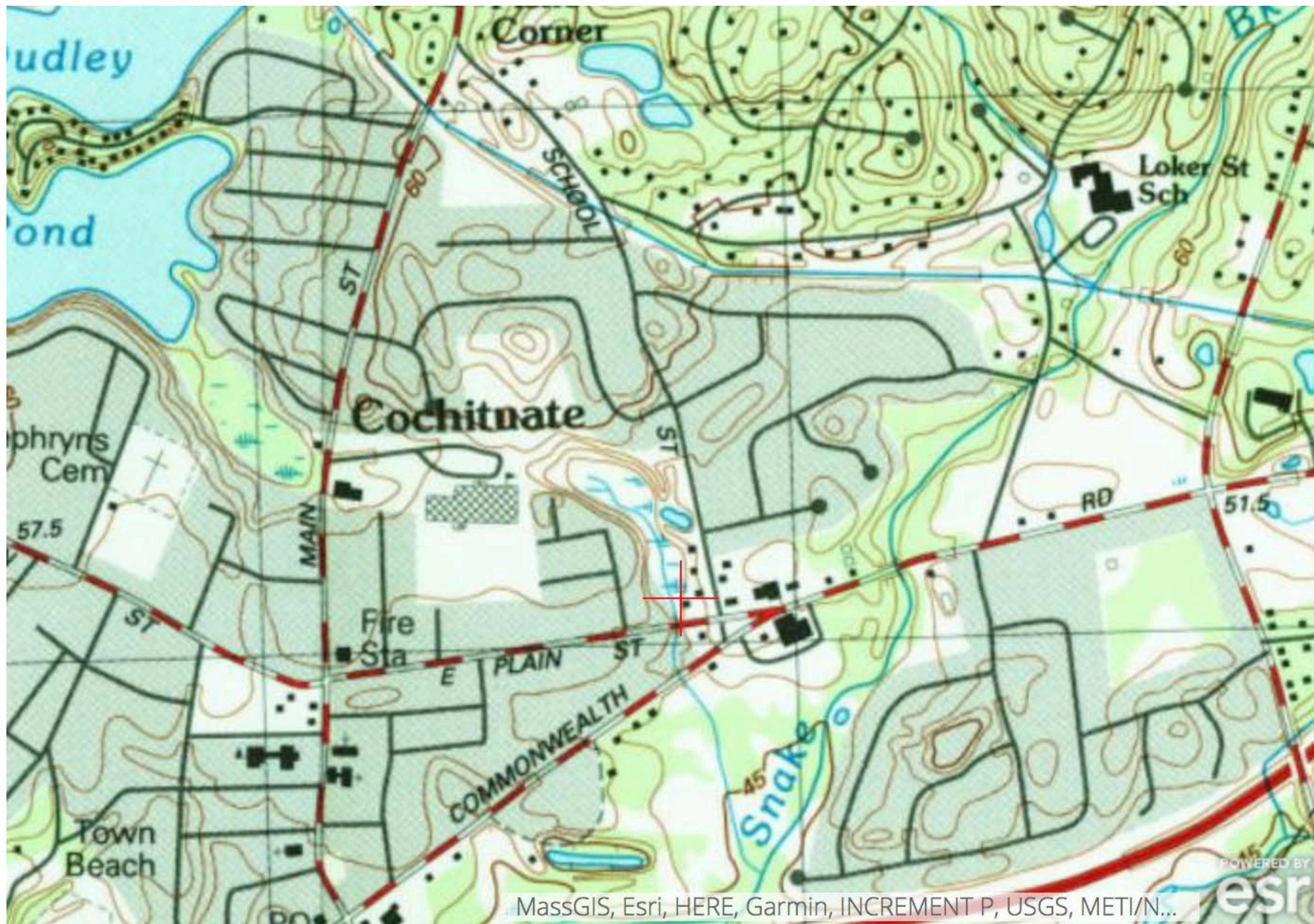


Figure 21. Percent change in the simulated long-term (1960–2004) median of the August mean streamflows with average 1993–2003 withdrawals (AVGWU) relative to no withdrawals (NOWU) in the upper Sudbury River Basin, Massachusetts.







NOTES:

- SUBJECT PARCEL IS SHOWN AS ASSESSORS MAP 52, LOT 189. RECORD TITLE FROM BOOK 0800, PAGE 304.
- UTILITY LOCATIONS SHOWN ON THIS PLAN, BOTH ABOVE- AND BELOW-GROUND, ARE BASED UPON DIRECT FIELD OBSERVATIONS MADE BY METROWEST ENGINEERING, INC. PERSONNEL DURING A FIELD SURVEY. RECORD PLAN LOCATIONS, OR DISCREPANT PAINT-INDICATORS, METROWEST ENGINEERING, INC. DOES NOT WARRANT THAT ALL UTILITIES ARE SHOWN OR THAT UTILITIES THAT ARE SHOWN ARE SHOWN IN THE CORRECT LOCATION, OR WITH THE PROPER MATERIAL DESIGNATION. METROWEST ENGINEERING, INC. DOES NOT WARRANT OR PROVIDE AN EXPRESS OR IMPLIED WARRANTY THAT ALL SUBSURFACE IMPROVEMENTS ARE SHOWN OR ARE SHOWN CORRECTLY, INCLUDING, BUT NOT LIMITED TO, UTILITIES, UNDERGROUND VALVES, UNDERGROUND TANKS OR CHIMNEYS, BURNERS, DUCT BANKS, AND/OR OTHER MAN-MADE IMPROVEMENTS THAT LIE BENEATH THE GROUND SURFACE AT THE TIME OF THE SURVEY.
- CONTRACTOR IS SOLELY RESPONSIBLE FOR ESTABLISHING EXISTING LOCATIONS OF ALL SUB-SURFACE UTILITIES AND MAN-MADE IMPROVEMENTS AND FOR THE REQUIREMENTS TO REPLACE, RELOCATE OR REPAIR EXISTING UTILITIES IN THE EVENT OF DAMAGE OCCURRING DURING CONSTRUCTION. MWE IS NOT RESPONSIBLE OR LIABLE FOR DELAYS OR COSTS ASSOCIATED WITH REMOVING/REPLACING/RELOCATING OF EXISTING UTILITIES REGARDLESS OF WHETHER SAID UTILITIES ARE ACCURATELY DEPICTED ON THIS SURVEY.
- THE PROPERTY DESCRIBED ON THIS SURVEY DOES NOT LIE WITHIN A SPECIAL FLOOD HAZARD AREA AS DEFINED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY. THE PROPERTY LIES WITHIN ZONE "X" OF THE FLOOD INSURANCE RATE MAP IDENTIFIED AS MAP NUMBER 2507C0028F, BEARING AN EFFECTIVE DATE OF JULY 7, 2014.

BENCHMARKS

ELEVATIONS SHOWN ON THIS PLAN REFER TO RM 11 (ELEV=163.84'). A CHISELED SQUARE IN THE NORTH HEADWALL OF THE CULVERT UNDER COMMONWEALTH ROAD FOR SNAKE (BOOK N.G.V.D. 1929.)

T.B.M.	DESCRIPTION	ELEVATION
C	CHISELED SQUARE IN 1" BLACK LOCUST	161.80'
D	DRILL SET IN 10" NORWAY MAPLE	166.74'

CONTRACTOR TO VERIFY ACTUAL LOCATION OF EXISTING UTILITY SERVICES IN THE FIELD PRIOR TO CONSTRUCTION (WATER, ELECTRICAL, ETC.) CALL 811 OR 800-4-A-SAFE BEFORE YOU DIG 811.

ZONING:

RESIDENCE ZONE 20,000 - 120' FRONT

- MINIMUM LOT AREA = 20,000² SF.
- MINIMUM LOT COVERAGE = 20%
- MINIMUM FRONTAGE = 300 FT.
- SETBACKS:
 - FRONT LOT LINE = 30' FT.
 - FRONT YARD CENTER LINE = 55 FT.
 - SIDE YARD = 10' FT.
 - REAR YARD = 10' FT.
 - MAX. HEIGHT = 35 FT./25 STORES
- 2) IF \$198-702 SHALL REQUIRE A GREATER SETBACK OR PERMIT A LESSER SETBACK, THE PROVISIONS OF SAID \$198-702 SHALL PREVAIL OVER THIS TABLE.
- 3) SIDE YARDS SHALL MEET THE REQUIREMENTS OF \$198-703.4 AND 703.5, AND THE REQUIRED MINIMUM SIDE YARD MAY BE REDUCED IN ACCORDANCE WITH PROVISIONS OF \$198-703.2
- 13) MINIMUM FRONT YARD WIDTH SHALL BE CALCULATED IN ACCORDANCE WITH THE REQUIREMENTS OF \$198-705.1 OF THE ZONING BYLAW.

EXISTING TREE DESCRIPTION LEGEND

CODE	DESCRIPTION
BLF	BLACK LOCUST
CHAP	CHAMP APPLE
HML	HEMLOCK
LIN	LINDEN
NMA	NORWAY MAPLE
NOR	NORWAY SPRUCE
RED	RED MAPLE
STY	STYCMORE

LEGEND

DOB	DRAIN CATCH BASIN
HM	MANHOLE
W/G	WATER GATE
HYD	HYDRANT
U.P.	UTILITY POST
DH	DRILL HOLE
FOU	FOUND
CB	CONCRETE BOUND
SB	STONE BOUND
W/L	WETLAND FLAG
E.M.	ELECTRIC METER
G.M.	GAS METER
N.F.	NOW OR FORMERLY
---	EXISTING SPOT GRADE
---	EXISTING GRADING
---	EXISTING OVERHEAD WIRE

REVISIONS:

No.	DATE	REVISION
1	05/23/17	REVISE BUILDINGS AND PARKING

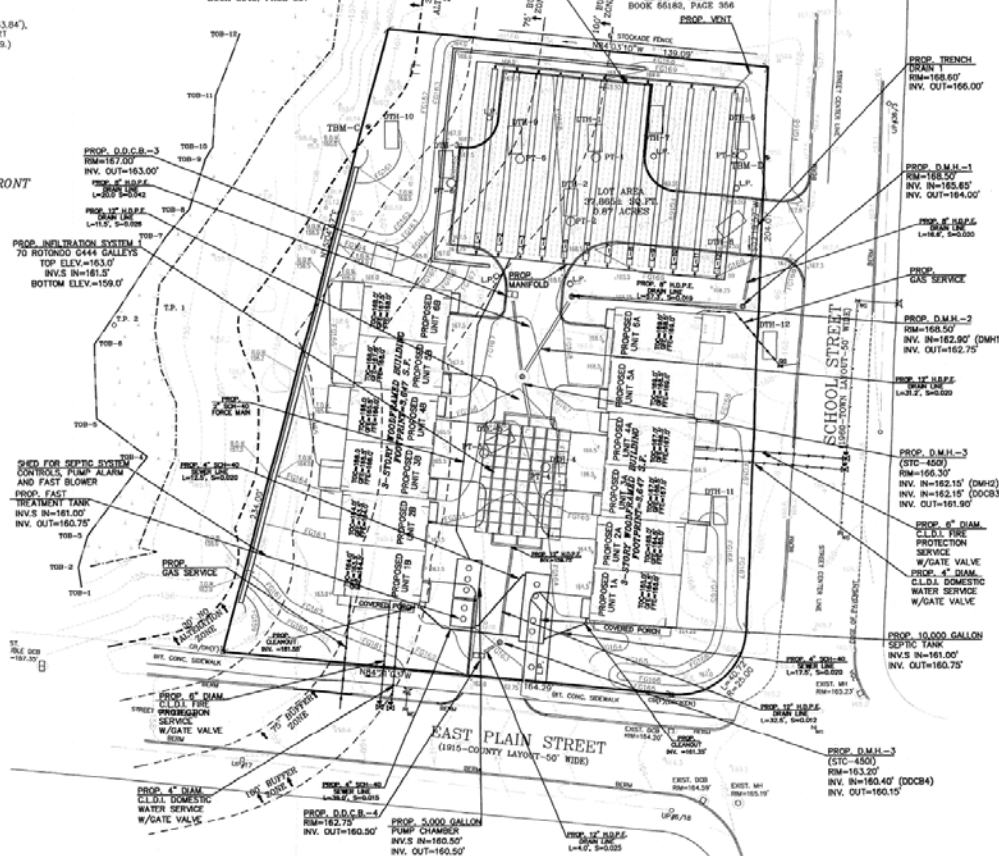
PROPOSED SOIL ABSORPTION SYSTEM ELEVATIONS

LOCATION	BOTTOM OF TRENCH	BEGINNING OF LINE
LINE 1	163.22'	165.22'
LINE 2	163.50'	165.50'
LINE 3	163.75'	165.75'
LINE 4	164.00'	166.00'
LINE 5	164.25'	166.25'
LINE 6	164.50'	166.50'
LINE 7	164.75'	166.75'
LINE 8	165.00'	167.00'
LINE 9	165.25'	167.25'
LINE 10	165.50'	167.50'
LINE 11	165.75'	167.75'
LINE 12	166.00'	168.00'

PROPOSED SOIL ABSORPTION SYSTEM
12 LINES 600' LONG

MAP 47D, LOT 58B
N/T
TOWN OF WAYLAND
BOOK 8945, PAGE 337

MAP 52, LOT 189
N/T
LINDA P. MILLER
BOOK 8945, PAGE 366



SOIL LOGS SOIL TEST RESULTS

No.	DTH-1 ELEV=165.7'	DTH-2 ELEV=165.9'	DTH-3 ELEV=161.7'	DTH-4 ELEV=164.1'	DTH-5 ELEV=162.6'
0'-10" Ap FINE SANDY LOAM 10.9/3/3	0'-10" Ap FINE SANDY LOAM 10.9/3/3	0'-10" Ap FINE SANDY LOAM 10.9/3/3	0'-10" Ap FINE SANDY LOAM 10.9/3/3	0'-20" Flt FINE SANDY LOAM 10.9/3/3	0'-10" Ap FINE SANDY LOAM 10.9/3/3
10'-24" Bk FINE SANDY LOAM 10.9/3/3	10'-24" Bk FINE SANDY LOAM 10.9/3/3	10'-24" Bk FINE SANDY LOAM 10.9/3/3	10'-24" Bk FINE SANDY LOAM 10.9/3/3	20'-40" Flt FINE SANDY LOAM 10.9/3/3	10'-24" Bk FINE SANDY LOAM 10.9/3/3
24'-40" C1 SANDY LOAM 2.5/5/3	40'-62" C1 SANDY LOAM 2.5/5/3	40'-62" C1 SANDY LOAM 2.5/5/3	40'-62" C1 SANDY LOAM 2.5/5/3	40'-62" Flt FINE SANDY LOAM 10.9/3/3	40'-62" C1 SANDY LOAM 2.5/5/3
40'-62" C2 SANDY LOAM 2.5/5/3	62'-126" C2 SANDY LOAM 2.5/5/3	62'-126" C2 SANDY LOAM 2.5/5/3	62'-126" C2 SANDY LOAM 2.5/5/3	62'-126" Flt FINE SANDY LOAM 10.9/3/3	62'-126" C2 SANDY LOAM 2.5/5/3
62'-126" C2 SANDY LOAM 2.5/5/3	126'-180" C2 SANDY LOAM 2.5/5/3	126'-180" C2 SANDY LOAM 2.5/5/3	126'-180" C2 SANDY LOAM 2.5/5/3	126'-180" Flt FINE SANDY LOAM 10.9/3/3	126'-180" C2 SANDY LOAM 2.5/5/3
126'-180" C2 SANDY LOAM 2.5/5/3	180'-240" C2 SANDY LOAM 2.5/5/3	180'-240" C2 SANDY LOAM 2.5/5/3	180'-240" C2 SANDY LOAM 2.5/5/3	180'-240" Flt FINE SANDY LOAM 10.9/3/3	180'-240" C2 SANDY LOAM 2.5/5/3
180'-240" C2 SANDY LOAM 2.5/5/3	240'-300" C2 SANDY LOAM 2.5/5/3	240'-300" C2 SANDY LOAM 2.5/5/3	240'-300" C2 SANDY LOAM 2.5/5/3	240'-300" Flt FINE SANDY LOAM 10.9/3/3	240'-300" C2 SANDY LOAM 2.5/5/3
240'-300" C2 SANDY LOAM 2.5/5/3	300'-360" C2 SANDY LOAM 2.5/5/3	300'-360" C2 SANDY LOAM 2.5/5/3	300'-360" C2 SANDY LOAM 2.5/5/3	300'-360" Flt FINE SANDY LOAM 10.9/3/3	300'-360" C2 SANDY LOAM 2.5/5/3
300'-360" C2 SANDY LOAM 2.5/5/3	360'-420" C2 SANDY LOAM 2.5/5/3	360'-420" C2 SANDY LOAM 2.5/5/3	360'-420" C2 SANDY LOAM 2.5/5/3	360'-420" Flt FINE SANDY LOAM 10.9/3/3	360'-420" C2 SANDY LOAM 2.5/5/3
360'-420" C2 SANDY LOAM 2.5/5/3	420'-480" C2 SANDY LOAM 2.5/5/3	420'-480" C2 SANDY LOAM 2.5/5/3	420'-480" C2 SANDY LOAM 2.5/5/3	420'-480" Flt FINE SANDY LOAM 10.9/3/3	420'-480" C2 SANDY LOAM 2.5/5/3
420'-480" C2 SANDY LOAM 2.5/5/3	480'-540" C2 SANDY LOAM 2.5/5/3	480'-540" C2 SANDY LOAM 2.5/5/3	480'-540" C2 SANDY LOAM 2.5/5/3	480'-540" Flt FINE SANDY LOAM 10.9/3/3	480'-540" C2 SANDY LOAM 2.5/5/3
480'-540" C2 SANDY LOAM 2.5/5/3	540'-600" C2 SANDY LOAM 2.5/5/3	540'-600" C2 SANDY LOAM 2.5/5/3	540'-600" C2 SANDY LOAM 2.5/5/3	540'-600" Flt FINE SANDY LOAM 10.9/3/3	540'-600" C2 SANDY LOAM 2.5/5/3
540'-600" C2 SANDY LOAM 2.5/5/3	600'-660" C2 SANDY LOAM 2.5/5/3	600'-660" C2 SANDY LOAM 2.5/5/3	600'-660" C2 SANDY LOAM 2.5/5/3	600'-660" Flt FINE SANDY LOAM 10.9/3/3	600'-660" C2 SANDY LOAM 2.5/5/3
600'-660" C2 SANDY LOAM 2.5/5/3	660'-720" C2 SANDY LOAM 2.5/5/3	660'-720" C2 SANDY LOAM 2.5/5/3	660'-720" C2 SANDY LOAM 2.5/5/3	660'-720" Flt FINE SANDY LOAM 10.9/3/3	660'-720" C2 SANDY LOAM 2.5/5/3
660'-720" C2 SANDY LOAM 2.5/5/3	720'-780" C2 SANDY LOAM 2.5/5/3	720'-780" C2 SANDY LOAM 2.5/5/3	720'-780" C2 SANDY LOAM 2.5/5/3	720'-780" Flt FINE SANDY LOAM 10.9/3/3	720'-780" C2 SANDY LOAM 2.5/5/3
720'-780" C2 SANDY LOAM 2.5/5/3	780'-840" C2 SANDY LOAM 2.5/5/3	780'-840" C2 SANDY LOAM 2.5/5/3	780'-840" C2 SANDY LOAM 2.5/5/3	780'-840" Flt FINE SANDY LOAM 10.9/3/3	780'-840" C2 SANDY LOAM 2.5/5/3
780'-840" C2 SANDY LOAM 2.5/5/3	840'-900" C2 SANDY LOAM 2.5/5/3	840'-900" C2 SANDY LOAM 2.5/5/3	840'-900" C2 SANDY LOAM 2.5/5/3	840'-900" Flt FINE SANDY LOAM 10.9/3/3	840'-900" C2 SANDY LOAM 2.5/5/3
840'-900" C2 SANDY LOAM 2.5/5/3	900'-960" C2 SANDY LOAM 2.5/5/3	900'-960" C2 SANDY LOAM 2.5/5/3	900'-960" C2 SANDY LOAM 2.5/5/3	900'-960" Flt FINE SANDY LOAM 10.9/3/3	900'-960" C2 SANDY LOAM 2.5/5/3
900'-960" C2 SANDY LOAM 2.5/5/3	960'-1020" C2 SANDY LOAM 2.5/5/3	960'-1020" C2 SANDY LOAM 2.5/5/3	960'-1020" C2 SANDY LOAM 2.5/5/3	960'-1020" Flt FINE SANDY LOAM 10.9/3/3	960'-1020" C2 SANDY LOAM 2.5/5/3
960'-1020" C2 SANDY LOAM 2.5/5/3	1020'-1080" C2 SANDY LOAM 2.5/5/3	1020'-1080" C2 SANDY LOAM 2.5/5/3	1020'-1080" C2 SANDY LOAM 2.5/5/3	1020'-1080" Flt FINE SANDY LOAM 10.9/3/3	1020'-1080" C2 SANDY LOAM 2.5/5/3
1020'-1080" C2 SANDY LOAM 2.5/5/3	1080'-1140" C2 SANDY LOAM 2.5/5/3	1080'-1140" C2 SANDY LOAM 2.5/5/3	1080'-1140" C2 SANDY LOAM 2.5/5/3	1080'-1140" Flt FINE SANDY LOAM 10.9/3/3	1080'-1140" C2 SANDY LOAM 2.5/5/3
1080'-1140" C2 SANDY LOAM 2.5/5/3	1140'-1200" C2 SANDY LOAM 2.5/5/3	1140'-1200" C2 SANDY LOAM 2.5/5/3	1140'-1200" C2 SANDY LOAM 2.5/5/3	1140'-1200" Flt FINE SANDY LOAM 10.9/3/3	1140'-1200" C2 SANDY LOAM 2.5/5/3
1140'-1200" C2 SANDY LOAM 2.5/5/3	1200'-1260" C2 SANDY LOAM 2.5/5/3	1200'-1260" C2 SANDY LOAM 2.5/5/3	1200'-1260" C2 SANDY LOAM 2.5/5/3	1200'-1260" Flt FINE SANDY LOAM 10.9/3/3	1200'-1260" C2 SANDY LOAM 2.5/5/3
1200'-1260" C2 SANDY LOAM 2.5/5/3	1260'-1320" C2 SANDY LOAM 2.5/5/3	1260'-1320" C2 SANDY LOAM 2.5/5/3	1260'-1320" C2 SANDY LOAM 2.5/5/3	1260'-1320" Flt FINE SANDY LOAM 10.9/3/3	1260'-1320" C2 SANDY LOAM 2.5/5/3
1260'-1320" C2 SANDY LOAM 2.5/5/3	1320'-1380" C2 SANDY LOAM 2.5/5/3	1320'-1380" C2 SANDY LOAM 2.5/5/3	1320'-1380" C2 SANDY LOAM 2.5/5/3	1320'-1380" Flt FINE SANDY LOAM 10.9/3/3	1320'-1380" C2 SANDY LOAM 2.5/5/3
1320'-1380" C2 SANDY LOAM 2.5/5/3	1380'-1440" C2 SANDY LOAM 2.5/5/3	1380'-1440" C2 SANDY LOAM 2.5/5/3	1380'-1440" C2 SANDY LOAM 2.5/5/3	1380'-1440" Flt FINE SANDY LOAM 10.9/3/3	1380'-1440" C2 SANDY LOAM 2.5/5/3
1380'-1440" C2 SANDY LOAM 2.5/5/3	1440'-1500" C2 SANDY LOAM 2.5/5/3	1440'-1500" C2 SANDY LOAM 2.5/5/3	1440'-1500" C2 SANDY LOAM 2.5/5/3	1440'-1500" Flt FINE SANDY LOAM 10.9/3/3	1440'-1500" C2 SANDY LOAM 2.5/5/3
1440'-1500" C2 SANDY LOAM 2.5/5/3	1500'-1560" C2 SANDY LOAM 2.5/5/3	1500'-1560" C2 SANDY LOAM 2.5/5/3	1500'-1560" C2 SANDY LOAM 2.5/5/3	1500'-1560" Flt FINE SANDY LOAM 10.9/3/3	1500'-1560" C2 SANDY LOAM 2.5/5/3
1500'-1560" C2 SANDY LOAM 2.5/5/3	1560'-1620" C2 SANDY LOAM 2.5/5/3	1560'-1620" C2 SANDY LOAM 2.5/5/3	1560'-1620" C2 SANDY LOAM 2.5/5/3	1560'-1620" Flt FINE SANDY LOAM 10.9/3/3	1560'-1620" C2 SANDY LOAM 2.5/5/3
1560'-1620" C2 SANDY LOAM 2.5/5/3	1620'-1680" C2 SANDY LOAM 2.5/5/3	1620'-1680" C2 SANDY LOAM 2.5/5/3	1620'-1680" C2 SANDY LOAM 2.5/5/3	1620'-1680" Flt FINE SANDY LOAM 10.9/3/3	1620'-1680" C2 SANDY LOAM 2.5/5/3
1620'-1680" C2 SANDY LOAM 2.5/5/3	1680'-1740" C2 SANDY LOAM 2.5/5/3	1680'-1740" C2 SANDY LOAM 2.5/5/3	1680'-1740" C2 SANDY LOAM 2.5/5/3	1680'-1740" Flt FINE SANDY LOAM 10.9/3/3	1680'-1740" C2 SANDY LOAM 2.5/5/3
1680'-1740" C2 SANDY LOAM 2.5/5/3	1740'-1800" C2 SANDY LOAM 2.5/5/3	1740'-1800" C2 SANDY LOAM 2.5/5/3	1740'-1800" C2 SANDY LOAM 2.5/5/3	1740'-1800" Flt FINE SANDY LOAM 10.9/3/3	1740'-1800" C2 SANDY LOAM 2.5/5/3
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3960'-4020" C2 SANDY LOAM 2.5/5/3	4020'-4080" C2 SANDY LOAM 2.5				

Drainage Approach

There are presently no stormwater controls in place to manage runoff rates or volumes. Runoff drains to the south and West on to abutting properties and into West Plain Street. The proposed development will have a stormwater management system to capture, treat and recharge runoff generated by the majority of proposed surfaces on the property.

Runoff from the front portions of the building roofs will be captured and routed to proposed infiltration system 1 located under the proposed driveway. Runoff from the proposed driveway will be captured and treated in deep sump catch basins, Stormceptor 450 units prior to discharge into proposed infiltration system 1. Proposed infiltration system 1 has been designed to fully store and infiltrate runoff from storms up through and including the 25-year storm with minor overflow coming from larger storm events. The project will provide treatment of runoff from all paved surfaces and will significantly reduce the rates and volumes of runoff leaving the project site in all storm events. Tables Two and Three below illustrate the significant reductions in runoff rates and volumes in the post-development condition.

Chapter 6:

Standard 3: Recharge

- **Soil Data is provided in Chapter 2 of Stormwater Report, Chapter 1, and on the Existing Conditions Plan**
- **The required recharge volume calculations:**

The required Recharge Volume is based on loamy sand with a NRCS Hydrologic Group rating of A and a Target Depth Factor (F) of 0.60-inch. Below is the calculation for the required recharge volume for the entire site:

Required Recharge Volume

$R_v = (F) \times (\text{Impervious Area})$

$R_v = (0.60 \text{ inch} / 12) \times (19,507 \text{ square feet})$

Rv = 975 cubic feet.

- The sizing of the infiltration BMP's is based on a "Static Method."
- Runoff from the proposed parking and a portion of roof surfaces on the site are being discharged into the infiltration BMP.
- The recharge BMP's have been sized to infiltrate the required Recharge Volume:

Proposed Infiltration System 1

Basic geometry:	35.5 feet wide by 44 feet long
System type:	Shea Leaching Galleys; 360 gallons each
	Use 70 Galleys; 4-feet long by 4.5-feet wide by 4-feet high
Infiltration rate:	1.02 inches per hour over 1,562 square foot bed
Exfiltration Capacity:	0.038 c.f.s.

Recharge Volumes from Hydrologic Analysis, Chapter 1.

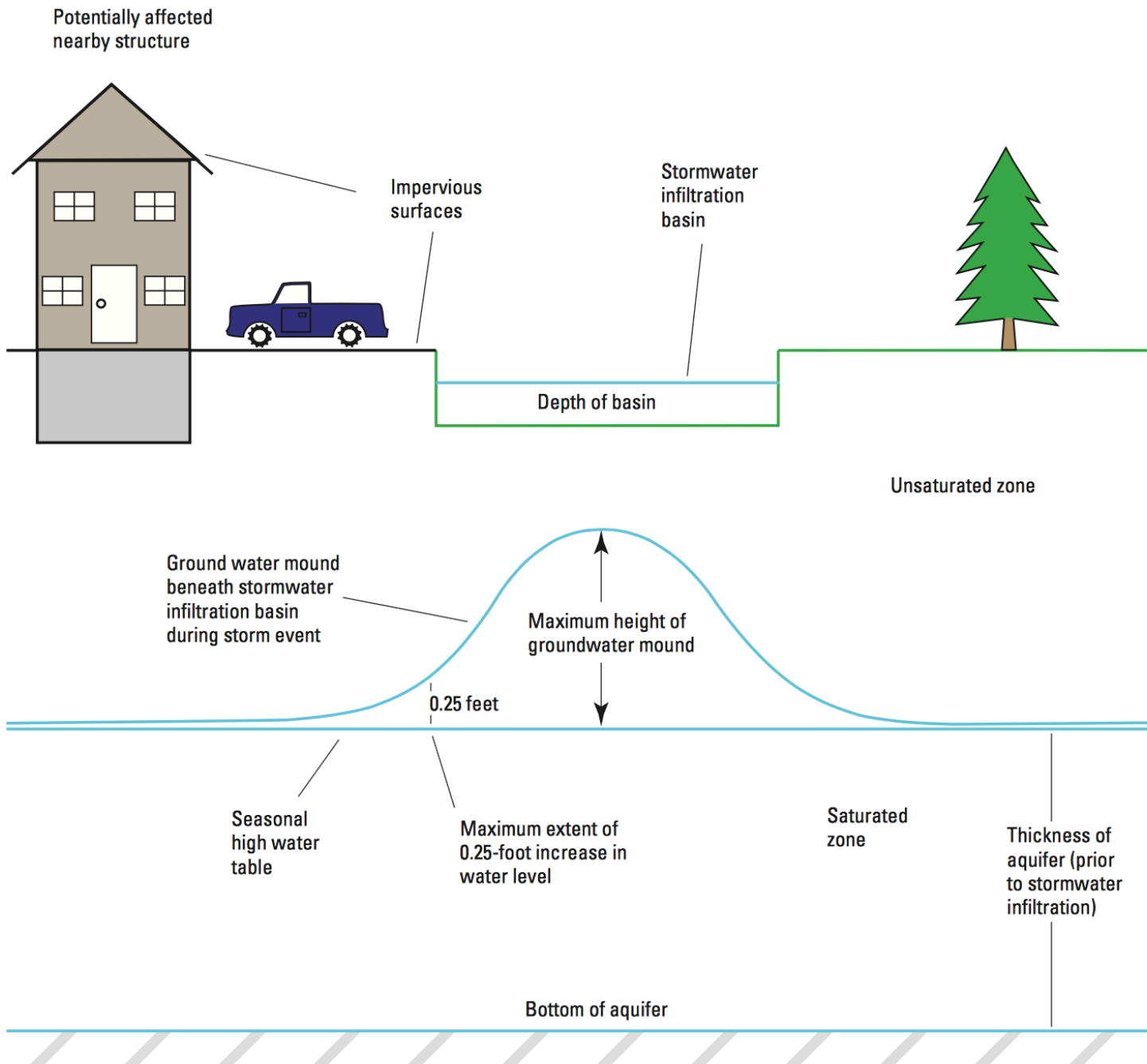
Subsurface Infiltration System 1

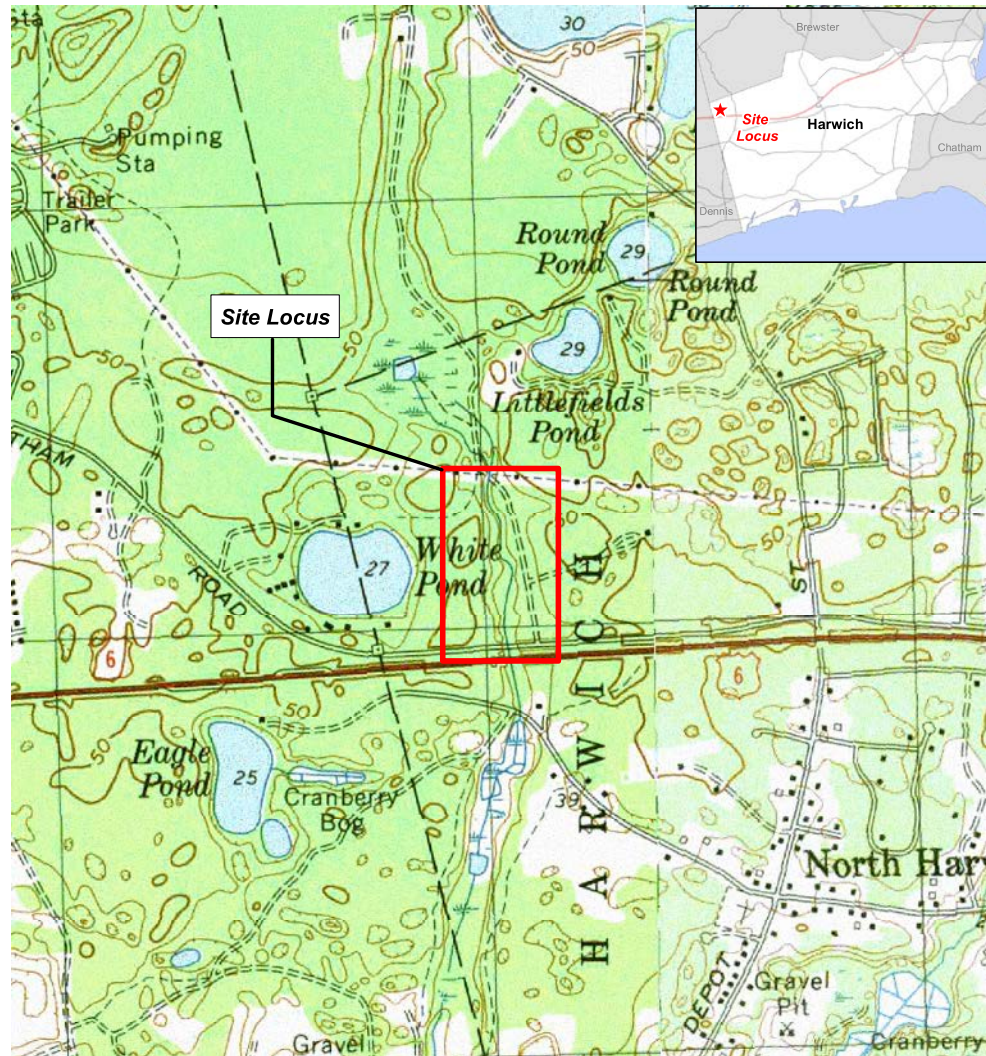
2-Year Recharge Volume = 1,880 cubic feet

10-Year Recharge Volume = 3,398 cubic feet

25-Year Recharge Volume = 4,320 cubic feet

100-Year Recharge Volume = 5,756 cubic feet





ographic Quadrangle

Simulated Water Sources and Effects of Pumping on Surface and Ground Water, Sagamore and Monomoy Flow Lenses, Cape Cod, Massachusetts

By Donald A. Walter and Ann T. Whealan

In cooperation with the Massachusetts Department of Environmental Protection
Drinking Water Program

Scientific Investigations Report 2004-5181

**U.S. Department of the Interior
U.S. Geological Survey**

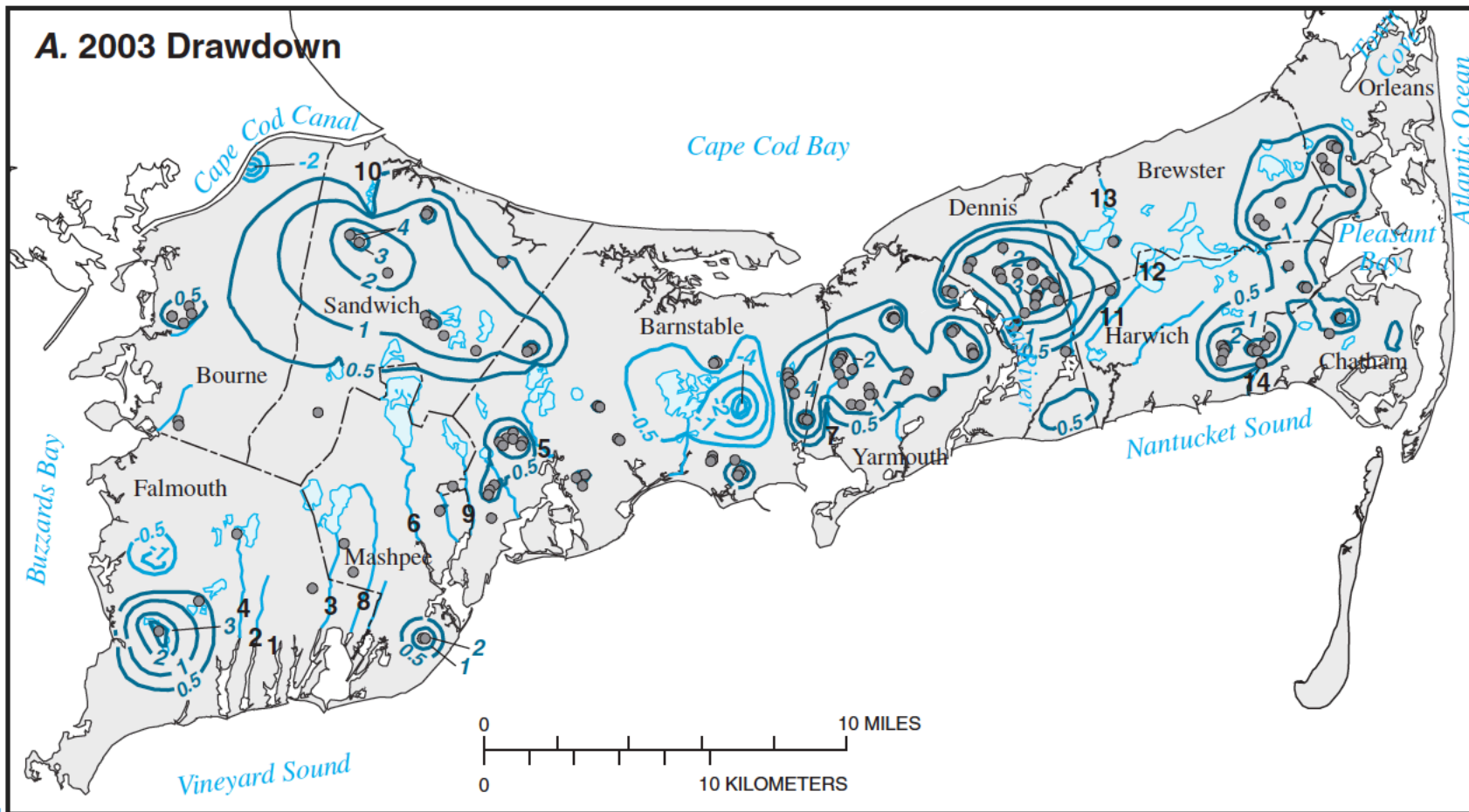
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69°55'01"

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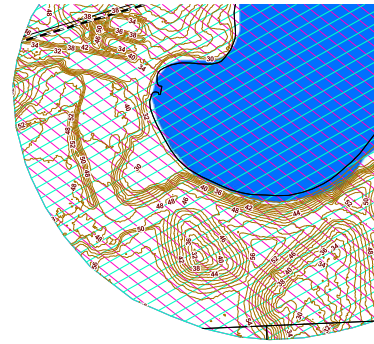
A. 2003 Drawdown



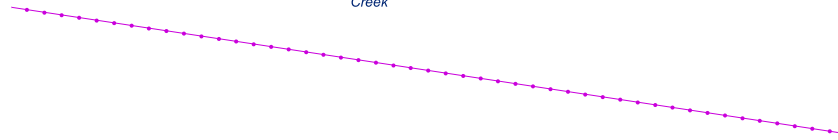
EXPLANATION

— LINE OF EQUAL DRAWDOWN — Number is drawdown in feet. Contour interval varies
 ● LOCATION OF PUMPED WELL

— LINE OF EQUAL DRAWDOWN — Number is drawdown in feet. Negative number indicates mounding. Contour interval varies



Smelt
Creek



Smelt
Creek



Smelt
Creek

Smelt
Creek