

**Appendix A. List of special concern species and priority habitats in Chicopee River basin (from Massachusetts Natural Heritage and Endangered Species Program 2002).**

**Rare Species in the Chicopee Watershed**

<u>Scientific Name</u>	<u>Common Name</u>	<u>Status</u>	<u>Year</u>
<b>Invertebrates</b>			
AESHNA MUTATA	SPATTERDOCK DARNER	E	1999
ALASMIDONTA UNDULATA	TRIANGLE FLOATER	SC	1999
ALASMIDONTA VARICOSA	BROOK FLOATER	E	1997
ANAX LONGIPES	COMET DARNER	SC	1996
APHARETRA DENTATA	BLUEBERRY SALLOW	SC	1999
CICINDELA PURPUREA	PURPLE TIGER BEETLE	SC	1999
ENALLAGMA LATERALE	NEW ENGLAND BLUET	SC	1999
EUBRANCHIPUS INTRICATUS	INTRICATE FAIRY SHRIMP	SC	1985
GOMPHUS BOREALIS	BEAVERPOND CLUBTAIL	SC	1992
GOMPHUS DESCRIPTUS	HARPOON CLUBTAIL	E	2001
GRAMMIA OITHONA	OITHONA TIGER MOTH	E	1994
GRAMMIA PHYLLIRA	PHYLLIRA TIGER MOTH	E	1994
METARRANTHIS PILOSARIA	COASTAL SWAMP METARRANTHIS MOTH	SC	1999
STROPHITUS UNDULATUS	SQUAWFOOT	SC	1999
WILLIAMSONIA FLETCHERI	EBONY BOGHAUNTER	E	1999
WILLIAMSONIA LINTNERI	RINGED BOGHAUNTER	E	1986
<b>Plants</b>			
ADLUMIA FUNGOSA	CLIMBING FUMITORY	T	2000
AMELANCHIER BARTRAMIANA	BARTRAM'S SHADBUSH	T	1996
ARCEUTHOBIUM PUSILLUM	DWARF MISTLETOE	SC	1989
ARETHUSA BULBOSA	ARETHUSA	T	1999
CAREX POLYMORPHA	VARIABLE SEDGE	E	2000
CLEMATIS OCCIDENTALIS	PURPLE CLEMATIS	SC	2000
ERIOPHORUM GRACILE	SLENDER COTTONGRASS	T	2000

JUNCUS FILIFORMIS	THREAD RUSH	T 1987
LIATRIS BOREALIS	NEW ENGLAND BLAZING STAR	SC 1999
LYGODIUM PALMATUM	CLIMBING FERN	SC 2000
MIMULUS MOSCHATUS	MUSKFLOWER	T 1999
MYRIOPHYLLUM ALTERNIFLORUM	ALTERNATE-FLOWERED WATER-MILFOIL	T 1898
ORONTIUM AQUATICUM	GOLDEN CLUB	T 1996
PANAX QUINQUEFOLIUS	GINSENG	SC 1989
PANICUM PHILADELPHICUM	PHILADELPHIA PANIC-GRASS	SC 1980
PRENANTHES SERPENTARIA	LION'S FOOT	E 2000
RANUNCULUS PENNSYLVANICUS	BRISTLY BUTTERCUP	T 1998
RHYNCHOSPORA SCIRPOIDES	LONG-BEAKED BALD-SEDGE	SC 1995
SAGITTARIA TERES	TERETE ARROWHEAD	SC 1997
SCHEUCHZERIA PALUSTRIS	POD-GRASS	T
SCIRPUS LONGII	LONG'S BULRUSH	E 2000

#### **Vertebrates**

AMBYSTOMA JEFFERSONIANUM	JEFFERSON SALAMANDER	SC 1999
AMBYSTOMA LATERALE	BLUE-SPOTTED SALAMANDER	SC 1999
AMBYSTOMA OPACUM	MARbled SALAMANDER	T 2000
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T 1972
BARTRAMIA LONGICAUDA	UPLAND SANDPIPER	E 1989
BOTAURUS LENTIGINOSUS	AMERICAN BITTERN	E 2000
CIRCUS CYANEUS	NORTHERN HARRIER	T 1990
CISTOTHORUS PLATENSIS	SEDGE WREN	E 1992
CLEMMYS GUTTATA	SPOTTED TURTLE	SC 2001
CLEMMYS INSCULPTA	WOOD TURTLE	SC 2001
EMYDOIDEA BLANDINGII	BLANDING'S TURTLE	T 1993
FALCO PEREGRINUS	PEREGRINE FALCON	E 1933
GAVIA IMMER	COMMON LOON	SC 2000
GYRINOPHILUS PORPHYRITICUS	SPRING SALAMANDER	SC 1996
HALIAEETUS LEUCOCEPHALUS	BALD EAGLE	E 1999

HEMIDACTYLIUM SCUTATUM	FOUR-TOED SALAMANDER	SC 1999
IXOBRYCHUS EXILIS	LEAST BITTERN	E 1999
NOTROPIS BIFRENATUS	BRIDLE SHINER	SC 1996
PODILYMBUS PODICEPS	PIED-BILLED GREBE	E 1993
RALLUS ELEGANS	KING RAIL	T 1993
SOREX PALUSTRIS	WATER SHREW	SC 1999
SYNAPTOMYS COOPERI	SOUTHERN BOG LEMMING	SC 1994
TERRAPENE CAROLINA	EASTERN BOX TURTLE	SC 1999
VERMIVORA CHRYSOPTERA	GOLDEN-WINGED WARBLER	E 1983

**Other**

ACIDIC ROCKY SUMMIT/ROCK OUTCROP COMMUNITY	ACIDIC ROCKY SUMMIT/ROCK OUTCROP COMMUNITY	1982
ATLANTIC WHITE CEDAR BOG	ATLANTIC WHITE CEDAR BOG	1989
BLACK GUM SWAMP	BLACK GUM SWAMP	2000
CERTIFIED VERNAL POOL		- 2001
HEMLOCK-HARDWOOD SWAMP	HEMLOCK-HARDWOOD SWAMP	1998
HIGH-ENERGY RIVERBANK	HIGH-ENERGY RIVERBANK	1999
INLAND ATLANTIC WHITE CEDAR SWAMP	INLAND ATLANTIC WHITE CEDAR SWAMP	1989
KETTLEHOLE LEVEL BOG	KETTLEHOLE LEVEL BOG	1998
LEVEL BOG	LEVEL BOG	2000
NORTHERN ATLANTIC WHITE CEDAR SWAMP	NORTHERN ATLANTIC WHITE CEDAR SWAMP	1989
OAK - HEMLOCK - WHITE PINE FOREST	OAK - HEMLOCK - WHITE PINE FOREST	1998
OAK - HICKORY FOREST	OAK - HICKORY FOREST	2000
RED MAPLE SWAMP	RED MAPLE SWAMP	1998
SPRUCE-TAMARACK BOG	SPRUCE-TAMARACK BOG	1999

**Status:**

**E = Endangered**

**T = Threatened**

**SC = Special Concern**

**Appendix B. Zoning related bylaws and regulations in Chicopee basin communities (information from Massachusetts Historic Commission).**

Municipality:	Tools Guidebook Responses:	Nhood Cons Dist:	Demo Delay:	Site Plan Review:	Cluster:	Phased Growth:	Planned Unit Development:	Overlay Zoning:	Village Center Zoning:	Design Review Board:	Scenic Roads:	Local Historic District:
Athol	No	No	No	No	No	No	No	No	No	No	No	No
Barre	No	No	No	No	No	No	No	No	No	No	No	No
Belchertown	Yes	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
Brimfield	No	No	No	Yes	Yes	No	No	No	No	No	Yes	No
Brookfield	Yes	No	No	Yes	Yes	No	No	Yes	Yes	No	Yes	No
Charlton	Yes	No	No	Yes	Yes	No	No	Yes	No	No	Yes	Yes
Chicopee	Yes	No	No	Yes	No	No	Yes	Yes	No	No	No	Yes
East Brookfield	No	No	No	No	No	No	No	No	No	No	No	No
Granby	No	No	No	No	No	No	No	Yes	No	No	No	Yes
Hampden	Yes	No	No	Yes	Yes	No	Yes	Yes	No	No	No	No
Hardwick	No	No	No	No	No	No	No	No	No	No	No	No
Hubbardston	Yes	No	No	Yes	No	No	No	No	No	No	Yes	No
Leicester	No	No	No	No	No	No	No	Yes	No	No	No	No
Ludlow	No	No	No	No	No	No	No	Yes	No	No	No	No
Monson	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No	No
New Braintree	No	No	No	No	No	No	No	No	No	No	No	No
New Salem	Yes	No	No	No	No	No	No	No	No	No	No	No
North Brookfield	Yes	No	No	No	No	Yes	Yes	No	No	No	No	No
Oakham	No	No	No	No	No	No	No	No	No	No	No	No
Orange	No	No	No	Yes	Yes	No	No	No	No	No	No	No
Palmer	Yes	No	No	Yes	No	No	No	No	No	No	No	No
Paxton	Yes	No	No	No	No	No	No	No	No	No	No	No
Pelham	Yes	No	No	Yes	No	No	No	Yes	No	No	No	No
Petersham	No	No	No	No	No	No	No	No	No	No	Yes?	Yes
Phillipston	Yes	No	No	No	No	No	No	No	No	No	Yes	No
Princeton	No	No	No	No	No	No	No	No	No	No	No	No

Municipality:	Tools Guidebook Responses:	Nhood Cons Dist:	Demo Delay:	Site Plan Review:	Cluster:	Phased Growth:	Planned Unit Development:	Overlay Zoning:	Village Center Zoning:	Design Review Board:	Scenic Roads:	Local Historic District:
Rutland	No	No	No	No	Yes	No	No	No	No	No	No	No
Shutesbury	Yes	No	No	No	No	No	No	No	No	No	No	No
Spencer	No	No	No	No	No	No	No	No	No	No	No	No
Springfield	Yes	No	No	No	Yes	No	No	No	No	No	No	Yes
Sturbridge	Yes	No	No	Yes	No	No	Yes	Yes	No	Yes	No	No
Templeton	No	No	No	No	No	No	No	No	No	No	No	No
Wales	No	No	No	No	No	No	No	Yes	No	No	No	No
Ware	No	No	No	No	No	No	No	Yes	No	No	No	No
Warren	No	No	No	No	No	No	No	No	No	No	No	No
Wendell	Yes	No	No	Yes	Yes	Yes	No	No	No	No	Yes	No
West Brookfield	No	No	No	No	No	No	No	Yes	Yes	No	No	No
Westminster	No	No	No	No	No	No	No	No	No	No	No	No
Wilbraham	No	No	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No

No	39	39	25	28	37	33	24	35	38	31	33
Yes	0	0	14	11	2	6	15	4	1	7	6
Total	39	39	39	39	39	39	39	39	39	38	39

**Appendix C. Information on selected dams in the Chicopee River basin (information from U.S. Fish and Wildlife Service, Connecticut River Coordinators Office; 1996)**

ID #	Nat_id	Name	River	Owner	Dam Type	Purpose	Yr cmltd	Length	Height	Seq	Alsa	Sasa	Anro	Pema	Alae	Doce	Alps	Mosa	Quadname
1623	MA00640	PIERCE POND DAM	TR-MAHONEY BROOK	LEO G. LELOUX	GRAVITY	RECREATION	1900	250	9	9	u2	u2	p4	u2	u2	u2	u2	--	GARDNER
908	MA00776	BUXTON MILL POND DAM	WILLOW BROOK	NONE RECORDED	GRAVITY	RECREATION	1920	0	30	8	u2	u2	p4	u2	u2	u2	u2	--	EAST BROOKFIELD
1254	MA01175	HOWE POND DAM	CRANBERRY RIVER	TOWN OF SPENCER	GRAVITY	RECREATION	1900	75	14	8	u2	u2	p4	u2	u2	u2	u2	--	EAST BROOKFIELD
1319	MA00961	LAKE LASHAWAY DAM	EAST BROOKFIELD RIVER	TOWN OF BROOKFIELD	GRAVITY	RECREATION	1926	300	16	8	u2	u2	p4	u2	u2	u2	u2	--	EAST BROOKFIELD
818	MA00904	NAULTAUG BROOK POND DAM	NAULTAUG BROOK	BERNARD B. LENO	GRAVITY	RECREATION	1920	125	18	8	u2	u2	p4	u2	u2	u2	u2	--	WARREN
974	MA00903	COMINS POND DAM	TR-QUABOAG RIVER	TOWN OF WARREN	GRAVITY	WATER SUPPLY	1957	315	14	8	u2	u2	p4	u2	u2	u2	u2	--	WARREN
1339	MA00905	LAMBERTON BROOK SITE, aka LAMBERTON BROOK DAM WEST WARREN MILL POND DAM	LAMBERTON BROOK	COMMONWEALTH OF MASS.	GRAVITY	FLOOD CONTROL	1967	385	0	8	u2	u2	p4	u2	u2	u2	u2	--	WARREN
1974	MA00902	DAM	QUOBOAG RIVER	WILLIAM E. WRIGHT CO.	GRAVITY	WATER SUPPLY	1900	197	19	7	u2	u2	p4	u2	u2	u2	u2	--	WARREN
889	MA00695	BROWNING POND DAM	SEVENMILE RIVER	BOY SCOUTS OF AMERICA	GRAVITY	RECREATION	1940	503	8	8	u2	u2	p4	u2	u2	u2	u2	--	PAXTON
1055	MA00676	EAMES POND DAM	TURKEY HILL BROOK	COMM OF MA - DEM	GRAVITY	RECREATION	1880	230	18	9	u2	u2	p4	u2	u2	u2	u2	--	PAXTON
1753	MA01309	SHAW POND DAM	SHAW BROOK	TOWN OF SPENCER	GRAVITY	WATER SUPPLY	1900	350	10	9	u2	u2	p4	u2	u2	u1	u2	--	PAXTON
1858	MA00697	THOMPSONS POND DAM	TURKEY HILL BROOK	COMM OF MA - DEM	GRAVITY	RECREATION	1957	290	29	8	u2	u2	p4	u2	u2	u2	u2	--	PAXTON
1030	MA01304	DEAN POND DAM	FIVEMILE RIVER	FRANK PACKARD JR.	GRAVITY	RECREATION	1920	250	8	10	u2	u2	p4	u2	u2	u2	u2	--	NORTH BROOKFIELD
1040	MA00948	DOANE POND DAM	HORSE POND BROOK	TOWN OF NORTH BROOKFIELD	GRAVITY	WATER SUPPLY	1950	500	12	10	u2	u2	p4	u2	u2	u2	u2	--	NORTH BROOKFIELD
1249	MA00947	HORSE POND DAM	TR-HORSEPOND BROOK	TOWN OF NORTH BROOKFIELD	GRAVITY	WATER SUPPLY	1950	350	30	11	u2	u2	p4	u2	u2	u2	u2	--	NORTH BROOKFIELD
884	MA00980	BROOKHAVEN LAKE DAM	TR-LAMBERTON BROOK	BROOKHAVEN ASSN	GRAVITY	RECREATION	1900	140	8	9	u2	u2	p4	u2	u2	u2	u2	--	WARE
1385	MA00751	LOWER CANAL DAM	WARE RIVER	WARE INDUSTRIES	GRAVITY	FLOOD CONTROL	1850	192	31	9	u2	u2	p4	u2	u2	u2	u2	--	WARE
1604	MA00618	PATRILL HOLLOW POND DAM	MUDDY BROOK	SAMUEL A. GALPIN	GRAVITY	RECREATION	1920	225	13	11	u2	u2	p4	u2	u2	u2	u2	--	WARE
1628	MA00617	PINE BROOK DAM	PINE HILL BROOK	SOUTH BARRE ROD & GUN CLUB	GRAVITY	RECREATION	1940	120	11	12	u2	u2	p4	u2	u2	u2	u2	--	WARE
1948	MA00594	WARE UPPER, aka WARE INDUSTRIES UPPER DAM	WARE RIVER	PIONEER HYDROPOWER	GRAVITY	HYDROELECTRIC	1890	250	0	10	u2	u2	p4	u2	u2	u2	u2	--	WARE
820	MA00592	BEAVER LAKE DAM	BEAVER BROOK	BEAVER LAKE INC.	GRAVITY	RECREATION	1900	145	18	9	u2	u2	p4	u2	u2	u2	u2	--	WINSOR DAM
1612	MA00591	PEPPERS MILL POND DAM	BEAVER BROOK	COMM OF MA - MDC	GRAVITY	RECREATION	1953	103	12	10	u2	u2	p4	u2	u2	u2	u2	--	WINSOR DAM
1626	MA01275	PILCHS NO 3 DAM	TR-BEAVER BROOK	JOHN PILCH	GRAVITY	RECREATION	1945	700	26	0	n2	u2	u5	n2	n2	n2	n2	--	WINSOR DAM
1669	MA00590	QUABBIN GOODNOUGH DIKE	BEAVER BROOK	COMM OF MA - MDC	GRAVITY	WATER SUPPLY	1938	2140	200	11	u2	u2	n4	u2	u2	u2	u2	--	WINSOR DAM
1670	MA00589	QUABBIN SPILLWAY DAM	SWIFT RIVER	TOWN OF WARE	GRAVITY	WATER SUPPLY	1938	0	10	9	u2	u2	n4	u5	u2	u5	u2	--	WINSOR DAM
1671	MA00588	QUABBIN WINSOR DAM	SWIFT RIVER	COMM OF MA - MDC	GRAVITY	WATER SUPPLY	1939	2640	280	9	u2	u2	n4	u2	u2	u2	u2	--	WINSOR DAM
776	MA01248	ASNACOMET POND DAM	TR-EAST BR. WARE RIVER	COMM OF MA - MDC	GRAVITY	RECREATION	1900	400	9	16	u2	u2	p4	u2	u2	u2	u2	--	WACHUSETT MOUNTAIN
881	MA00661	BRIGHAM POND DAM	WEST BR. WARE RIVER	COMM OF MA - MDC	GRAVITY	RECREATION	1900	200	12	16	u2	u2	p4	u2	u2	u2	u2	--	WACHUSETT MOUNTAIN
1010	MA00666	CROSS POND DAM	TR-EAST BR. WARE RIVER	DAVID M. RICHARDS	GRAVITY	RECREATION	1900	300	9	16	u2	u2	p4	u2	u2	u2	u2	--	WACHUSETT MOUNTAIN
1810	MA01301	STEVENS POND DAM	TR-EAST BR WARE RIVER	EMBERT STEVENS	GRAVITY	FIRE/FARM POND	1920	150	9	16	u2	u2	p4	u2	u2	u2	u2	--	WACHUSETT MOUNTAIN
802	MA00962	BARRE FALLS DAM, aka DRY RESERVOIR	WARE RIVER	DAEN NED	GRAVITY	FLOOD CONTROL	1958	885	69	15	u2	u2	p4	u2	u2	u2	u2	--	BARRE
965	MA00093	COLD BROOK INTAKE DAM	WARE RIVER	COMM OF MA - MDC	ARCH	WATER SUPPLY	1910	300	38	14	u2	u2	p4	u2	u2	u2	u2	--	BARRE
1650	MA00092	POWDER MILL POND	WARE RIVER	SOUTH BARRE HYDRO ELECTRIC CO.	GRAVITY	HYDROELECTRIC	1908	155	0	13	u2	u2	p4	u2	u2	u2	u2	--	BARRE
888	MA00652	BROWN POND DAM	TR-SWIFT RIVER	MARTHA B. DAY	GRAVITY	RECREATION	1900	90	14	12	u2	u2	p2	u2	u2	u2	u2	--	PETERSHAM
1201	MA00549	HARRIS POND DAM	HIGHER BROOK	TOWN OF LUDLOW	GRAVITY	RECREATION	1950	50	10	4	u2	u2	p4	u2	u2	u2	u2	--	LUDLOW
1661	MA00554	PULPIT ROCK POND SMALL DAM	TR-TWELVEMILE BROOK	YANKEE PROPERTIES	GRAVITY	RECREATION	1900	215	11	7	u2	u2	p4	u2	u2	u2	u2	--	LUDLOW
1662	MA00553	PULPIT ROCK POND WEST DAM	TR-TWELVEMILE BROOK	YANKEE PROPERTIES	GRAVITY	RECREATION	1900	183	12	7	u2	u2	p4	u2	u2	u2	u2	--	LUDLOW
1682	MA00723	RED BRIDGE, aka RED BRIDGE (RES)	CHICOPEE RIVER	WMECO	GRAVITY	HYDROELECTRIC	1901	827	59	6	n2	n2	p4	n2	n2	n2	n2	--	LUDLOW
1975	MA00724	PUTTS BRIDGE, aka LUDLOW MFG. DAM	CHICOPEE RIVER	WMECO	GRAVITY	HYDROELECTRIC	1918	223	0	5	u2	u2	p4	u2	u2	u2	u2	--	LUDLOW
1838	MA00698	SUGDEN RESERVOIR DAM	SHAW BROOK	TOWN OF SPENCER	GRAVITY	RECREATION	1957	440	37	8	u2	u2	p4	u2	u2	u2	u2	--	PAXTON
1338	MA00699	LAKE WHITTEMORE DAM	TR-SEVENMILE RIVER	TOWN OF SPENCER	GRAVITY	RECREATION	1900	300	17	0	n2	u2	u5	n2	n2	n2	n2	--	PAXTON

891 MA00901	BUCK HILL CON PD DAM, aka BUCK HILL CONS POND DAM	TR-SEVEN MILE RIVER	WORC CO EXTENSION SERV	GRAVITY	RECREATION	1967	325	0	8 u2	u2	p4	u2	u2	u2	u2	--	PAXTON
1295 MA01311	KENWOOD DRIVE POND DAM	DEMOND POND BROOK	COMM OF MA - MDC	GRAVITY	RECREATION	1920	110	8	16 u2	u2	p4	u2	u2	u2	u2	--	PAXTON
1034 MA00991	DEMOND POND DAM	LONG POND BROOK	COMM OF MA - MDC	GRAVITY	RECREATION	1925	90	12	15 u2	u2	p4	u2	u2	u2	u2	--	PAXTON
1568 MA00643	NOYES POND DAM	TR-EAST BR. WARE RIVER	GEORGE C. WHITNEY	GRAVITY	RECREATION	1900	140	25	17 u2	u2	p4	u2	u2	u2	u2	--	GARDNER
1430 MA01020	MARE MEADOW RESERVOIR DAM	EAST BRANCH WARE RIVER	CITY OF FITCHBURG	GRAVITY	WATER SUPPLY	1953	830	46	16 u2	u2 p4	u2	u2	u2	u2	--	WACHUSETT MOUNTAIN	
839 MA01022	BICKFORD POND DIKE	EAST BTANCH WARE RIVER	CITY OF FITCHBURG	GRAVITY	WATER SUPPLY	1970	507	23	0 n2	u2 u5	n2	n2	n2	n2	--	WACHUSETT MOUNTAIN	
838 MA01021	BICKFORD POND DAM	EAST BRANCH WARE RIVER	CITY OF FITCHBURG	GRAVITY	WATER SUPPLY	1970	0	51	16 u2	u2 p4	u2	u2	u2	u2	--	WACHUSETT MOUNTAIN	
826 MA00665	BEMS POND DAM	TR-EAST BR. WARE RIVER	PINECREST ASSOCIATES	GRAVITY	RECREATION	1900	160	10	16 u2	u2 p4	u2	u2	u2	u2	--	WACHUSETT MOUNTAIN	
1064 MA00930	EDSON POND DAM	POMMOGUSSETT BROOK	DONALD E. MARTIN	GRAVITY	RECREATION	1960	100	12	16 u2	u2 p4	u2	u2	u2	u2	--	WACHUSETT MOUNTAIN	
1498 MA00931	MOULTON POND DAM	MILL BROOK	FREDERICK C. BOND	GRAVITY	RECREATION	1920	175	14	17 u2	u2 p4	u2	u2	u2	u2	--	WACHUSETT MOUNTAIN	
1853 MA01249	THAYER POND DAM	MILL BROOK	DR. ROCKWOOD H. THAYER	GRAVITY	RECREATION	1930	300	9	16 u2	u2 p4	u2	u2	u2	u2	--	WACHUSETT MOUNTAIN	
1380 MA00646	LOVEWELL POND DAM	JOSLIN BROOK	LOVEWELL SPORTING CLUB	GRAVITY	RECREATION	1900	120	12	17 u2	u2 p4	u2	u2	u2	u2	--	GARDNER	
1935 MA01016	WAITE POND DAM	TR-JOSLIN BROOK	RONALD E. BURTON	GRAVITY	RECREATION	1900	210	9	17 u2	u2 p4	u2	u2	u2	u2	--	GARDNER	
1070 MA01017	ELLIS POND DAM	TR-WHITMAN RIVER	TOWN OF WESTMINSTER	GRAVITY	RECREATION	1925	150	9	0 u2	u2 u5	u2	u2	u2	u2	--	GARDNER	
1483 MA01019	MINOTT POND DAM	TR-MAHONEY BROOK	TOWN OF WESTMINSTER	GRAVITY	RECREATION	1900	500	9	11 u2	u2 p4	u2	u2	u2	u2	--	GARDNER	
1911 MA00850	UPPER RESERVOIR DAM	TR- MAHONEY BROOK	TOWN OF WESTMINSTER	GRAVITY	OTHER	1900	300	12	10 u2	u2 p4	u2	u2	u2	u2	--	GARDNER	
2031 MA00117	WRIGHTS RESERVOIR DAM	GREENWOOD BROOK	CITY OF GARDNER	GRAVITY	FLOOD CONTROL	1965	1965	18	9 u2	u2 p4	u2	u2	u2	u2	--	GARDNER	
2024 MA00529	WOODMAN POND DAM	TR-SEVEN MILE RIVER	COMM OF MA - DEM	GRAVITY	RECREATION	1950	300	15	12 u2	u2 p4	u2	u2	u2	u2 u2	--	WALES	
873 MA00556	BRADWAY POND DAM	TR-FOSKETT MILL STREAM	WESTVIEW FARM INC.	GRAVITY	IRRIGATION	1958	600	14	11 u2	u2 p4	u2	u2	u2	u2	--	MONSON	
913 MA01003	CALKINS POND DAM, aka JURCZYK LOWER POND DAM	TR-CHICOPEE BROOK	WILLIAM W. JURCZYK	GRAVITY	RECREATION	1960	285	16	10 u2	u2 p4	u2	u2	u2	u2	--	MONSON	
914 MA01332	CALKINS POND UPPER DAM	TR-CHICOPEE BROOK	WILLIAM W. JURCZYK	GRAVITY	RECREATION	1960	230	29	11 u2	u2 p4	u2	u2	u2	u2	--	MONSON	
947 MA00614	CHURCH MANUFACTURING COMPANY DAM	CHICOPEE BROOK	AMER. STD. CHURCH PRODUCTS	GRAVITY	WATER SUPPLY	1900	75	16	7 u2	u2 p4	u2	u2	u2	u2	--	MONSON	
976 MA00965	CONANT BROOK DAM, aka DRY RESERVOIR	CONANT BROOK	DAEN NED	GRAVITY	FLOOD CONTROL	1966	1050	77	10 u2	u2 p4	u2	u2	u2	u2	--	MONSON	
1497 MA00728	MOULTON POND DAM #1	CHICOPEE BROOK	G. CAULKING	GRAVITY	RECREATION	1850	135	12	8 u2	u2 p4	u2	u2	u2	u2	--	MONSON	
1541 MA00566	NORCROSS POND DAM #2	VINICA RIVER	NORCROSS WILDLIFE FUND INC	GRAVITY	IRRIGATION	1953	230	16	11 u2	u2 p4	u2	u2	u2	u2	--	MONSON	
1542 MA00567	NORCROSS POND DAM #3	VINICA BROOK	NORCROSS WILDLIFE FUND INC	GRAVITY	IRRIGATION	1953	230	16	12 u2	u2 p4	u2	u2	u2	u2	--	MONSON	
1593 MA00711	PARADISE LAKE DAM	TR-CHICOPEE BROOK	CLARA A. EATON	GRAVITY	RECREATION	1935	180	10	10 u2	u2 p4	u2	u2	u2	u2	--	MONSON	
1924 MA00538	VINICA POND DAM	VINICA BROOK	NORCROSS WILDLIFE FUND INC	GRAVITY	WATER SUPPLY	1950	750	12	13 u2	u2 p4	u2	u2	u2	u2	--	WALES	
1543 MA00613	NORCROSS POND DAM #4	TR-VINICA BROOK	NORCROSS WILDLIFE FUND INC	GRAVITY	OTHER	1953	625	16	13 u2	u2 p4	u2	u2	u2	u2	--	MONSON	
2035 MA00551	ZERO MANUFACTURING COMPANY DAM	CHICOPEE BROOK	MONSON MILL ASSOCIATION	GRAVITY	WATER SUPPLY	1900	150	19	9 u2	u2 p4	u2	u2	u2	u2	--	MONSON	
1031 MA00078	DEAN POND DAM	FOSKETT MILL STREAM	COMM OF MA - DEM	GRAVITY	RECREATION	1920	140	21	11 u2	u2 p4	u2	u2	u2	u2	--	MONSON	
755 MA00687	ALUM POND DAM	TR-QUINEBAUG RIVER	TOWN OF STURBRIDGE	GRAVITY	RECREATION	1900	0	9	0 u2	u2 u5	u2	u2	u2	u2	--	EAST BROOKFIELD	
1741 MA00098	SAW MILL POND DAM	TROUT BROOK	TOWN OF BROOKFIELD	GRAVITY	RECREATION	1920	135	12	8 u2	u2 p4	u2	u2	u2	u2	--	EAST BROOKFIELD	
1038 MA00562	DIAMOND INTERNATIONAL CORP UPPER DAM	WARE RIVER	DIAMOND FIBER PRODUCTS INC	GRAVITY	WATER SUPPLY	1918	334	23	0 u2	u2 u5	u2	u2	u2	u2	--	PALMER	
1857 MA00558	THOMPSON LAKE DAM	TR-WARE RIVER	LAKE THOMPSON CIVIC ASSOC.	GRAVITY	RECREATION	1900	93	13	0 u2	u2 u5	u2	u2	u2	u2	--	PALMER	
1592 MA00557	PALMER RESERVOIR UPPER DAM	TR-QUABOAG RIVER	TOWN OF PALMER	GRAVITY	WATER SUPPLY	1900	275	25	7 u2	u2 p4	u2	u2	u2	u2	--	PALMER	
1037 MA00563	DIAMOND INTERNATIONAL CORP LOWER DAM	WARE RIVER	DIAMOND FIBER PRODUCTS INC	GRAVITY	RECREATION	1900	0	17	0 u2	u2 u5	u2	u2	u2	u2	--	PALMER	
859 MA00561	BONDSVILLE LOWER DAM	TR-SWIFT RIVER	DELSON DEVELOPMENT CORP.	GRAVITY	RECREATION	1900	225	20	0 u2	u2 u5	u2	u2	u2	u2	--	PALMER	
1852 MA00560	TEXTILE PRINTING CO. BONDSVILLE UPPER	TR-SWIFT RIVER	DELSON DEVELOPMENT CORP.	GRAVITY	WATER SUPPLY	1900	230	28	0 u2	u2 u5	u2	u2	u2	u2	--	PALMER	
1114 MA00559	FOREST LAKE DAM	TR-WARE RIVER	DWIGHT HOLBROOK	GRAVITY	RECREATION	1900	65	8	0 u2	u2 u5	u2	u2	u2	u2	--	PALMER	
751 MA00546	ALDEN POND DAM	BROAD BROOK	CAMP ALDEN ASSOC. INC.	GRAVITY	RECREATION	1950	220	21	7 u2	u2 p4	u2	u2	u2	u2	--	LUDLOW	
940 MA00548	CHERRY VALLEY DAM	BILLINGS BROOK	CITY OF SPRINGFIELD	GRAVITY	WATER SUPPLY	1877	0	47	8 u2	u2 p4	u2	u2	u2	u2	--	LUDLOW	
1403 MA00547	LUDLOW DAM	TR-HIGHER BROOK	CITY OF SPRINGFIELD	GRAVITY	WATER SUPPLY	1877	0	27	9 u2	u2 p4	u2	u2	u2	u2	--	LUDLOW	

797 MA00725	BALDWIN POND DAM	TWELVEMILE BROOK	J.E. SHEPARD CO.	GRAVITY	RECREATION	1900	125	17	8	u2	u2 p4	u2 u2 u2	u2 --	PALMER
1660 MA00552	PULPIT ROCK POND NEW DAM	TWELVEMILE BROOK	YANKEE PROPERTIES	GRAVITY	RECREATION	1900	190	18	6	u2	u2 p4	u2 u2 u2	u2 --	LUDLOW
1514 MA00550	NASH HILL RESERVOIR DAM	CHICOPEE VALLEY AQUEDUCT	COMM OF MA - MDC	GRAVITY	WATER SUPPLY	1950	1900	26	0	n2	u2 u5	n2 n2 n2	n2 --	LUDLOW
1264 MA00722	INDIAN ORCHARD MONSANTO COMPANY UPPER DAM	CHICOPEE RIVER	WMECO	GRAVITY	HYDROELECTRIC	1846	401	0	4	u2	u2 p4	u2 u2 u2	u2 --	SPRINGFIELD NORTH
1486 MA00573	DAM	TR CHICOPEE RIVER	MONSANTO CHEMICAL CO.	GRAVITY	RECREATION	1900	145	12	4	u2	u2 p4	u2 u2 u2	u2 --	SPRINGFIELD NORTH
944 MA00720	CHICOPEE RESERVOIR DAM WADE POND DAM, aka WADE POND	COOLEY BROOK	COMM OF MA - DEM	GRAVITY	RECREATION	1926	500	47	4	u2	u2 p4	u2 u2 u2	u2 --	SPRINGFIELD NORTH
1932 MA01269	CHICOPEE	STONY BROOK	DOD USAF	GRAVITY	RECREATION	1961	100	11	6	n2	n2 p4	n2 n2 n2	n2 --	SPRINGFIELD NORTH
943 MA00719	UPPER BEMIS POND DAM	CHICOPEE RIVER	CHICOPEE	GRAVITY	HYDROELECTRIC	1898	314	0	3	n2	n2 y1	n2 n2 n2	n2 --	SPRINGFIELD NORTH
1896 MA00069	LOWER BEMIS POND DAM	CHICOPEE RIVER	CITY OF CHICOPEE	GRAVITY	RECREATION	1954	335	19	4	u2	u2 u5	u2 u2 u2	u2 --	SPRINGFIELD NORTH
1384 MA00531	DWIGHT DAM	CHICOPEE RIVER	CITY OF CHICOPEE	GRAVITY	RECREATION	1862	0	33	3	u2	u2 u1	u2 u2 u2	u2 --	SPRINGFIELD NORTH
1052	ADAMS POND DAM	CHICOPEE RIVER	NORTHEAST UTILITIES			0	0	20	2	n1	n2 y1	n1 n1 n1	n2 n	SPRINGFIELD NORTH
749 MA00949	BROOKS POND DAM	BURROW BROOK	LEXTON H. CARROLL	GRAVITY	RECREATION	1920	500	8	12	u2	u2 p4	u2 u2 u2	u2 --	NORTH BROOKFIELD
885 MA00696	BROOKS POND DAM	FIVE MILE RIVER	B.P.W. INC.	GRAVITY	RECREATION	1939	56	18	9	u2	u2 p4	u2 u2 u2	u2 --	NORTH BROOKFIELD
1250 MA00950	HORSEPOND SITE, aka HORSEPOND DAM	HORSE POND BROOK	COMMONWEALTH OF MASSACHU	GRAVITY	FLOOD CONTROL	1965	1875	0	9	u2	u2 p4	u2 u2 u2	u2 --	NORTH BROOKFIELD
1303 MA00951	KITTREDGE SITE, aka KITTREDGE DAM	TR-FIVE MILE RIVER	COMMONWEALTH OF MASSACHU	GRAVITY	FLOOD CONTROL	1965	1360	0	9	u2	u2 p4	u2 u2 u2	u2 --	NORTH BROOKFIELD
1990 MA00616	WHEELWRIGHT POND DAM	WARE RIVER	ROMAR TISSUE MILLS INC.	GRAVITY	WATER SUPPLY	1920	160	17	11	u2	u2 p4	u2 u2 u2	u2 --	WARE
1196 MA00080	HARDWICK POND DAM	MUDDY BROOK	TOWN OF WARE	GRAVITY	WATER SUPPLY	1920	70	10	10	u2	u2 p4	u2 u2 u2	u2 --	WARE
1776 MA00079	SNOW POND DAM	MUDDY BROOK	TOWN OF WARE	GRAVITY	RECREATION	1920	200	18	9	u2	u2 p4	u2 u2 u2	u2 --	WARE
1287 MA00593	JUDA DAM	TR-BEAVER BROOK	STANLEY P JUDA	GRAVITY	IRRIGATION	1962	230	18	0	n2	u2 u5	n2 n2 n2	n2 --	WINSOR DAM
1275 MA01259	JABISH BROOK DAM	JABISH BROOK	COMM OF MA - U. OF MA	GRAVITY	RECREATION	1900	300	10	9	u2	u2 p4	u2 u2 u2	u2 --	BELCHERTOWN
1304 MA00485	KNIGHTS POND DAM	JABISH BROOK	CITY OF SPRINGFIELD	GRAVITY	WATER SUPPLY	1900	0	23	8	u2	u2 p4	u2 u2 u2	u2 --	BELCHERTOWN
1960 MA00664	WAX FACTORY POND DAM	BURNSHIRT RIVER	DONALD DIPAOLO	GRAVITY	WATER SUPPLY	1940	110	16	12	u2	u2 p4	u2 u2 u2	u2 --	BARRE
2012 MA00662	WILLIAMSVILLE POND DAM	BURNSHIRT RIVER	CHARLES G. ALLEN CO.	GRAVITY	WATER SUPPLY	1960	350	14	14	u2	u2 p4	u2 u2 u2	u2 --	BARRE
2013 MA00663	WILLIAMSVILLE POND DAM	TR-BURNSHIRT RIVER	CHARLES G. ALLEN CO.	GRAVITY	WATER SUPPLY	1920	110	14	13	u2	u2 p4	u2 u2 u2	u2 --	BARRE
803 MA00094	BARRE RESERVOIR DAM & DIKE	PRINCE RIVER	PRINCE RIVER CORP.	GRAVITY	RECREATION	1932	639	15	12	u2	u2 p4	u2 u2 u2	u2 --	BARRE
1234 MA01305	HOLDEN DAM	TR-PRINCE RIVER	SALLY WORTHINGTON	GRAVITY	WATER SUPPLY	1920	250	9	12	u2	u2 p4	u2 u2 u2	u2 --	BARRE
1780 MA00091	SOUTH BARRE MILL POND	WARE RIVER	SOUTH BARRE HYDRO ELECTRIC CO.	GRAVITY	HYDROELECTRIC	1981	315	0	12	u2	u2 p4	u2 u2 u2	u2 --	BARRE
981 MA00651	CONNOR POND DAM	SWIFT RIVER	WORCESTER NATURAL HISTORY	GRAVITY	RECREATION	1900	108	12	11	u2	u2 p2	u2 u2 u2	u2 --	PETERSHAM
924 MA00653	CARTER POND DAM	SILVER BROOK	CARTER POND CO.	GRAVITY	RECREATION	1920	155	12	10	u2	u2 u2	u2 u2 u2	u2 --	PETERSHAM
1149 MA01302	GAVCO POND DAM	TR-WEST BR FEVER BROOK	GAVCO REALTY TRUST	GRAVITY	OTHER	1975	1100	19	10	u2	u2 p2	u2 u2 u2	u2 --	PETERSHAM
886 MA00654	BROOKS POND DAM	EAST BR. FEVER BROOK	HARVARD FORESTRY COLLEGE	GRAVITY	RECREATION	1900	110	10	10	u2	u2 p2	u2 u2 u2	u2 --	PETERSHAM
1147 MA00095	GASTON POND DAM	RUTLAND BROOK	INSIGHT MEDITATION SOCIETY	GRAVITY	RECREATION	1915	250	17	12	u2	u2 p2	u2 u2 u2	u2 --	PETERSHAM
1673 MA00648	QUEEN LAKE DAM	TR-BURNSHIRT RIVER	TOWN OF PHILLIPSTON	GRAVITY	RECREATION	1900	50	12	15	u2	u2 p4	u2 u2 u2	u2 --	TEMPLETON
1171 MA00517	GRAHAM POND DAM	PLYMPTON BROOK	WENDELL WILDERNESS INC.	GRAVITY	RECREATION	1900	700	20	8	u2	u2 p4	u2 u2 u2	u2 --	MILLERS FALLS

Legend:

**Seq** = sequence of dam from mouth of the Connecticut River(e.g., if 2 dams between this dam and mouth, Seq=3)

**Alsa** = American shad  
**Sasa** = Atlantic salmon  
**Anro** = American eel  
**Pema** = Sea lamprey  
**Alae** = Blueback herring  
**Doce** = Gizzard shad  
**Alps** = Alewife  
**Mosa** = Striped bass

- For these species, codes are as follows:

First Position: Can the species pass?      Second position: Does the species go up to it?

y = yes	1 = yes
n = no	2 = no
w = only in high water	3 = only in high water
p = probably	4 = probably
u = uncertain	5 = uncertain

example: "n1" = *the species cannot pass the dam, but swims up to it*

**Appendix D. Results of EOEА Buildout analyses for Chicopee River Basin communities**

<b>Quabbin Region: Town of Athol</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population:		
	1990	11451
	Current	11299
	Buildout	39498
Students:		
	1990	2015
	Current	2137
	Buildout	7453
Households:		
	1990	4379
	Current	4824
	Buildout	16381
Water Use(gallons/day):		
Current		934572.6
Buildout		3155767.6
Buildout Impacts:		
Additional Residents		28199
Additional School Children		5316
Additional Residential Units		11557
Additional Developable Land Area(sq ft)		578166309
Additional Developable Land Area(acres)		13273
Additional Commercial/Industrial Buildable Floor Area(sq ft)		1414468
Additional Water Demand at Buildout(gallons/day)		2221195
Residential		2114908
Commercial and Industrial		106287
Additional Solid Waste(tons/yr)		14466
Non-Recyclable		10287
Recyclable		4179
Additional Roadway at Buildout(miles)		186

<b>Quabbin Region: Town of Barre</b>		
Buildout Analysis Summary		
Buildout completion date: 2000		
<b>Demographic Projections</b>		
Population		
	1990	4546
	Current	5113
	Buildout	18704
Students		
	1990	804
	Current	988
	Buildout	4751
Households		
	1990	1637
	Current	1988
	Buildout	7215
Water Use(gallons/day)		
	Current	361627.4
	Buildout	1427040.4
Buildout Impacts		
Additional Residents		13591
Additional School Children		3763
Additional Residential Units		5227
Additional Developable Land Area(sq ft)		611843760
Additional Developable Land Area(acres)		14046
Additional Commercial/Industrial Buildable Floor Area(sq ft)		614967
Additional Water Demand at Buildout(gallons/day)		1065413
Residential		1019291
Commercial and Industrial		46122
Additional Solid Waste(tons/yr)		8195
Non-Recyclable		4961
Recyclable		3234
Additional Roadway at Buildout(miles)		77

<b>Quabbin Region: Town of Belchertown</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	10579
	Current	12968
	Buildout	66332
Students		
	1990	1765
	Current	2408
	Buildout	9696
Households		
	1990	3825
	Current	5050
	Buildout	22729
Water Use(gallons/day)		
	Current	376920.55
	Buildout	4584646.55
Buildout Impacts		
Additional Residents		53364
Additional School Children		7222
Additional Residential Units		17679
Additional Developable Land Area(sq ft)		1384161902
Additional Developable Land Area(acres)		21679
Additional Commercial/Industrial Buildable Floor Area(sq ft)		7028169
Additional Water Demand at Buildout(gallons/day)		4207726
Residential		4002305
Commercial and Industrial		205421
Additional Solid Waste(tons/yr)		27376
Non-Recyclable		19533
Recyclable		7843
Additional Roadway at Buildout(miles)		245

<b>Quabbin Region: Town of Brimfield</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	3001
	Current	3339
	Buildout	22564
Students		
	1990	604
	Current	662
	Buildout	4742
Households		
	1990	1078
	Current	1396
	Buildout	8311
Water Use(gallons/day)		
	Current	10252.05
	Buildout	2047430.05
Buildout Impacts		
Additional Residents		19225
Additional School Children		4080
Additional Residential Units		6915
Additional Developable Land Area(sq ft)		689062073
Additional Developable Land Area(acres)		15819
Additional Commercial/Industrial Buildable Floor Area(sq ft)		6984922
Additional Water Demand at Buildout(gallons/day)		2037178
Residential		1441872
Commercial and Industrial		595306
Additional Solid Waste(tons/yr)		9862
Non-Recyclable		7017
Recyclable		2845
Additional Roadway at Buildout(miles)		118

<b>Quabbin Region: Town of Brookfield</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	2968
	Current	3051
	Buildout	8007
Students		
	1990	504
	Current	577
	Buildout	1566
Households		
	1990	1124
	Current	1302
	Buildout	3375
Water Use(gallons/day)		
	Current	139021.92
	Buildout	546911.92
Buildout Impacts		
Additional Residents		4956
Additional School Children		989
Additional Residential Units		2073
Additional Developable Land Area(sq ft)		209262240
Additional Developable Land Area(acres)		4804
Additional Commercial/Industrial Buildable Floor Area(sq ft)		482504
Additional Water Demand at Buildout(gallons/day)		407890
Residential		371702
Commercial and Industrial		36188
Additional Solid Waste(tons/yr)		2988
Non-Recyclable		1809
Recyclable		1179
Additional Roadway at Buildout(miles)		48

<b>Quabbin Region: Town of Charlton</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	9576
	Current	11263
	Buildout	31841
Students		
	1990	1845
	Current	2376
	Buildout	8445
Households		
	1990	3147
	Current	4008
	Buildout	11409
Water Use(gallons/day)		
	Current	48501.37
	Buildout	1948871.37
Buildout Impacts		
Additional Residents		20578
Additional School Children		6069
Additional Residential Units		7401
Additional Developable Land Area(sq ft)		764364240
Additional Developable Land Area(acres)		17754
Additional Commercial/Industrial Buildable Floor Area(sq ft)		4760641
Additional Water Demand at Buildout(gallons/day)		1900370
Residential		1543322
Commercial and Industrial		357048
Additional Solid Waste(tons/yr)		12409
Non-Recyclable		7511
Recyclable		4898
Additional Roadway at Buildout(miles)		151

<b>Connecticut River Valley Region: City of Chicopee</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	56632
	Current	54653
	Buildout	64050
Students		
	1990	6645
	Current	7722
	Buildout	9000
Households		
	1990	22625
	Current	24424
	Buildout	28183
Water Use(gallons/day)		
	Current	6995520.55
	Buildout	9143278.55
Buildout Impacts		
Additional Residents		9397
Additional School Children		1278
Additional Residential Units		3759
Additional Developable Land Area(sq ft)		105030087
Additional Developable Land Area(acres)		2457
Additional Commercial/Industrial Buildable Floor Area(sq ft)		19240249
Additional Water Demand at Buildout(gallons/day)		2147758
Residential		704740
Commercial and Industrial		1443018
Additional Solid Waste(tons/yr)		4820
Non-Recyclable		3428
Recyclable		1392
Additional Roadway at Buildout(miles)		40

<b>Quabbin Region: Town of East Brookfield</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	2033
	Current	2097
	Buildout	6597
Students		
	1990	393
	Current	383
	Buildout	1374
Households		
	1990	721
	Current	849
	Buildout	2663
Water Use(gallons/day)		
	Current	139068.49
	Buildout	743835.49
Buildout Impacts		
Additional Residents		4500
Additional School Children		991
Additional Residential Units		1814
Additional Developable Land Area(sq ft)		17800640
Additional Developable Land Area(acres)		3944
Additional Commercial/Industrial Buildable Floor Area(sq ft)		3563900
Additional Water Demand at Buildout(gallons/day)		604767
Residential		337474
Commercial and Industrial		267293
Additional Solid Waste(tons/yr)		2714
Non-Recyclable		1643
Recyclable		1071
Additional Roadway at Buildout(miles)		44

<b>Connecticut River Valley Region: Town of Granby</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	5565
	Current	6132
	Buildout	28430
Students		
	1990	915
	Current	1072
	Buildout	4964
Households		
	1990	1939
	Current	2295
	Buildout	10896
Water Use(gallons/day)		
	Current	31728.77
	Buildout	2529236.77
Buildout Impacts		
Additional Residents		22298
Additional School Children		3892
Additional Residential Units		8601
Additional Developable Land Area(sq ft)		522415080
Additional Developable Land Area(acres)		11993
Additional Commercial/Industrial Buildable Floor Area(sq ft)		11002101
Additional Water Demand at Buildout(gallons/day)		2497508
Residential		1672350
Commercial and Industrial		825158
Additional Solid Waste(tons/yr)		11439
Non-Recyclable		8132
Recyclable		3307
Additional Roadway at Buildout(miles)		142

<b>Connecticut River Valley Region: Town of Hampden</b>		
Buildout Analysis Summary		
Buildout completion date: 1999		
<b>Demographic Projections</b>		
Population		
	1990	4709
	Current	5171
	Buildout	16182
Students		
	1990	732
	Current	948
	Buildout	2843
Households		
	1990	1620
	Current	1846
	Buildout	5634
Water Use(gallons/day)		
	Current	10852.05
	Buildout	1072188.05
Buildout Impacts		
Additional Residents		11011
Additional School Children		1895
Additional Residential Units		3788
Additional Developable Land Area(sq ft)		307707840
Additional Developable Land Area(acres)		7064
Additional Commercial/Industrial Buildable Floor Area(sq ft)		3544738
Additional Water Demand at Buildout(gallons/day)		1061336
Residential		795480
Commercial and Industrial		265856
Additional Solid Waste(tons/yr)		2450
Non-Recyclable		
Recyclable		
Additional Roadway at Buildout(miles)		83

<b>Quabbin Region: Town of Hardwick</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	2385
	Current	2622
	Buildout	18856
Students		
	1990	398
	Current	532
	Buildout	4675
Households		
	1990	913
	Current	1086
	Buildout	7821
Water Use(gallons/day)		
	Current	89786.3
	Buildout	1357036.3
Buildout Impacts		
Additional Residents		16234
Additional School Children		4143
Additional Residential Units		6735
Additional Developable Land Area(sq ft)		632055600
Additional Developable Land Area(acres)		14510
Additional Commercial/Industrial Buildable Floor Area(sq ft)		662654
Additional Water Demand at Buildout(gallons/day)		1267250
Residential		1217550
Commercial and Industrial		49700
Additional Solid Waste(tons/yr)		9789
Non-Recyclable		5925
Recyclable		3864
Additional Roadway at Buildout(miles)		142

<b>Quabbin Region: Town of Hubbardston</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	2797
	Current	3909
	Buildout	17398
Students		
	1990	573
	Current	892
	Buildout	3895
Households		
	1990	954
	Current	1360
	Buildout	5978
Water Use(gallons/day)		
	Current	6663.01
	Buildout	1252276.01
Buildout Impacts		
Additional Residents		13489
Additional School Children		3003
Additional Residential Units		4618
Additional Developable Land Area(sq ft)		491704077
Additional Developable Land Area(acres)		11288
Additional Commercial/Industrial Buildable Floor Area(sq ft)		3118914
Additional Water Demand at Buildout(gallons/day)		1245613
Residential		1011694
Commercial and Industrial		233919
Additional Solid Waste(tons/yr)		6920
Non-Recyclable		4921
Recyclable		1999
Additional Roadway at Buildout(miles)		105

<b>Blackstone River Valley Region: Town of Leicester</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	10191
	Current	10471
	Buildout	24368
Students		
	1990	1688
	Current	1957
	Buildout	5604
Households		
	1990	3458
	Current	3826
	Buildout	8755
Water Use(gallons/day)		
	Current	543049.32
	Buildout	1707613.32
Buildout Impacts		
Additional Residents		13897
Additional School Children		3647
Additional Residential Units		4929
Additional Developable Land Area(sq ft)		394000200
Additional Developable Land Area(acres)		9045
Additional Commercial/Industrial Buildable Floor Area(sq ft)		1630523
Additional Water Demand at Buildout(gallons/day)		1164564
Residential		1042275
Commercial and Industrial		122289
Additional Solid Waste(tons/yr)		8380
Non-Recyclable		5072
Recyclable		3308
Additional Roadway at Buildout(miles)		75

<b>Connecticut River Valley Region: Town of Ludlow</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	18820
	Current	21209
	Buildout	35607
Students		
	1990	2762
	Current	3072
	Buildout	5239
Households		
	1990	6957
	Current	7841
	Buildout	13551
Water Use(gallons/day)		
	Current	4165000
	Buildout	5526425
Buildout Impacts		
Additional Residents		14398
Additional School Children		2167
Additional Residential Units		5710
Additional Developable Land Area(sq ft)		323484154
Additional Developable Land Area(acres)		7426
Additional Commercial/Industrial Buildable Floor Area(sq ft)		12441033
Additional Water Demand at Buildout(gallons/day)		1361425
Residential		428348
Commercial and Industrial		933077
Additional Solid Waste(tons/yr)		7386
Non-Recyclable		5252
Recyclable		2134
Additional Roadway at Buildout(miles)		89

<b>Quabbin Region: Town of Monson</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	7776
	Current	8359
	Buildout	38999
Students		
	1990	1260
	Current	1530
	Buildout	7101
Households		
	1990	2642
	Current	3213
	Buildout	14355
Water Use(gallons/day)		
	Current	502701.37
	Buildout	3427167.37
Buildout Impacts		
Additional Residents		30640
Additional School Children		5571
Additional Residential Units		11142
Additional Developable Land Area(sq ft)		921590085
Additional Developable Land Area(acres)		21157
Additional Commercial/Industrial Buildable Floor Area(sq ft)		8352408
Additional Water Demand at Buildout(gallons/day)		2924466
Residential		2298035
Commercial and Industrial		626431
Additional Solid Waste(tons/yr)		15719
Non-Recyclable		11184
Recyclable		4535
Additional Roadway at Buildout(miles)		242

<b>Quabbin Region: Town of North Brookfield</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	4708
	Current	4683
	Buildout	14311
Students		
	1990	783
	Current	823
	Buildout	2610
Households		
	1990	1733
	Current	1902
	Buildout	5649
Water Use(gallons/day)		
	Current	327895.89
	Buildout	1113561.89
Buildout Impacts		
Additional Residents		9628
Additional School Children		1787
Additional Residential Units		3747
Additional Developable Land Area(sq ft)		388642320
Additional Developable Land Area(acres)		8895
Additional Commercial/Industrial Buildable Floor Area(sq ft)		847808
Additional Water Demand at Buildout(gallons/day)		785666
Residential		722081
Commercial and Industrial		63585
Additional Solid Waste(tons/yr)		5806
Non-Recyclable		3514
Recyclable		2292
Additional Roadway at Buildout(miles)		100

<b>Quabbin Region: Town of New Braintree</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	881
	Current	927
	Buildout	5086
Students		
	1990	178
	Current	209
	Buildout	1162
Households		
	1990	284
	Current	328
	Buildout	1772
Water Use(gallons/day)		
	Current	9643.84
	Buildout	321534.84
Buildout Impacts		
Additional Residents		4159
Additional School Children		953
Additional Residential Units		1444
Additional Developable Land Area(sq ft)		411729120
Additional Developable Land Area(acres)		9452
Additional Commercial/Industrial Buildable Floor Area(sq ft)		0
Additional Water Demand at Buildout(gallons/day)		311891
Residential		311891
Commercial and Industrial		0
Additional Solid Waste(tons/yr)		2508
Non-Recyclable		1518
Recyclable		990
Additional Roadway at Buildout(miles)		41

<b>Quabbin Region: Town of New Salem</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	802
	Current	929
	Buildout	11551
Students		
	1990	135
	Current	146
	Buildout	2068
Households		
	1990	308
	Current	422
	Buildout	4507
Water Use(gallons/day)		
	Current	61275
	Buildout	857925
Buildout Impacts		
Additional Residents		10622
Additional School Children		1922
Additional Residential Units		4085
Additional Developable Land Area(sq ft)		216795942
Additional Developable Land Area(acres)		4977
Additional Commercial/Industrial Buildable Floor Area(sq ft)		0
Additional Water Demand at Buildout(gallons/day)		796650
Residential		796650
Commercial and Industrial		0
Additional Solid Waste(tons/yr)		5449
Non-Recyclable		3875
Recyclable		1574
Additional Roadway at Buildout(miles)		78

<b>Quabbin Region: Town of Oakham</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	1503
	Current	1673
	Buildout	6152
Students		
	1990	312
	Current	408
	Buildout	1353
Households		
	1990	522
	Current	591
	Buildout	2141
Water Use(gallons/day)		
	Current	125475
	Buildout	461401
Buildout Impacts		
Additional Residents		4479
Additional School Children		945
Additional Residential Units		1550
Additional Developable Land Area(sq ft)		311279976
Additional Developable Land Area(acres)		7146
Additional Commercial/Industrial Buildable Floor Area(sq ft)		0
Additional Water Demand at Buildout(gallons/day)		335926
Residential		335926
Commercial and Industrial		0
Additional Solid Waste(tons/yr)		2701
Non-Recyclable		1635
Recyclable		1066
Additional Roadway at Buildout(miles)		53

<b>Quabbin Region: Town of Orange</b>		
Buildout Analysis Summary		
Buildout completion date: 2000		
<b>Demographic Projections</b>		
Population		
	1990	7312
	Current	7518
	Buildout	38882
Students		
	1990	1414
	Current	1463
	Buildout	7910
Households		
	1990	2808
	Current	3303
	Buildout	14740
Water Use(gallons/day)		
	Current	662860.27
	Buildout	3439692.27
Buildout Impacts		
Additional Residents		31364
Additional School Children		7105
Additional Residential Units		11437
Additional Developable Land Area(sq ft)		588120548
Additional Developable Land Area(acres)		12552
Additional Commercial/Industrial Buildable Floor Area(sq ft)		5660553
Additional Water Demand at Buildout(gallons/day)		2776832
Residential		2352290
Commercial and Industrial		424542
Additional Solid Waste(tons/yr)		
Non-Recyclable		11441
Recyclable		
Additional Roadway at Buildout(miles)		192

<b>Quabbin Region: Town of Palmer</b>		
Buildout Analysis Summary		
Buildout completion date: 2000		
<b>Demographic Projections</b>		
Population		
	1990	12054
	Current	12497
	Buildout	30699
Students		
	1990	1932
	Current	2374
	Buildout	5446
Households		
	1990	4781
	Current	5402
	Buildout	12683
Water Use(gallons/day)		
	Current	1045961.64
	Buildout	3148290.64
Buildout Impacts		
Additional Residents		18202
Additional School Children		3104
Additional Residential Units		7281
Additional Developable Land Area(sq ft)		548288333
Additional Developable Land Area(acres)		12587
Additional Commercial/Industrial Buildable Floor Area(sq ft)		9828642
Additional Water Demand at Buildout(gallons/day)		2102329
Residential		1365181
Commercial and Industrial		737148
Additional Solid Waste(tons/yr)		9432
Non-Recyclable		6706
Recyclable		2726
Additional Roadway at Buildout(miles)		40

<b>Quabbin Region: Town of Paxton</b>		
Buildout Analysis Summary		
Buildout completion date: 2000		
<b>Demographic Projections</b>		
Population		
	1990	4047
	Current	4386
	Buildout	12912
Students		
	1990	582
	Current	711
	Buildout	2706
Households		
	1990	1310
	Current	1461
	Buildout	4303
Water Use(gallons/day)		
	Current	345487.67
	Buildout	985912.67
Buildout Impacts		
Additional Residents		8526
Additional School Children		1995
Additional Residential Units		2842
Additional Developable Land Area(sq ft)		184476660
Additional Developable Land Area(acres)		4235
Additional Commercial/Industrial Buildable Floor Area(sq ft)		12700
Additional Water Demand at Buildout(gallons/day)		640425
Residential		639472
Commercial and Industrial		953
Additional Solid Waste(tons/yr)		5141
Non-Recyclable		3112
Recyclable		2029
Additional Roadway at Buildout(miles)		40

<b>Quabbin Region: Town of Pelham</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	1373
	Current	1403
	Buildout	7186
Students		
	1990	213
	Current	237
	Buildout	822
Households		
	1990	492
	Current	556
	Buildout	2806
Water Use(gallons/day)		
	Current	105225
	Buildout	538926
Buildout Impacts		
Additional Residents		5783
Additional School Children		585
Additional Residential Units		2250
Additional Developable Land Area(sq ft)		260568516
Additional Developable Land Area(acres)		5982
Additional Commercial/Industrial Buildable Floor Area(sq ft)		0
Additional Water Demand at Buildout(gallons/day)		433701
Residential		433701
Commercial and Industrial		0
Additional Solid Waste(tons/yr)		2966
Non-Recyclable		2111
Recyclable		855
Additional Roadway at Buildout(miles)		51

<b>Quabbin Region: Town of Petersham</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	1131
	Current	1180
	Buildout	20323
Students		
	1990	159
	Current	84
	Buildout	3416
Households		
	1990	391
	Current	474
	Buildout	7564
Water Use(gallons/day)		
	Current	6076.71
	Buildout	1441822.71
Buildout Impacts		
Additional Residents		19143
Additional School Children		3332
Additional Residential Units		7090
Additional Developable Land Area(sq ft)		506286618
Additional Developable Land Area(acres)		11623
Additional Commercial/Industrial Buildable Floor Area(sq ft)		0
Additional Water Demand at Buildout(gallons/day)		1435746
Residential		1435746
Commercial and Industrial		0
Additional Solid Waste(tons/yr)		9821
Non-Recyclable		6983
Recyclable		2838
Additional Roadway at Buildout(miles)		115

<b>Quabbin Region: Town of Phillipston</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	1485
	Current	1621
	Buildout	9835
Students		
	1990	269
	Current	346
	Buildout	2148
Households		
	1990	508
	Current	739
	Buildout	4205
Water Use(gallons/day)		
	Current	121575
	Buildout	2270950
Buildout Impacts		
Additional Residents		8214
Additional School Children		1802
Additional Residential Units		3466
Additional Developable Land Area(sq ft)		373776719
Additional Developable Land Area(acres)		8581
Additional Commercial/Industrial Buildable Floor Area(sq ft)		20444468
Additional Water Demand at Buildout(gallons/day)		2149375
Residential		616040
Commercial and Industrial		1533335
Additional Solid Waste(tons/yr)		4214
Non-Recyclable		2996
Recyclable		1218
Additional Roadway at Buildout(miles)		79

<b>Montachusett Region: Town of Princeton</b>		
Buildout Analysis Summary		
Buildout completion date: 2000		
<b>Demographic Projections</b>		
Population		
	1990	3189
	Current	3353
	Buildout	11950
Students		
	1990	558
	Current	696
	Buildout	2719
Households		
	1990	1061
	Current	1196
	Buildout	4171
Water Use(gallons/day)		
	Current	251475
	Buildout	959375
Buildout Impacts		
Additional Residents		8597
Additional School Children		2023
Additional Residential Units		2975
Additional Developable Land Area(sq ft)		455956494
Additional Developable Land Area(acres)		10467
Additional Commercial/Industrial Buildable Floor Area(sq ft)		841673
Additional Water Demand at Buildout(gallons/day)		707900
Residential		644775
Commercial and Industrial		63125
Additional Solid Waste(tons/yr)		5184
Non-Recyclable		3138
Recyclable		2046
Additional Roadway at Buildout(miles)		76

<b>Quabbin Region: Town of Rutland</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	4936
	Current	6353
	Buildout	16275
Students		
	1990	897
	Current	1263
	Buildout	3734
Households		
	1990	1677
	Current	2392
	Buildout	6136
Water Use(gallons/day)		
	Current	348273.97
	Buildout	1190573.97
Buildout Impacts		
Additional Residents		9922
Additional School Children		2471
Additional Residential Units		3744
Additional Developable Land Area(sq ft)		401013360
Additional Developable Land Area(acres)		9206
Additional Commercial/Industrial Buildable Floor Area(sq ft)		1308660
Additional Water Demand at Buildout(gallons/day)		842300
Residential		744150
Commercial and Industrial		98150
Additional Solid Waste(tons/yr)		6251
Non-Recyclable		3622
Recyclable		2629
Additional Roadway at Buildout(miles)		82

<b>Quabbin Region: Town of Shutesbury</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	1561
	Current	1810
	Buildout	11763
Students		
	1990	265
	Current	362
	Buildout	2266
Households		
	1990	560
	Current	807
	Buildout	4374
Water Use(gallons/day)		
	Current	149025
	Buildout	895500
Buildout Impacts		
Additional Residents		9953
Additional School Children		1904
Additional Residential Units		3567
Additional Developable Land Area(sq ft)		378669258
Additional Developable Land Area(acres)		8693
Additional Commercial/Industrial Buildable Floor Area(sq ft)		0
Additional Water Demand at Buildout(gallons/day)		746475
Residential		746475
Commercial and Industrial		0
Additional Solid Waste(tons/yr)		5105
Non-Recyclable		3630
Recyclable		1475
Additional Roadway at Buildout(miles)		84

<b>Quabbin Region: Town of Spencer</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	11645
	Current	11691
	Buildout	27861
Students		
	1990	2061
	Current	1883
	Buildout	5145
Households		
	1990	4321
	Current	4938
	Buildout	11540
Water Use(gallons/day)		
	Current	712802.74
	Buildout	2065119.74
Buildout Impacts		
Additional Residents		16170
Additional School Children		3262
Additional Residential Units		6602
Additional Developable Land Area(sq ft)		529863840
Additional Developable Land Area(acres)		12164
Additional Commercial/Industrial Buildable Floor Area(sq ft)		1921958
Additional Water Demand at Buildout(gallons/day)		1352317
Residential		1208170
Commercial and Industrial		144147
Additional Solid Waste(tons/yr)		9750
Non-Recyclable		5902
Recyclable		3848
Additional Roadway at Buildout(miles)		166

<b>Connecticut River Valley Region: City of Springfield</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	156983
	Current	152082
	Buildout	152082
Students		
	1990	23910
	Current	26975
	Buildout	26975
Households		
	1990	57769
	Current	61172
	Buildout	61172
Water Use(gallons/day)		
	Current	29145265.75
	Buildout	29145265.75
Buildout Impacts		
Additional Residents		
Additional School Children		
Additional Residential Units		
Additional Developable Land Area(sq ft)		
Additional Developable Land Area(acres)		
Additional Commercial/Industrial Buildable Floor Area(sq ft)		
Additional Water Demand at Buildout(gallons/day)		
Residential		
Commercial and Industrial		
Additional Solid Waste(tons/yr)		
Non-Recyclable		
Recyclable		
Additional Roadway at Buildout(miles)		

<b>Quabbin Region: Town of Sturbridge</b>		
Buildout Analysis Summary		
Buildout completion date: 2000		
<b>Demographic Projections</b>		
Population		
	1990	7775
	Current	7837
	Buildout	28835
Students		
	1990	1407
	Current	1467
	Buildout	7552
Households		
	1990	2795
	Current	3335
	Buildout	11320
Water Use(gallons/day)		
	Current	917030.14
	Buildout	2981773.14
Buildout Impacts		
Additional Residents		20998
Additional School Children		6085
Additional Residential Units		7985
Additional Developable Land Area(sq ft)		598601520
Additional Developable Land Area(acres)		13742
Additional Commercial/Industrial Buildable Floor Area(sq ft)		6532191
Additional Water Demand at Buildout(gallons/day)		2064743
Residential		1538500
Commercial and Industrial		526243
Additional Solid Waste(tons/yr)		12662
Non-Recyclable		7664
Recyclable		4998
Additional Roadway at Buildout(miles)		75

<b>Quabbin Region: Town of Templeton</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	6438
	Current	6799
	Buildout	28862
Students		
	1990	1122
	Current	1217
	Buildout	6102
Households		
	1990	2195
	Current	2597
	Buildout	10738
Water Use(gallons/day)		
	Current	477865.75
	Buildout	3793628.75
Buildout Impacts		
Additional Residents		22063
Additional School Children		4885
Additional Residential Units		8141
Additional Developable Land Area(sq ft)		541699857
Additional Developable Land Area(acres)		12436
Additional Commercial/Industrial Buildable Floor Area(sq ft)		22146755
Additional Water Demand at Buildout(gallons/day)		3315763
Residential		1654756
Commercial and Industrial		1661007
Additional Solid Waste(tons/yr)		11319
Non-Recyclable		8049
Recyclable		3270
Additional Roadway at Buildout(miles)		126

<b>Quabbin Region: Town of West Brookfield</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	3532
	Current	3804
	Buildout	9408
Students		
	1990	599
	Current	612
	Buildout	1593
Households		
	1990	1228
	Current	1534
	Buildout	3758
Water Use(gallons/day)		
	Current	245967.12
	Buildout	680119.12
Buildout Impacts		
Additional Residents		5604
Additional School Children		981
Additional Residential Units		2224
Additional Developable Land Area(sq ft)		351485640
Additional Developable Land Area(acres)		8069
Additional Commercial/Industrial Buildable Floor Area(sq ft)		184700
Additional Water Demand at Buildout(gallons/day)		434152
Residential		420279
Commercial and Industrial		13873
Additional Solid Waste(tons/yr)		3379
Non-Recyclable		2045
Recyclable		1334
Additional Roadway at Buildout(miles)		57

<b>Quabbin Region: Town of Wales</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	1566
	Current	1737
	Buildout	8308
Students		
	1990	359
	Current	344
	Buildout	1013
Households		
	1990	550
	Current	796
	Buildout	3102
Water Use(gallons/day)		
	Current	7336.99
	Buildout	2661615.99
Buildout Impacts		
Additional Residents		6571
Additional School Children		669
Additional Residential Units		2306
Additional Developable Land Area(sq ft)		202953790
Additional Developable Land Area(acres)		4659
Additional Commercial/Industrial Buildable Floor Area(sq ft)		28819223
Additional Water Demand at Buildout(gallons/day)		2654279
Residential		492837
Commercial and Industrial		2161442
Additional Solid Waste(tons/yr)		3371
Non-Recyclable		2398
Recyclable		973
Additional Roadway at Buildout(miles)		63

<b>Quabbin Region: Town of Ware</b>		
Buildout Analysis Summary		
Buildout completion date: 2000		
<b>Demographic Projections</b>		
Population		
	1990	9808
	Current	9707
	Buildout	27848
Students		
	1990	1421
	Current	1350
	Buildout	3866
Households		
	1990	3836
	Current	4336
	Buildout	11422
Water Use(gallons/day)		
	Current	1149449.32
	Buildout	2645691.32
Buildout Impacts		
Additional Residents		18141
Additional School Children		2516
Additional Residential Units		7086
Additional Developable Land Area(sq ft)		567369000
Additional Developable Land Area(acres)		13025
Additional Commercial/Industrial Buildable Floor Area(sq ft)		904365
Additional Water Demand at Buildout(gallons/day)		1496242
Residential		1428415
Commercial and Industrial		67827
Additional Solid Waste(tons/yr)		9306
Non-Recyclable		6618
Recyclable		2688
Additional Roadway at Buildout(miles)		115

<b>Quabbin Region: Town of Warren</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	4437
	Current	4776
	Buildout	20946
Students		
	1990	776
	Current	879
	Buildout	4631
Households		
	1990	1694
	Current	2014
	Buildout	8836
Water Use(gallons/day)		
	Current	411739.73
	Buildout	1658900.73
Buildout Impacts		
Additional Residents		16170
Additional School Children		3752
Additional Residential Units		6822
Additional Developable Land Area(sq ft)		560094480
Additional Developable Land Area(acres)		12858
Additional Commercial/Industrial Buildable Floor Area(sq ft)		458817
Additional Water Demand at Buildout(gallons/day)		1247161
Residential		1212750
Commercial and Industrial		34411
Additional Solid Waste(tons/yr)		9750
Non-Recyclable		5902
Recyclable		3848
Additional Roadway at Buildout(miles)		112

<b>Quabbin Region: Town of Wendell</b>		
Buildout Analysis Summary		
Buildout completion date: 2000		
<b>Demographic Projections</b>		
Population		
	1990	899
	Current	986
	Buildout	6510
Students		
	1990	165
	Current	127
	Buildout	1017
Households		
	1990	346
	Current	439
	Buildout	2564
Water Use(gallons/day)		
	Current	73950
	Buildout	695544
Buildout Impacts		
Additional Residents		5524
Additional School Children		947
Additional Residential Units		2125
Additional Developable Land Area(sq ft)		354707773
Additional Developable Land Area(acres)		7512
Additional Commercial/Industrial Buildable Floor Area(sq ft)		2763995
Additional Water Demand at Buildout(gallons/day)		621594
Residential		414294
Commercial and Industrial		207300
Additional Solid Waste(tons/yr)		
Non-Recyclable		2015
Recyclable		
Additional Roadway at Buildout(miles)		42

<b>Montachusett Region: Town of Westminster</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	6191
	Current	6907
	Buildout	22998
Students		
	1990	1186
	Current	1370
	Buildout	3838
Households		
	1990	2175
	Current	2694
	Buildout	9387
Water Use(gallons/day)		
	Current	245010.96
	Buildout	2640655.96
Buildout Impacts		
Additional Residents		16091
Additional School Children		2468
Additional Residential Units		6693
Additional Developable Land Area(sq ft)		500512722
Additional Developable Land Area(acres)		11490
Additional Commercial/Industrial Buildable Floor Area(sq ft)		15941102
Additional Water Demand at Buildout(gallons/day)		2395645
Residential		1200062
Commercial and Industrial		1195583
Additional Solid Waste(tons/yr)		8245
Non-Recyclable		5863
Recyclable		2382
Additional Roadway at Buildout(miles)		124

<b>Connecticut River Valley Region: Town of Wilbraham</b>		
Buildout Analysis Summary		
Buildout completion date: 2001		
<b>Demographic Projections</b>		
Population		
	1990	12635
	Current	13473
	Buildout	25936
Students		
	1990	2122
	Current	2649
	Buildout	5186
Households		
	1990	4474
	Current	5048
	Buildout	9501
Water Use(gallons/day)		
	Current	1292356.16
	Buildout	2290719.16
Buildout Impacts		
Additional Residents		12463
Additional School Children		2537
Additional Residential Units		4453
Additional Developable Land Area(sq ft)		303250685
Additional Developable Land Area(acres)		6962
Additional Commercial/Industrial Buildable Floor Area(sq ft)		848918
Additional Water Demand at Buildout(gallons/day)		998363
Residential		934694
Commercial and Industrial		63669
Additional Solid Waste(tons/yr)		6395
Non-Recyclable		4551
Recyclable		1844
Additional Roadway at Buildout(miles)		88

## Appendix E. Executive Summary of DEP's "Chicopee River Basin: 1998 Water Quality Assessment Report"

### EXECUTIVE SUMMARY Chicopee River Basin 1998 WATER QUALITY ASSESSMENT REPORT

The Massachusetts Surface Water Quality Standards (SWQS) designate the most sensitive uses for which surface waters in the state shall be protected. The assessment of current water quality conditions is a key step in the successful implementation of the Watershed Approach. This critical phase provides an assessment of whether or not the designated uses are being met (support, partial support, non-support) or are not assessed, as well as basic information needed to focus resource protection and remediation activities later in the watershed management planning process. The Chicopee and Cranberry rivers and portions of the Quaboag, and Sevenmile rivers as well as 11 lakes are on the 1998 303(d) list of impaired waters. Total Maximum Daily Load (TMDL) reports have been or are being developed for some of these waters.

This report presents a summary of current water quality data/information as it relates to assessing the status of the State's designated uses for 23 named streams, brooks, creeks or rivers (the terms "rivers" will hereafter be used to include all) and for 84 lakes, ponds or impoundments (the term "lakes" will hereafter be used to include all) in the Chicopee River Basin. These data represent approximately 17% (23 of the 136) of the named rivers or about 42% (194 of the 464.2) of the river miles in the basin (the remaining rivers, small and/or unnamed, are currently unassessed). Detailed information for 37 individual river segments totaling 194 river miles is presented for the following designated uses: *Aquatic Life, Fish Consumption, Drinking Water, Primary and Secondary Contact Recreation and Aesthetics*. The report also presents a summary of current information for 84 of the 174 lakes (48%) representing approximately 97% (31,063 of the 32,099) of the lake acreage in the Chicopee River Basin (the remaining lakes, small and/or unnamed, are currently unassessed).

Each designated use within a given segment is individually assessed as 1) *support*, 2) *partial support*, or 3) *non-support*. The term *threatened* is used when the use is fully supported but may not support the use within two years because of adverse pollution trends or anticipated sources of pollution. When too little current data/information exists or no reliable data are available the use is *not assessed*. This report also contains detailed guidance used for assessing the status of each use. It is important to note, however, that not all waters are assessed. Many small and/or unnamed rivers and lakes are currently *unassessed*; the status of their designated uses has never been reported to EPA in the state's 305(b) Report nor is information on these waters maintained in the Water Body System (WBS) database.

#### CHICOPEE RIVER BASIN - RIVERS

The Chicopee River Basin is comprised of three major river systems, the Swift, Ware, and Quaboag rivers, which merge to form the mainstem Chicopee River in the village of "Three Rivers". The designated uses for 23 of the basin's 136 rivers, representing 194 of the 464.2 river miles, are assessed in this report: the designated uses for the remaining small and/or unnamed rivers are currently unassessed. Each of the four major subbasins are briefly summarized below:

- *Swift River Subbasin:* A total of 45.1 river miles along eight rivers (the East, Middle, and West Branches of the Swift River, Cadwell Creek, Atherton, Hop and West Branch Fever brooks, and the mainstem Swift River) were assessed in this subbasin. All but the Swift River are tributaries to the 187 square mile Quabbin Reservoir and are all managed and protected by the Massachusetts Metropolitan District Commission (MDC) as tributaries to the public water supply. Water released from Quabbin Reservoir discharges into the mainstem Swift River.

- *Ware River Subbasin:* A total of 75.8 river miles along six rivers (East and West Branches of the Ware River, Burnshirt River, Prince and Canesto brooks, and the mainstem Ware River) were assessed in this subbasin.
- *Quaboag River Subbasin:* A total of 51.9 river miles along seven rivers (Sevenmile, Cranberry and East Brookfield rivers, Forget-Me-Not, Dunn, and Chicopee brooks and the mainstem Quaboag River) were assessed in this subbasin.
- *Chicopee River Subbasin:* A total of 21.2 river miles along two rivers (Calkins Brook and the mainstem Chicopee River) were assessed in this subbasin.

The summary of the *Aquatic Life, Fish Consumption, Primary and Secondary Contact Recreation, and Aesthetics* uses in these rivers is provided below. Where sufficient data/current information were not available, the uses were not assessed.

**a. Aquatic Life Use - Rivers**

The *Aquatic Life Use* is assessed as support when suitable habitat (including water quality) is available for sustaining a native, naturally diverse, community of aquatic flora and fauna. Impairment of the *Aquatic Life Use* (non-support or partial support) may result from anthropogenic stressors that include point and/or nonpoint source(s) of pollution and hydrologic modification. The status of the *Aquatic Life Use* in the Chicopee River Basin is as follows:

<i>Aquatic Life Use Summary – Rivers (miles)</i>				
	SUPPORT	PARTIAL SUPPORT	NON-SUPPORT	NOT ASSESSED
Swift River Subbasin (45.1 miles)	40.7			4.4
Ware River Subbasin (75.8 miles)	52.8*	14.6		8.4
Quaboag River Subbasin (51.9 miles)	21.8		0.3	29.8
Chicopee River Subbasin (21.2 miles)				21.2
<b>Chicopee River Basin (194 miles)</b>	<b>115.3</b>	<b>14.6</b>	<b>0.3</b>	<b>63.8</b>

\* 3 miles are “threatened”

As illustrated in Figure 1, more than half of the river miles assessed in the Chicopee River Basin support the *Aquatic Life Use* while less than 10% were impaired (partial or non-support). However nearly one-third of the 194 river miles included in this report were not assessed. The assessment of the *Aquatic Life Use* within each subbasin is as follows:

- Ninety percent of the river miles in the Swift River Subbasin were assessed as supporting the *Aquatic Life Use*. The remaining 10%, a 4.4-mile segment of the Swift River, were not assessed.
- In the Ware River Subbasin 70% of the river miles were assessed as supporting the *Aquatic Life Use*. Three miles were threatened, however, due to toxicity in municipal wastewater treatment plant effluents. Nineteen percent of the river miles (12.9 miles of the East Branch Ware River and 1.7 miles of the Ware River) were assessed as partial support as a result of low DO and % saturation, and elevated temperatures. These conditions also coincided with low streamflow measurements, which may be the result of water withdrawals and/or reservoir operations in the upper watershed. Only one segment in this subbasin, the 8.4-mile Prince River, was not assessed for the *Aquatic Life Use*.

- In the Quaboag River Subbasin 42% of the river miles were assessed as supporting the *Aquatic Life Use*. A small portion (a 0.3-mile reach) of Forget-Me-Not Brook was assessed as non-support due to the moderately impaired benthic macroinvertebrate community downstream from the municipal wastewater treatment plant discharge. Fifty-seven percent of the river miles in the Quaboag River subbasin were not assessed for the *Aquatic Life Use*.
- The entire Chicopee River Subbasin (17.9 miles of the Chicopee River and the 3.3 mile Calkins Brook) was not assessed for *Aquatic Life Use*.



## Chicopee River Basin Aquatic Life Use Assessment Summary - Rivers

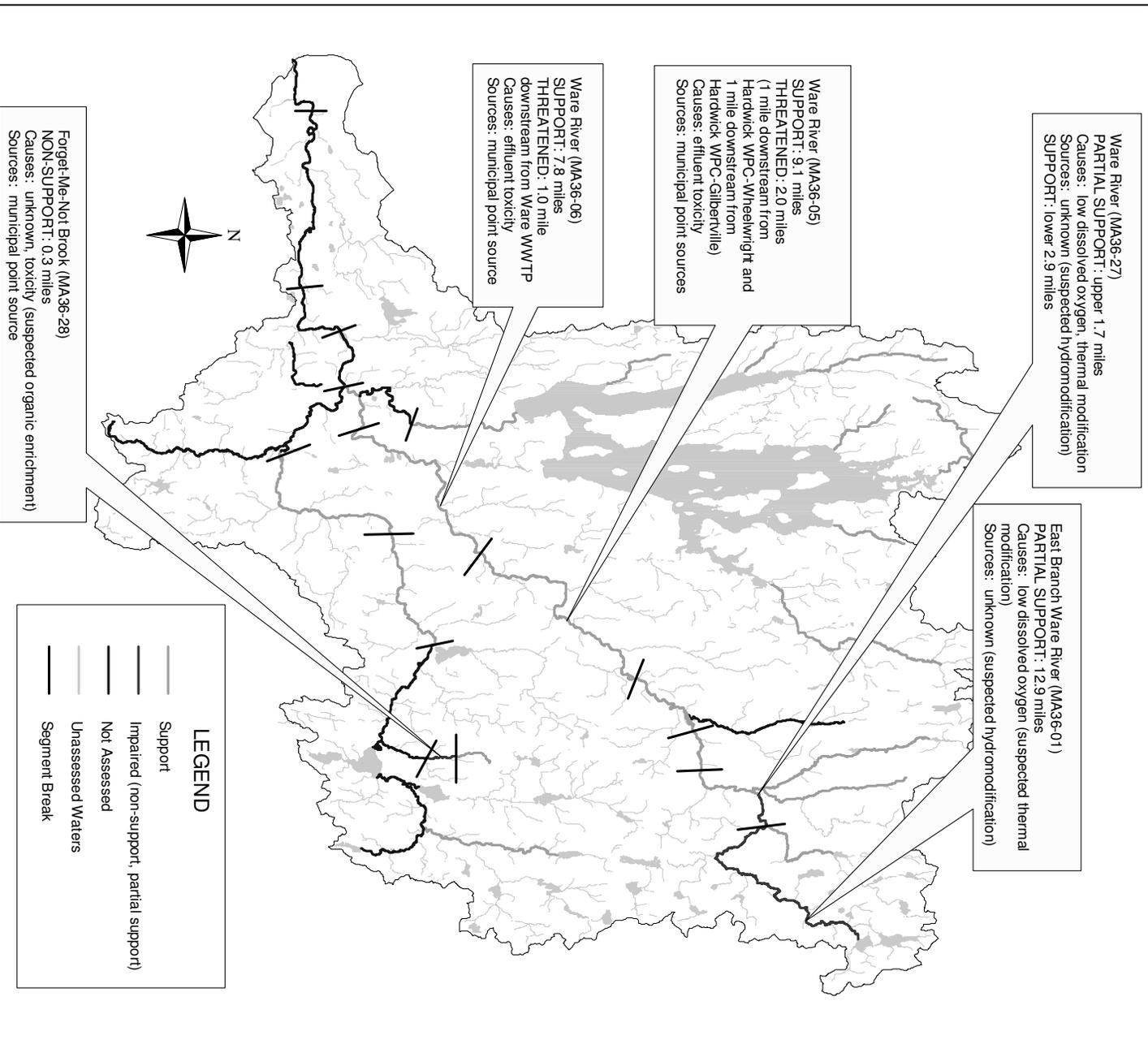


Figure 1. Chicopee River Basin Aquatic Life Use Assessment Summary – Rivers.

## Fish Consumption Use – Rivers

The *Fish Consumption Use* is met when there are no pollutants present that result in unacceptable concentrations in edible portions of marketable fish or shellfish or for the recreational use of fish, shellfish, other aquatic life or wildlife for human consumption. The assessment of this use is made using the most recent list of Fish Consumption Advisories issued by the Massachusetts Executive Office of Health and Human Services, Department of Public Health (DPH), Bureau of Environmental Health Assessment (MA DPH 1999). The DPH list identifies waterbodies where elevated levels of a specified contaminant in edible portions of freshwater species poses a health risk for human consumption; hence the *Fish Consumption Use* is assessed as non-support in these waters. In 1994, DPH also issued a statewide “Interim Freshwater Fish Consumption Advisory” for mercury (MA DPH 1994). This precautionary measure was aimed at pregnant women only; the general public was not considered to be at risk from fish consumption. DPH’s interim advisory does not include fish stocked by the state Division of Fisheries and Wildlife or farm-raised fish sold commercially. Because of the statewide interim advisory, no fresh waters can be assessed as support or partial support of the *Fish Consumption Use*. The status of the *Fish Consumption Use* in the Chicopee River Basin is as follows:

<i>Fish Consumption Use Summary – Rivers (miles)</i>				
	SUPPORT	PARTIAL SUPPORT	NON-SUPPORT	NOT ASSESSED
Swift River Subbasin (45.1 miles)				45.1
Ware River Subbasin (75.8 miles)			0.3	75.5
Quaboag River Subbasin (51.9 miles)				51.9
Chicopee River Subbasin (21.2 miles)				21.2
<b>Chicopee River Basin Total (194 miles)</b>	<b>0</b>	<b>0</b>	<b>0.3</b>	<b>193.7</b>

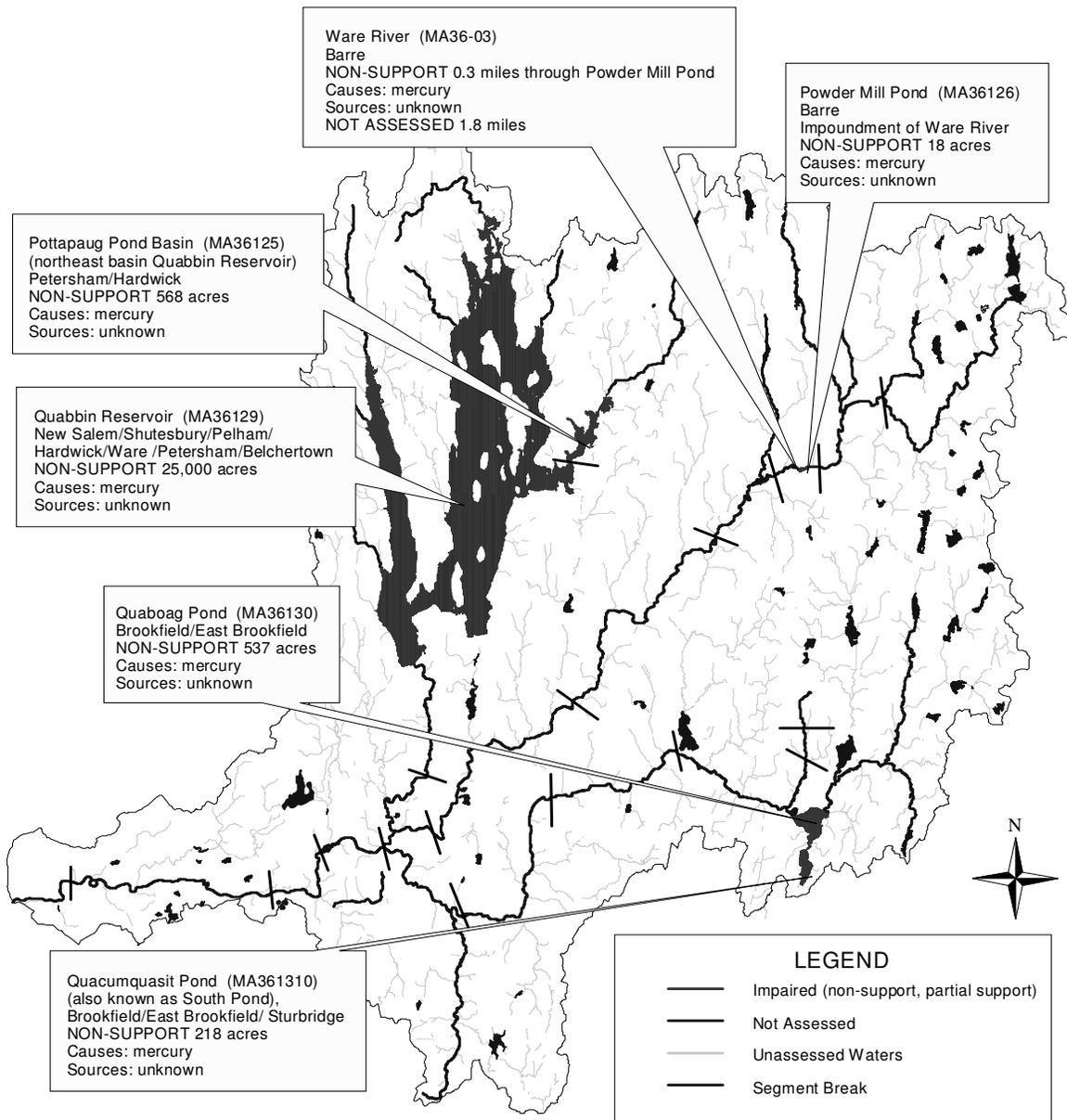
MA DPH issued an advisory based on elevated mercury concentrations in Powder Mill Pond fishes (MA DPH 1999), therefore the *Fish Consumption Use* was assessed as non-support in the 0.3 mile reach of the Ware River that flows through Powder Mill Pond (Figure 2). No other river miles were assessed for the *Fish Consumption Use* in the Chicopee River Basin.

### c. Drinking Water Use – Rivers

The term *Drinking Water Use* has been used to indicate sources of public drinking water. While this use is not assessed in this report, information on drinking water source protection and finish water quality is available at <http://www.state.ma.us/dep/brp/dws/dwshome.htm> and from the Chicopee River Basin’s public water suppliers. These waters are subject to stringent regulation in accordance with the Massachusetts Drinking Water Regulations. DEP’s Drinking Water Program (DWP) has primacy for implementing the provisions of the federal Safe Drinking Water Act. DWP has also initiated work on its Source Water Assessment Program (SWAP) which requires that the state delineate protection areas for all public ground and surface water sources; inventory land uses in these areas that may present potential threats to drinking water quality; determine the susceptibility of water supplies to contamination from these sources; and publicize the results. Except for suppliers with surface water sources for which a waiver from filtration has been granted (these systems also monitor surface water quality), public water suppliers monitor their finished water (tap water) for major categories of contaminants (e.g., bacteria, volatile and synthetic organic compounds, inorganic compounds, etc.) and report their data to DWP.



## Chicopee River Basin Fish Consumption Use Assessment Summary – Rivers and Lakes



Note: In 1994, DPH issued a statewide “Interim Freshwater Fish Consumption Advisory” for mercury (MA DPH 1994). This precautionary measure was aimed at pregnant women only; the general public was not considered to be at risk from fish consumption. DPH’s interim advisory does not include fish stocked by the state Division of Fisheries and Wildlife or farm-raised fish sold commercially. Because of the statewide interim advisory, no fresh waters can be assessed as support or partial support of the *Fish Consumption Use*.

Figure 2. Chicopee River Basin *Fish Consumption Use* Assessment Summary – Rivers and Lakes.

## Recreational Uses - Rivers

### d. Primary Contact

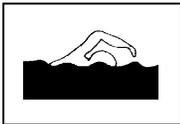
The *Primary Contact Recreational Use* is assessed as support when conditions are suitable (fecal coliform bacteria densities meet surface water quality standards) for any recreation or other water activity during which there is prolonged and intimate contact with the water with a significant risk of ingestion. Activities include, but are not limited to, wading, swimming, diving, surfing and water skiing. The status of the *Primary Contact Recreational Use* in the Chicopee River Basin is as follows:

<i>Primary Contact Recreational Use Summary – Rivers (miles)</i>				
	SUPPORT	PARTIAL SUPPORT	NON-SUPPORT	NOT ASSESSED
Swift River Subbasin (45.1 miles)	40.7			4.4
Ware River Subbasin (75.8 miles)	40.1		8.8	26.9
Quaboag River Subbasin (51.9 miles)		10.0	4.2	37.7
Chicopee River Subbasin (21.2 miles)				21.2
<b>Chicopee River Basin Total (194 miles)</b>	<b>80.8</b>	<b>10.0</b>	<b>13.0</b>	<b>90.2</b>

As illustrated in Figure 3, approximately 42% of the river miles in the Chicopee River Basin were assessed as supporting the *Primary Contact Recreational Use*. Less than 15% of the river miles were impaired for this use. Nearly half (46%) of the river miles were not assessed for the *Primary Contact Recreational Use*.

The *Primary Contact Recreational Use* assessment for each subbasin is as follows:

- Ninety percent of the river miles in the Swift River Subbasin were assessed as supporting the *Primary Contact Recreational Use*. A 4.4-mile reach of the mainstem Swift River was not assessed for this use which represented the remaining 10% of the river miles in the Swift River Subbasin.
- In the Ware River Subbasin 53% of the river miles were assessed as supporting the *Primary Contact Recreational Use*. An 8.8-mile reach of the Ware River had elevated fecal coliform bacteria counts during dry weather conditions and was therefore assessed as non-support. The remaining 35% of the river miles in the Ware River Subbasin, including the Prince River and 18.5 miles of the mainstem Ware River, were not assessed for this use.
- None of the rivers in the Quaboag River Subbasin were assessed as supporting the *Primary Contact Recreational Use*. A 3.8-mile reach of the Quaboag River and a 6.2-mile reach of the Sevenmile River were assessed as partial support due to elevated fecal coliform counts during dry weather conditions. A 4.2-mile reach of the Quaboag River downstream from the Warren WWTP discharge is frequently colored red, and therefore was assessed as non-support for the *Primary Contact Recreational Use*. Nearly 75% of the river miles in the Quaboag River Subbasin were not assessed for this use.
- The *Primary Contact Recreational Use* was not assessed for any of the river miles in the Chicopee River Subbasin.



# Chicopee River Basin Primary Contact Recreational Use Assessment Summary - Rivers

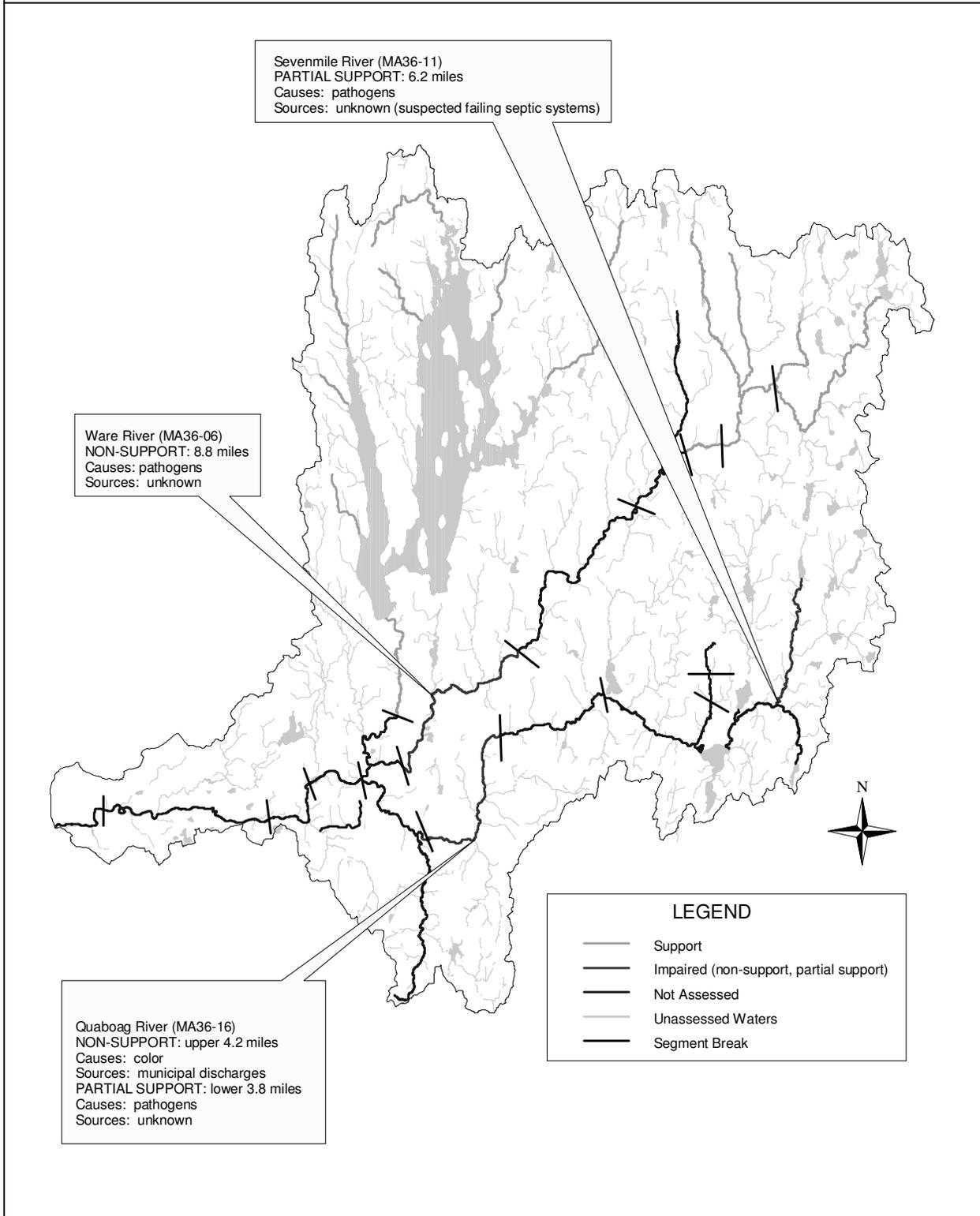


Figure 3. Chicopee River Basin *Primary Contact Recreational Use Assessment Summary – Rivers.*

## Secondary Contact

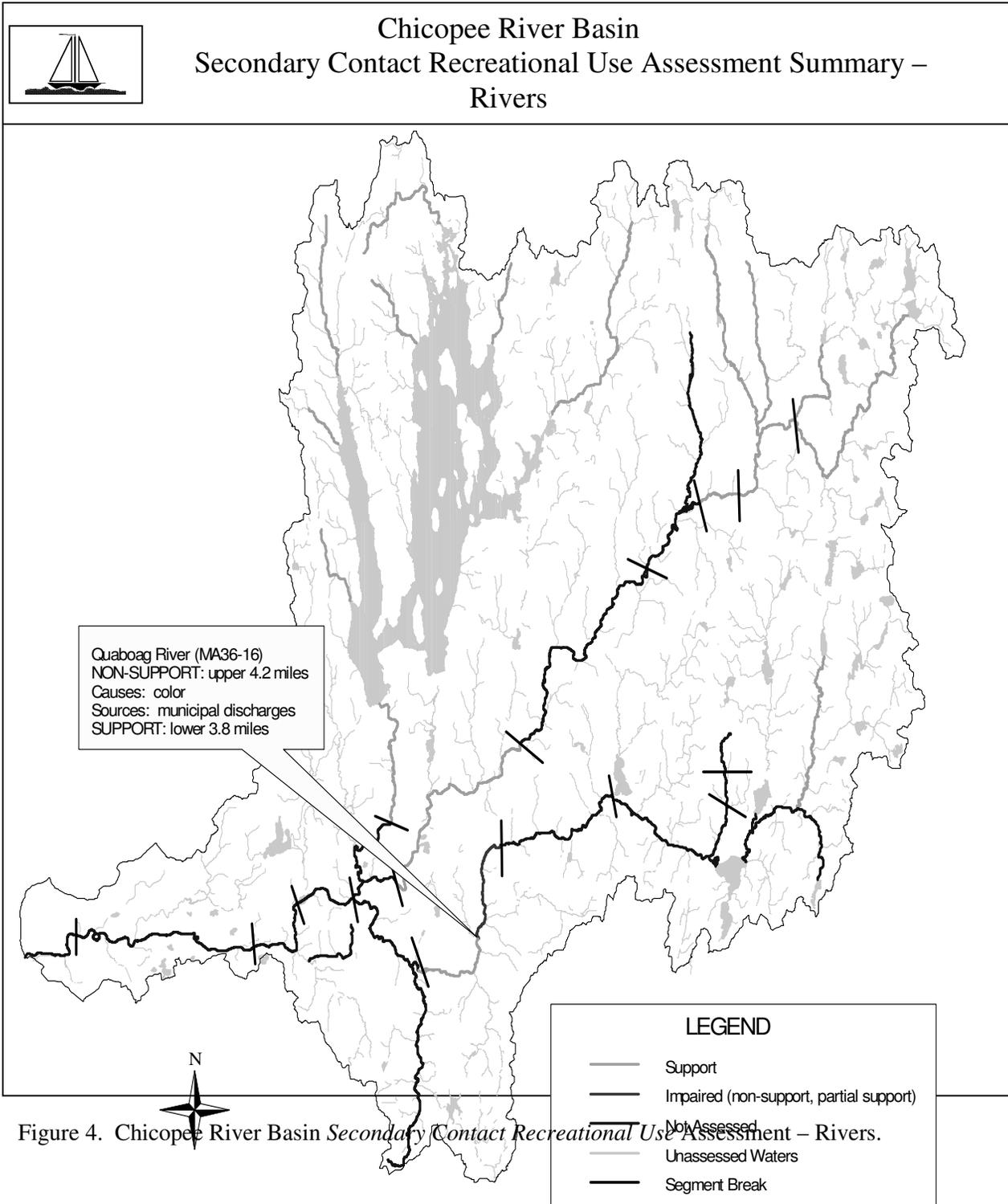
The *Secondary Contact Recreational Use* is assessed as support when conditions are suitable for any recreation or other water use during which contact with the water is either incidental or accidental. These include, but are not limited to, fishing, boating and limited contact incident to shoreline activities. The status of the *Secondary Contact Recreational Use* in the Chicopee River Basin can be summarized as follows:

<i>Secondary Contact Recreational Use Summary – Rivers (miles)</i>				
	SUPPORT	PARTIAL SUPPORT	NON-SUPPORT	NOT ASSESSED
Swift River Subbasin (45.1 miles)	40.7			4.4
Ware River Subbasin (75.8 miles)	48.9			26.9
Quaboag River Subbasin (51.9 miles)	10		4.2	37.7
Chicopee River Subbasin (21.2 miles)				21.2
<b>Chicopee River Basin Total (194 miles)</b>	<b>99.6</b>	<b>0</b>	<b>4.2</b>	<b>90.2</b>

Approximately 50% of the river miles in the Chicopee River Basin were assessed as supporting the *Secondary Contact Recreational Use* (Figure 4). Less than 5% of the river miles were impaired for this use. Nearly half (47%) of the river miles were not assessed. The assessment of the *Secondary Contact Recreational Use* in each subbasin is as follows:

- Ninety percent of the river miles in the Swift River Subbasin were assessed as supporting the *Secondary Contact Recreational Use*. A 4.4-mile reach of the mainstem Swift River was not assessed for this use representing the remaining 10% of the river miles in the Swift River Subbasin.
- In the Ware River Subbasin 65% of the river miles were assessed as support for the *Secondary Contact Recreational Use*. The remaining 35% of the river miles (the 8.4-mile Prince River and 18.5 miles of the Ware River) were not assessed.
- Nineteen percent of the river miles in the Quaboag River Subbasin were assessed as support for the *Secondary Contact Recreational Use*. The 4.2-mile reach of the Quaboag River downstream from the Warren WWTP discharge which is frequently colored red, was assessed as non-support for the *Secondary Contact Recreational Use*. Nearly 75% of the river miles in the Quaboag River Subbasin were not assessed for this use.
- The *Secondary Contact Recreational Use* was not assessed for any of the river miles in the Chicopee River Subbasin.

f.  
g.  
h.



### k. Aesthetics Use - Rivers

The *Aesthetics Use* is assessed as support when surface waters are free from pollutants in concentrations or combinations that settle to form objectionable deposits; float as debris, scum or other matter to form nuisances; produce objectionable odor, color, taste or turbidity; or produce undesirable or nuisance species of aquatic life. The status of the *Aesthetics Use* in the Chicopee River Basin is as follows:

<i>Aesthetics Use Summary – Rivers (miles)</i>				
	SUPPORT	PARTIAL SUPPORT	NON-SUPPORT	NOT ASSESSED
Swift River Subbasin (45.1 miles)	40.7			4.4
Ware River Subbasin (75.8 miles)	68.4			7.4
Quaboag River Subbasin (51.9 miles)	17.6	0.3	4.2	29.8
Chicopee River Subbasin (21.2 miles)				21.2
<b>Chicopee River Basin Total (194 miles)</b>	<b>126.7</b>	<b>0.3</b>	<b>4.2</b>	<b>62.8</b>

Approximately 65% of the river miles in the Chicopee River Basin were assessed as supporting the *Aesthetics Use*. Less than 5% of the river miles were impaired (partial or non-support) for this use. Nearly one-third (32%) of the river miles were not assessed for the *Aesthetics Use*. The assessment for each subbasin is as follows:

- Ninety percent of the river miles in the Swift River Subbasin were assessed as supporting the *Aesthetics Use*. A 4.4-mile reach of the mainstem Swift River was not assessed for this use representing the remaining 10% of the river miles in the Swift River Subbasin.
- In the Ware River Subbasin 90% of the river miles were assessed as support for the *Aesthetics Use*. The remaining 10% of the river miles were not assessed for this use.
- Approximately one-third of the river miles in the Quaboag River Subbasin (34%) were assessed as support for the *Aesthetics Use*. The 4.2-mile reach of the Quaboag River downstream from the Warren WWTP discharge which is frequently colored red was assessed as non-support for the *Aesthetics Use*. The remaining 57% of the river miles in the Quaboag River Subbasin were not assessed for this use.
- The *Aesthetics Use* was not assessed for any of the river miles in the Chicopee River Subbasin.

## SUMMARY - RIVERS

In addition to specific issues for the individual river segments, the evaluation of current water quality conditions in the Chicopee River Basin has revealed the need for the following:

- Conduct bacteriological monitoring (use indicator organism specified in the Massachusetts Surface Water Quality Standards - SWQS) to assess the status of the *Primary* and *Secondary Contact Recreational* uses,
- implement and track the progress of combined sewer overflow (CSO) abatement activities, identify other sources of bacteria and storm water contaminants and remediate problems,
- analyze Metropolitan District Commission (MDC) and DWM benthic macroinvertebrate datasets (inclusive of the habitat quality evaluation to distinguish between habitat effects and water quality impacts) to assess *Aquatic Life Use*,
- in the next revision of the SWQS designate various rivers as Cold Water Fisheries (if supported by Division of Fisheries, Wildlife, and Environmental Law Enforcement - DFWELE) and delete CSO restrictions where no longer necessary,
- conduct monitoring to determine “natural condition” ranges for pH, dissolved oxygen, and temperature
- pursue and continue funding for resource protection efforts,
- monitor dam safety and/or removal issues including the need for fish passage facilities,
- optimize water withdrawal practices to maintain minimum streamflow, and to the extent possible, natural flow regimes,
- collect additional data to determine the frequency, duration, and spatial extent of low flow conditions and simultaneously evaluate instream temperature and dissolved oxygen concentrations, and assess habitat quality as it is related to streamflow conditions,
- implement Best Management Practices (BMPs) to reduce the impacts of storm water runoff,
- when the DEP Drinking Water Program SWAP evaluations are completed, review them, and develop and implement recommendations to protect the Class A rivers in the Chicopee River Basin,
  - continue to evaluate compliance with Water Management Act (WMA) registration and permit limits, and
  - reissue the remaining municipal, industrial and institutional NPDES permits in the Chicopee River Basin with appropriate permit limits and monitoring requirements.

The municipal NPDES permits will address phosphorus loading to the watershed in an attempt to reduce nutrient loading to the Red Bridge Impoundment of the Chicopee River and Quaboag Pond. The need to control phosphorus loads will be refined during the next NPDES permitting cycle (2005-2006). Construction projects to abate some CSO discharges into the Chicopee River are scheduled to begin in 2001 in Palmer, Chicopee, and Ludlow. Further abatement of CSO discharges into the Chicopee River is currently in the planning stage via development of CSO Long Term Control Plans in Chicopee and Springfield and a Comprehensive Wastewater Management Plan in Ludlow. Additionally, several communities including Chicopee, Ludlow, Paxton, Springfield, and Wilbraham will be required to obtain a Phase 2 storm water permits to reduce impacts of storm water by the development of BMPs, elimination of cross-connections and significant public education.

## I. Chicopee RIVER BASIN - LAKES

Information on 84 of the 174 lakes/ponds (48%) in the Chicopee River Basin is presented in this report. These lakes include approximately 97% (31,063 of 32,099) of the basin lake acreage. Quabbin Reservoir, a 25,000-acre public water supply, accounts for 80% of the lake acreage assessed in this report.

Lakes in the Chicopee River Basin represent all stages of succession, as described in terms of trophic status estimates (Table 1). Most frequently excessive plant growth (both rooted aquatics and algae) has been recorded as the cause of impairment to several uses (*Aquatic Life Use*, or *Aesthetics*, or *Primary* and *Secondary Contact Recreational Use*) in lakes assessed in 1998.

Table 1. Chicopee River Basin 1998 Lakes Trophic Status Summary.

TROPHIC STATUS	NUMBER OF LAKES	ACRES
Oligotrophic	1	25,000.0
Mesotrophic	2	184.0
Eutrophic	27	1,477.2
Hypereutrophic	3	733.0
Dystrophic	2	81.0
Undetermined	49	3,587.8
Total	84	31,063.0

It should be noted that some lakes or portions of lakes were listed as undetermined when indicators were not readily observable. With this approach, only the most obvious impairments are reported and so the assessment of lakes in the Chicopee River Basin is limited to a "best case" picture. Potentially more of the lake acreage would be listed as impaired, or in a more enriched trophic status, if more variables were measured and more criteria assessed.

### I. AQUATIC LIFE USE – LAKES

Three non-native, aquatic plant species (Eurasian water milfoil, variable milfoil, and fanwort) were found in lakes in the Chicopee River Basin. These plants are particularly invasive species and reproduce vegetatively; so they may spread readily on downstream currents or between lakes by mechanical transport. Based on the presence of these non-native aquatic species, 13 lakes were assessed as partial support for the *Aquatic Life Use*. Flow alteration at Old Reservoir in Barre resulted in 10 acres of this waterbody not supporting the *Aquatic Life Use*. The status of the *Aquatic Life Use* for the Chicopee River Basin lakes (acres) is as follows:

#### Aquatic Life Use Summary – Lakes

- 2,052.5 acres partial support
- 10.0 acres non-support
- 29,000.5 acres not assessed

### m. FISH CONSUMPTION USE – LAKES

Because of health concerns associated with exposure to mercury, DPH issued fish consumption advisories for Quabbin Reservoir including Pottapaug Pond Basin (New Salem/ Shutesbury/Pelham/ Hardwick/Ware /Petersham/Belchertown), Powder Mill Pond (Barre), Quacumquasit Pond [South Pond] (Brookfield/East Brookfield/ Sturbridge), and Quaboag Pond (Brookfield/East Brookfield) (MA DPH 1999). The status of the *Fish Consumption Use* for the Chicopee River Basin lakes (acres) is as follows:

### **Fish Consumption Use Summary – Lakes**

- 26,341.0 acres non-support
- 4,722.0 acres not assessed

[NOTE: In 1994, DPH issued a statewide *Interim Freshwater Fish Consumption Advisory* for mercury. This precautionary measure states that “pregnant women should be advised of the possible health risk from eating fish from Massachusetts freshwater bodies in order to prevent exposure of developing fetuses to mercury”. This precautionary measure was aimed at pregnant women only; the general public was not considered to be at risk from fish consumption. DPH’s interim advisory does not include fish stocked by the state Division of Fisheries and Wildlife or farm-raised fish sold commercially. Because the statewide interim advisory encompasses all freshwater in Massachusetts, none of the lakes can be assessed as supporting the *Fish Consumption Use*; therefore they remain not assessed.]

### **n. Drinking Water Use – LAKES**

The *Drinking Water Use* has been used to indicate sources of public drinking water. While this use is not assessed in this report, information on drinking water source protection and finish water quality is available at <http://www.state.ma.us/dep/brp/dws/dwshome.htm> and from the Chicopee River Basin’s public water suppliers. These waters are subject to stringent regulation in accordance with the Massachusetts Drinking Water Regulations. The DWP has primacy for implementing the provisions of the federal Safe Drinking Water Act. DWP has also initiated work on SWAP which requires that the state delineate protection areas for all public ground and surface water sources; inventory land uses in these areas that may present potential threats to drinking water quality; determine the susceptibility of water supplies to contamination from these sources; and publicize the results. Except for suppliers with surface water sources for which a waiver from filtration has been granted (these systems also monitor surface water quality) public water suppliers monitor their finished water (tap water) for major categories of contaminants (e.g., bacteria, volatile and synthetic organic compounds, inorganic compounds, etc.) and report their data to DWP.

### **o. PRIMARY AND SECONDARY CONTACT RECREATIONAL AND AESTHETICS USES - LAKES**

The lack of fecal coliform bacteria data resulted in 96% of the lake acreage not being assessed for the *Primary Contact Recreational Use*. Due to the focus of the recent surveys conducted by DWM (e.g., macrophyte cover, transparency and biocommunity modifications), the major cause of impairment was aquatic plants (either noxious-native or non-native). Flow alteration was identified as a cause of impairment in one waterbody. The status of *Primary* and *Secondary Contact Recreational* and *Aesthetics Uses* is as follows:

<i>Primary Contact Use</i>	<i>Secondary Contact Use</i>	<i>Aesthetics Use</i>
• 0 acres support	• 28,396.3 acres support	• 28,396.3 acres support
• 613.0 acres partial support	• 613.0 acres partial support	• 613.0 acres partial support
• 625.0 acres non-support	• 625.0 acres non-support	• 625.0 acres non-support
• 29,825.0 acres not assessed	• 1,428.7 acres not assessed	• 1,428.7 acres not assessed

## SUMMARY - LAKES

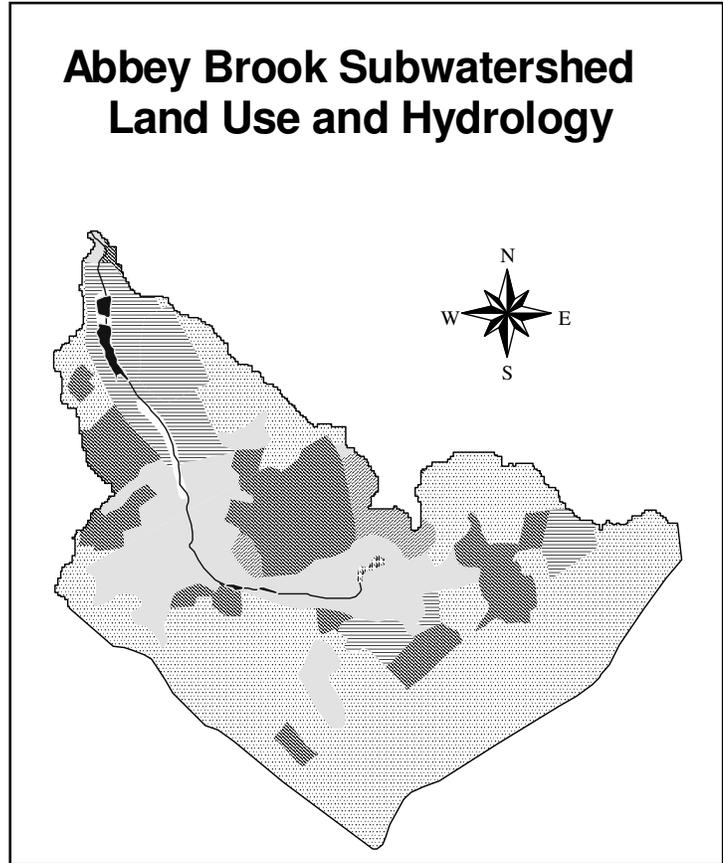
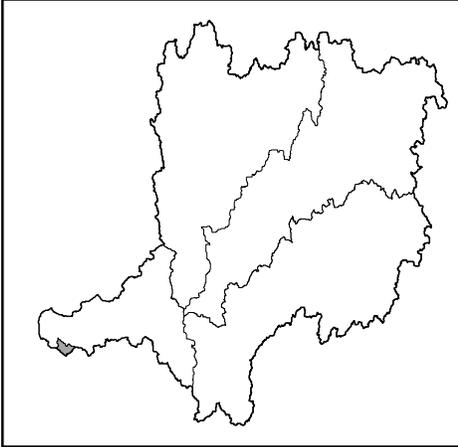
Potentially more of the lake acreage would be listed as impaired or in a more enriched trophic status if additional variables were measured and more criteria assessed. In the Chicopee River Basin there is a need to:

- conduct monitoring for fecal coliform bacteria and Secchi disk depth to assess the *Primary Contact Recreational Use*,
- collect water chemistry data including dissolved oxygen and temperature profiles and chlorophyll *a* to assess the *Aquatic Life Use*,
- monitor and control the spread and growth of non-native aquatic and wetland vegetation,
- implement recommendations identified in the TMDLs and lake Diagnostic/Feasibility studies,
- review the DEP Drinking Water Program SWAP evaluations are when they are completed to develop and implement recommendations for the protection of Class A lakes in the Chicopee River Basin including Asnacomet, Bickford, Brigham, Brooks, Carter, Connor, Cunningham, Desmond, Doane, Edson, Gaston, Horse, Knights, Long, Lovewell, Moosehorn, Moulton, Muddy, Shaw, Stone Bridge, Thayer, Waite, and Williamsville ponds, Mare Meadow, Palmer, Quabbin (and Pottapoag Pond Basin), and Springfield reservoirs, and Queen Lake.

**Appendix F. Results of subwatershed pollutant loading analyses.**

**Chicopee River Watershed**

**Abbey Brook Subwatershed  
(1.3 sq mi)**



Land use Summary:

Agriculture:	00.0	00.0%
Forest:	143.9	17.4%
Wetlands:	04.6	00.6%
Open land:	127.8	15.4%
Residential:	428.3	51.7%
Commercial:	117.0	14.1%
Industrial:	01.2	00.1%
Transport:	00.0	00.0%
Water:	05.3	00.6%

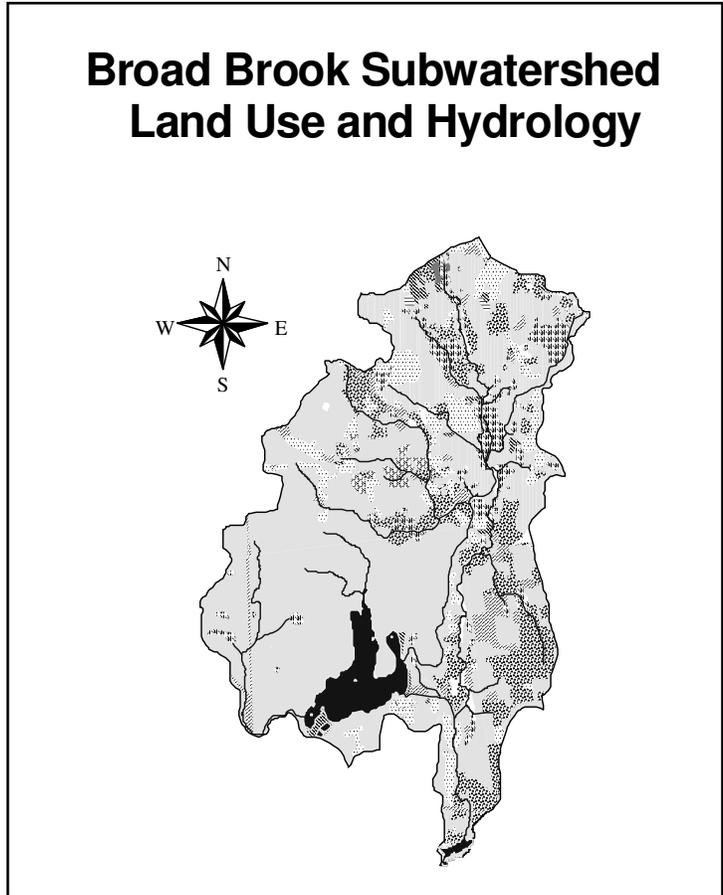
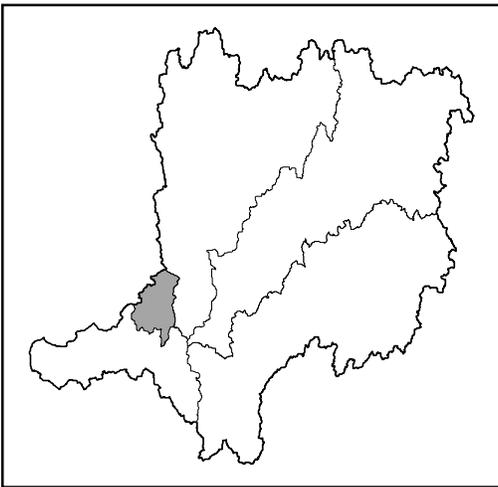
Total Area = 828.2 acres (1.29 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	7313.3 pounds, or	5651.7 lbs/sq mi
Average Annual Phosphorus Load =	1291.8 pounds, or	998.3 lbs/sq mi
Average Annual Suspended Solids Load =	332281.7 pounds, or	256786.5 lbs/sq mi

The impervious area is 290.2 acres  
This makes the percentage of imperviousness 35.0%

**Chicopee River Watershed  
Broad Brook Subwatershed  
(15.0 sq mi)**



Land use Summary:

Agriculture:	1148.1	11.9%
Forest:	6437.4	66.9%
Wetlands:	259.6	02.7%
Open land:	544.0	05.7%
Residential:	735.9	07.7%
Commercial:	14.0	00.1%
Industrial:	27.5	00.3%
Transport:	20.9	00.2%
Water:	429.6	04.5%

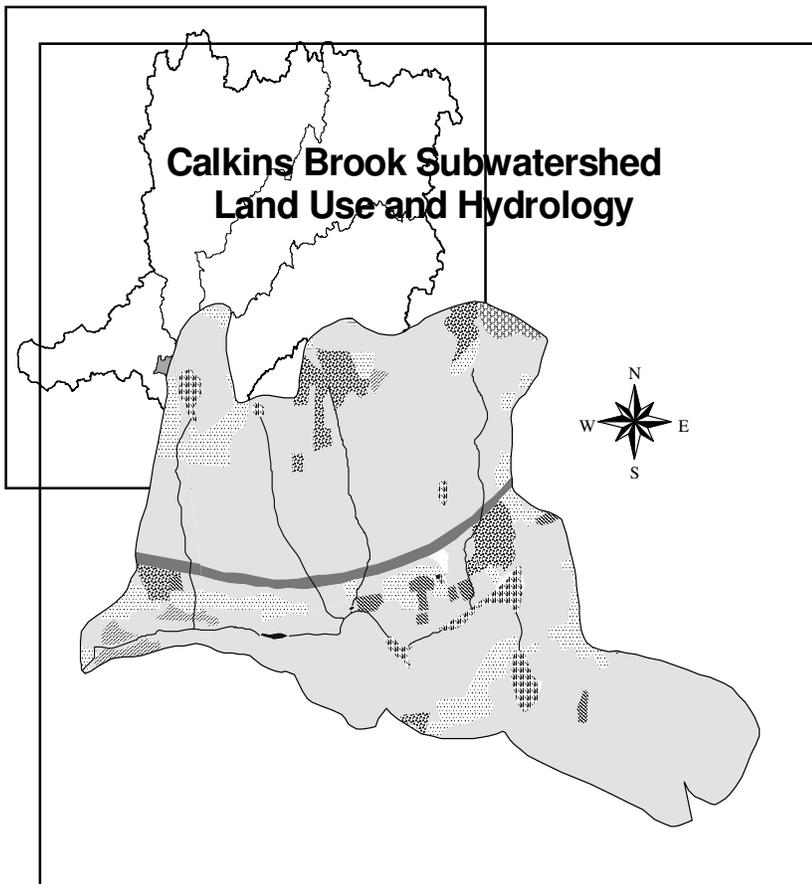
Total Area 9616.9 acres (15.0 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	30523.5 pounds, or	2031.2 lbs/sq mi
Average Annual Phosphorus Load =	3151.0 pounds, or	209.7 lbs/sq mi
Average Annual Suspended Solids Load =	903567.8 pounds, or	60129.6 lbs/sq mi

The impervious area is 225.5 acres  
This makes the percentage of imperviousness 2.3%

**Chicopee River Watershed  
Calkins Brook Subwatershed  
(3.3 sq mi)**

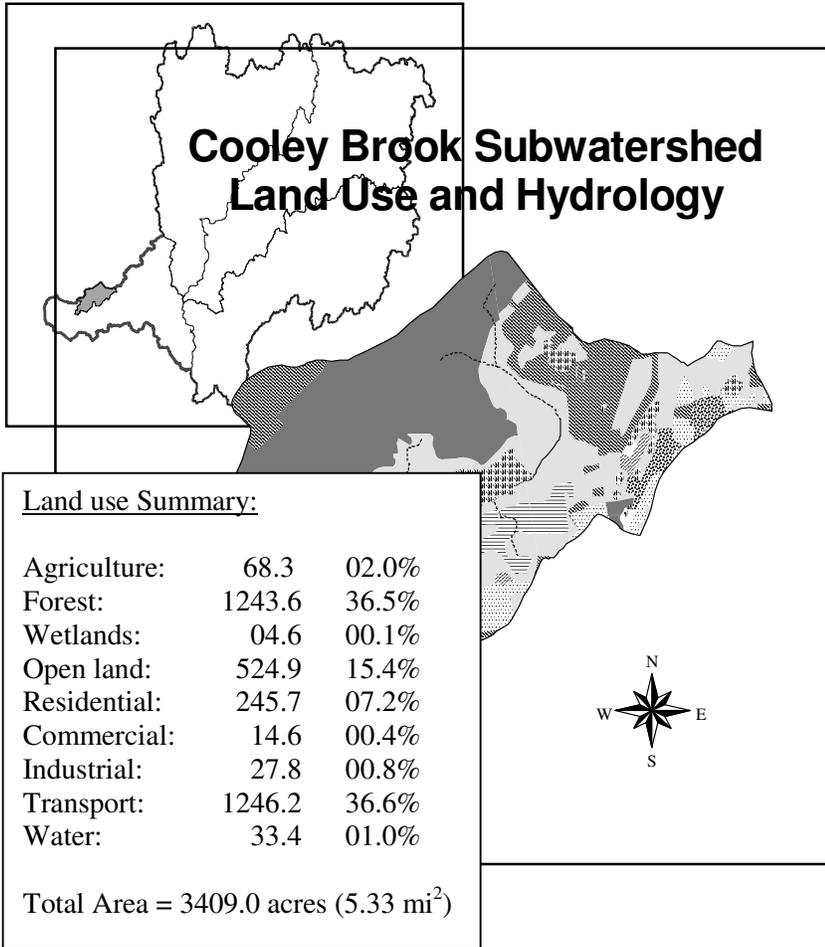


.8%  
.3%  
.5%  
.2%  
.7%  
.5%  
.4%  
.4%  
.1%  
(.26 mi<sup>2</sup>)

Point Source Pollution loads based on Landuse:  
Nitrogen Load = 7167.4 pounds; or 2198.6 lbs/sq mi  
Phosphorus Load = 737.1 pounds; or 226.1 lbs/sq mi  
Suspended Solids Load = 194178.9 pounds; or 59564.1 lbs/sq mi

The impervious area is 92.5 acres  
This makes the percentage of imperviousness 4.4 %

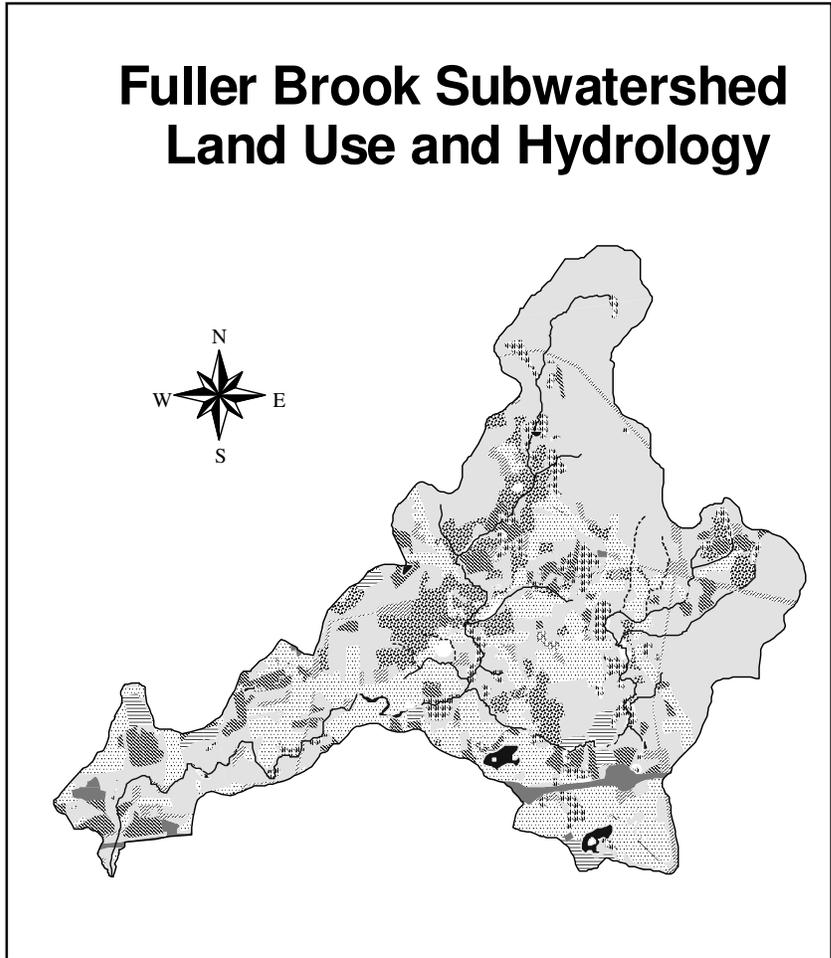
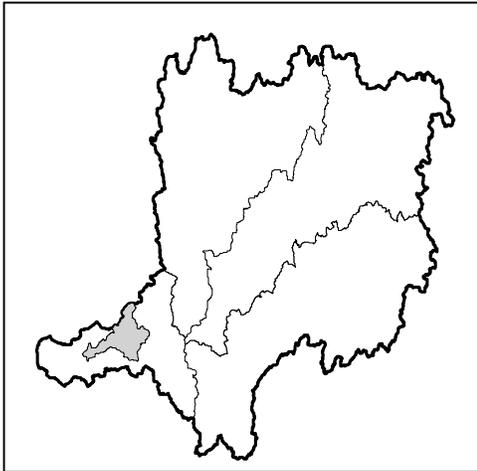
**Chicopee River Watershed  
Cooley Brook Subwatershed  
(5.3 sq mi)**



<u>Estimated Nonpoint Source Pollution loads based on Landuse:</u>		
Average Annual Nitrogen Load =	23006.8 pounds, or	4319.3 lbs/sq mi
Average Annual Phosphorus Load =	4594.5 pounds, or	862.6 lbs/sq mi
Average Annual Suspended Solids Load =	1421421.8 pounds, or	266855.4 lbs/sq mi

The impervious area is 1088.5 acres  
This makes the percentage of imperviousness 31.9%

**Chicopee River Watershed  
Fuller Brook Subwatershed  
(11.9 sq mi)**



Land use Summary:

Agriculture:	651.3	08.6%
Forest:	3970.8	52.2%
Wetlands:	116.9	01.5%
Open land:	724.8	09.5%
Residential:	1676.7	22.1%
Commercial:	52.2	00.7%
Industrial:	205.3	02.7%
Transport:	120.6	01.6%
Water:	81.9	01.1%

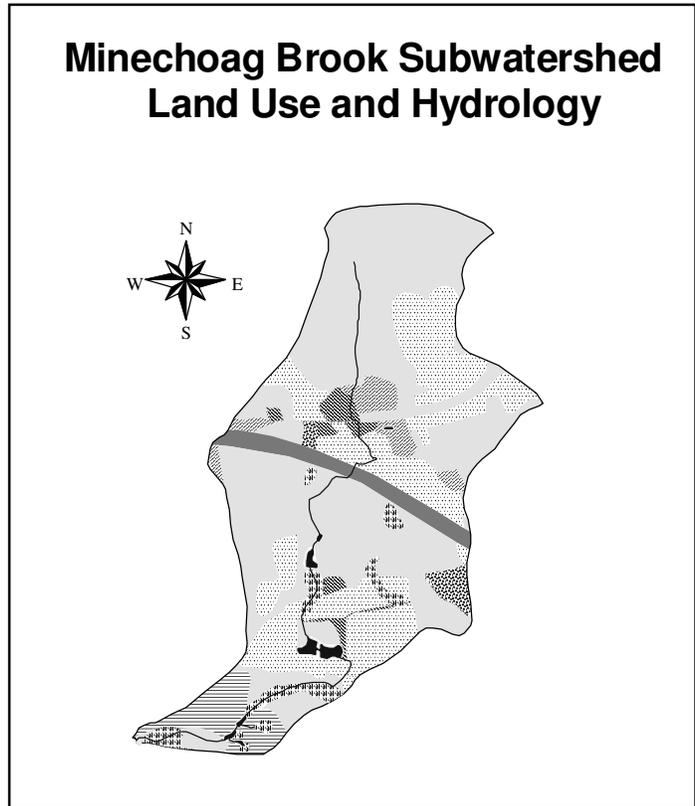
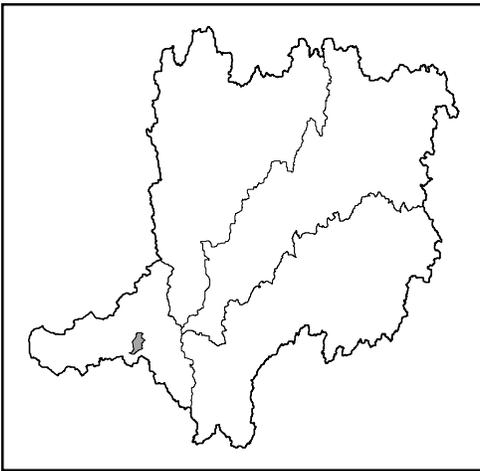
Total Area = 7600.4 acres (11.9 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	34146.3 pounds, or	2875.2 lbs/sq mi
Average Annual Phosphorus Load =	4811.5 pounds, or	405.1 lbs/sq mi
Average Annual Suspended Solids Load =	1313600.1 pounds, or	110609.6 lbs/sq mi

The impervious area is 483.7 acres  
This makes the percentage of imperviousness 6.4%

**Chicopee River Watershed  
Minechoag Brook Subwatershed  
(1.3 sq mi)**



Land use Summary:

Agriculture:	12.9	01.6%
Forest:	452.2	56.2%
Wetlands:	05.8	00.7%
Open land:	74.7	09.3%
Residential:	208.2	25.9%
Commercial:	03.1	00.4%
Industrial:	09.4	01.2%
Transport:	31.2	03.9%
Water:	06.8	00.9%

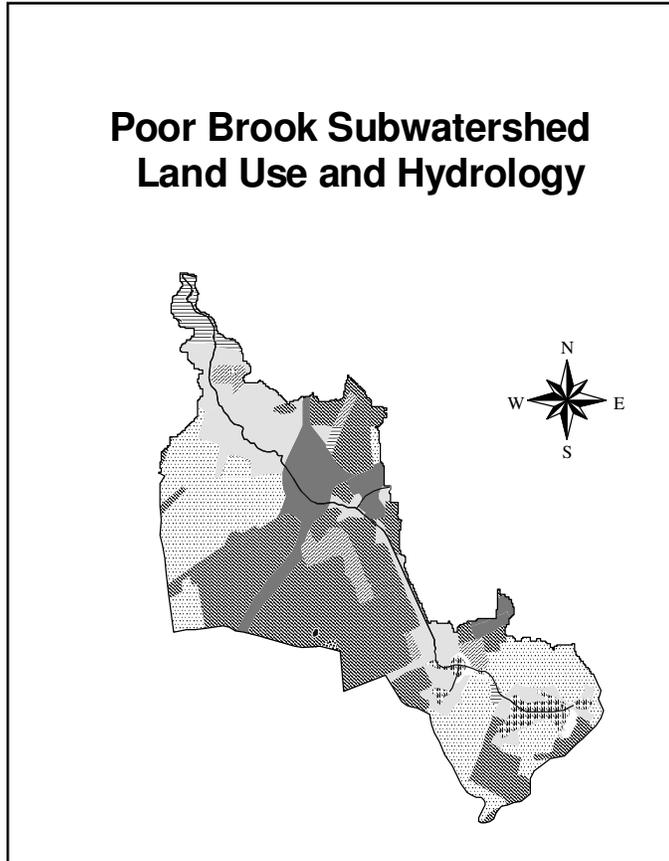
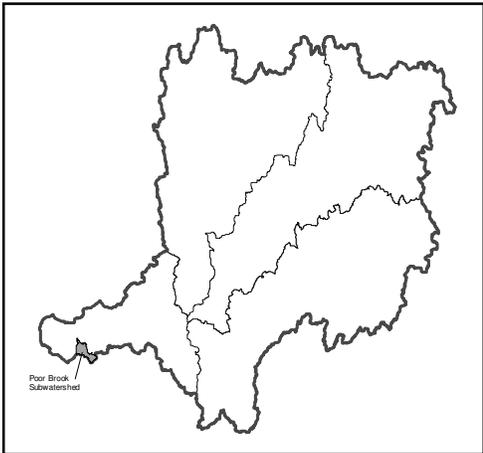
Total Area = 804.3 acres (1.26 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 3990.4 pounds, or 3167.0 lbs/sq mi  
 Average Annual Phosphorus Load = 604.0 pounds, or 479.4 lbs/sq mi  
 Average Annual Suspended Solids Load = 153672.2 pounds, or 121962.1 lbs/sq mi

The impervious area is 91.0 acres  
 This makes the percentage of imperviousness 11.3%

**Chicopee River Watershed  
 Poor Brook Subwatershed  
 (1.6 mi<sup>2</sup>)**



**Land use Summary:**

Agriculture:	01.5	00.2%
Forest:	195.1	19.3%
Wetlands:	10.0	01.0%
Open land:	100.1	09.9%
Residential:	271.2	26.9%
Commercial:	72.5	07.2%
Industrial:	269.0	26.6%
Transport:	90.4	09.0%
Water:	00.0	00.0%

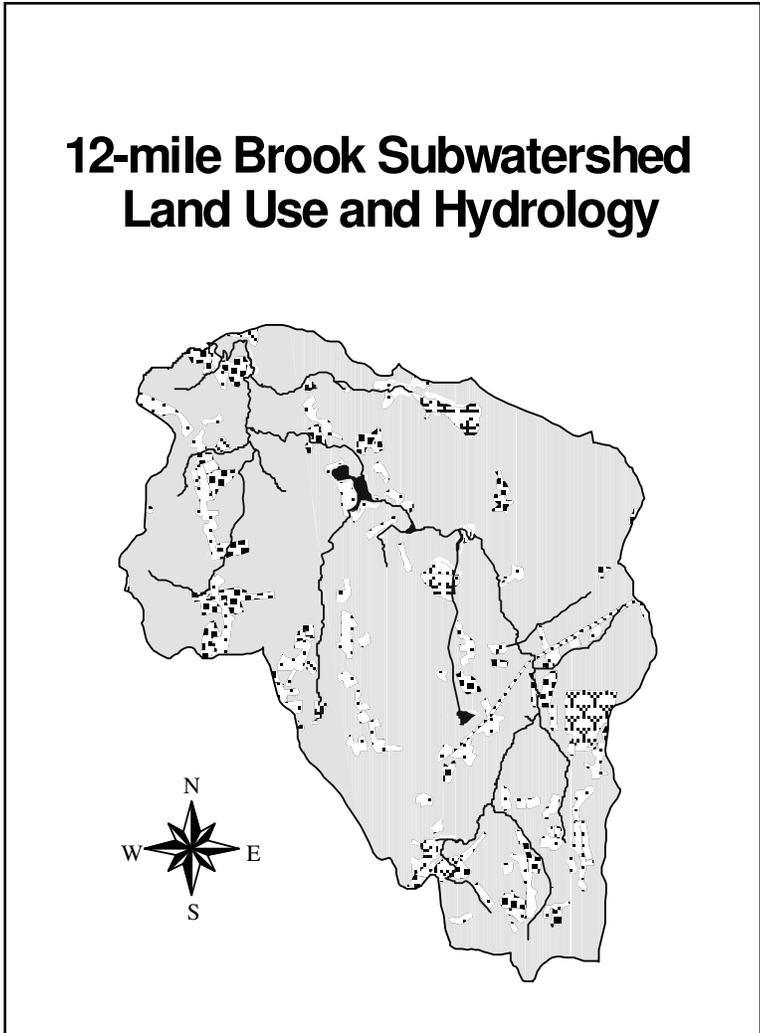
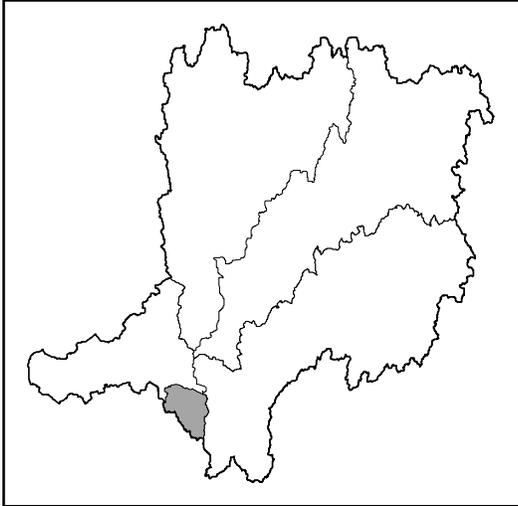
Total area = 1009.7 acres (1.58 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	8667.5 pounds, or	5485.8 lbs/sq mi
Average Annual Phosphorus Load =	1569.9 pounds, or	993.6 lbs/sq mi
Average Annual Suspended Solids Load =	447733.5 pounds, or	283375.6 lbs/sq mi

The impervious area is 476.3 acres  
 This makes the percentage of imperviousness 47.2%

**Chicopee River Watershed  
Twelve Mile Brook Subwatershed  
(10.4 mi<sup>2</sup>)**



Land use Summary (Acres):

Agriculture:	240.0	( 4.6 %)
Forest:	5629.5	(84.7%)
Wetlands:	84.6	( 1.3%)
Open land:	129.3	( 1.9%)
Residential:	525.0	( 7.9%)
Commercial:	0.0	(0.0%)
Industrial:	0.0	(0.0%)
Transport:	0.0	(0.0%)
Water:	39.4	( 0.6%)

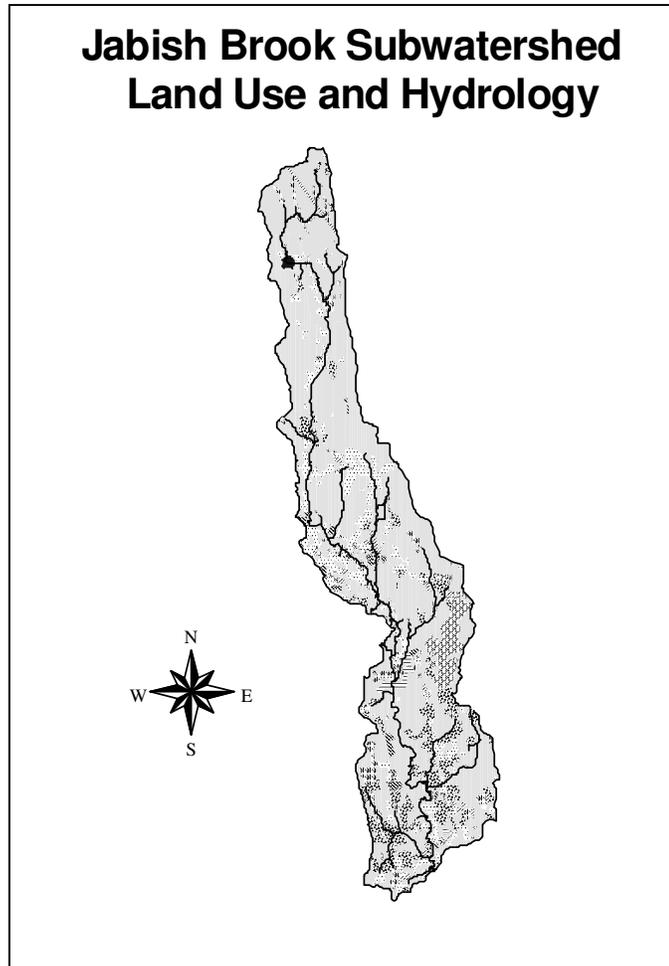
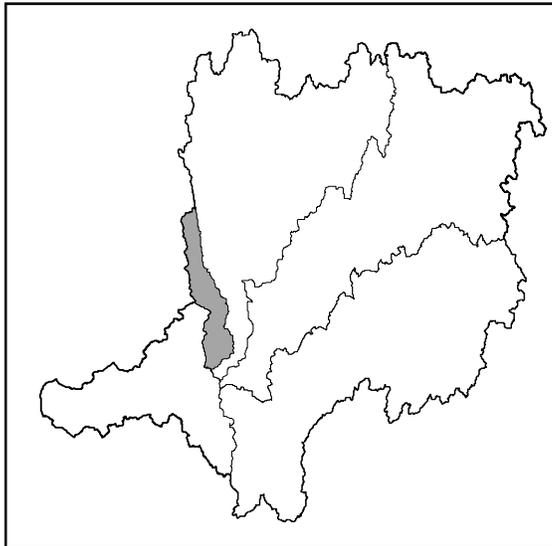
Total Area = 6647.8 acres (10.387 sq mi)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	20077.3 pounds; or	1932.9 lbs/sq mi
Average Annual Phosphorus Load =	1573.0 pounds; or	151.4 lbs/sq mi
Average Annual Suspended Solids Load =	366585.6 pounds; or	35292.1 lbs/sq mi

The impervious area is 115.1 acres  
This makes the percentage of imperviousness 1.7%

**Swift River Watershed  
Jabish Brook Subwatershed  
(18.6 sq mi)**



Land use Summary:

Agriculture:	1056.9	08.9%
Forest:	8754.8	73.6%
Wetlands:	230.7	01.9%
Open land:	648.9	05.5%
Residential:	1045.5	08.8%
Commercial:	38.7	00.3%
Industrial:	62.6	00.5%
Transport:	00.0	00.0%
Water:	55.9	00.5%

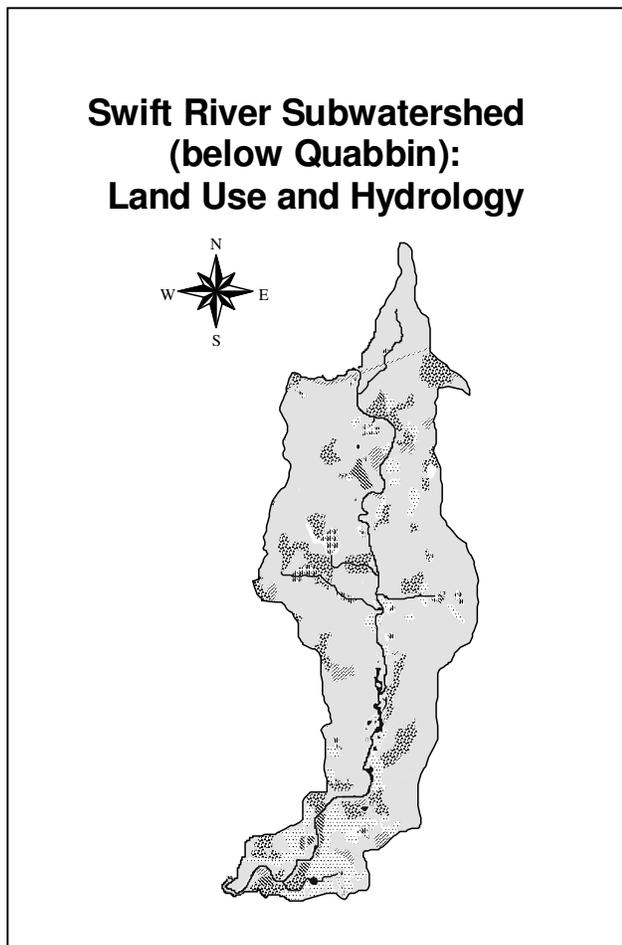
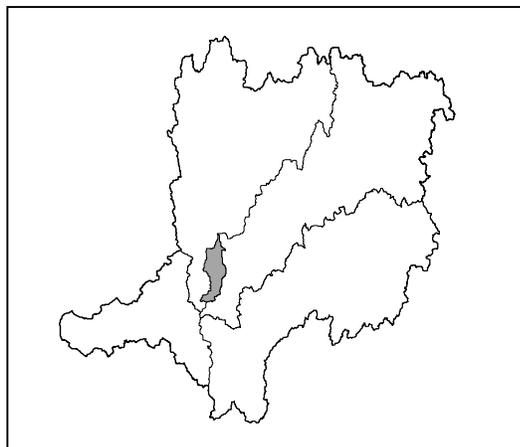
Total Area = 11894.0 acres (18.58 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 37648.2 pounds, or 2025.7 lbs/sq mi  
 Average Annual Phosphorus Load = 3573.2 pounds, or 192.3 lbs/sq mi  
 Average Annual Suspended Solids Load = 935069.1 pounds, or 50313.1 lbs/sq mi

The impervious area is 287.0 acres  
 This makes the percentage of imperviousness 2.4%

**Swift River Watershed  
Swift below Quabbin Subwatershed  
(7.95 sq mi)**



Land use Summary:

Agriculture:	530.4	10.4%
Forest:	3749.9	73.7%
Wetlands:	96.1	01.9%
Open land:	134.9	02.7%
Residential:	377.5	07.4%
Commercial:	04.9	00.1%
Industrial:	41.0	00.8%
Transport:	01.1	00.0%
Water:	152.1	03.0%

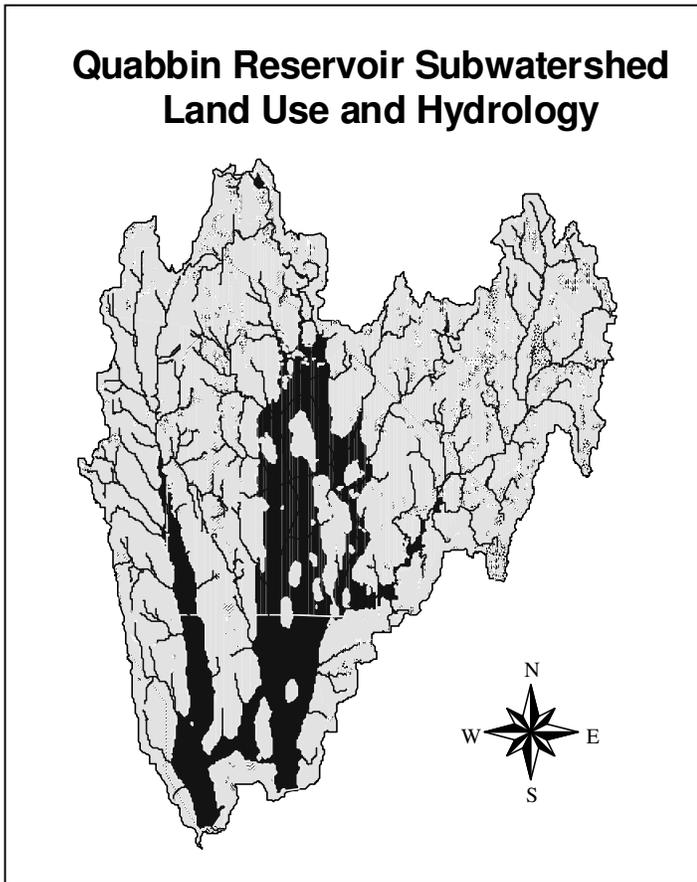
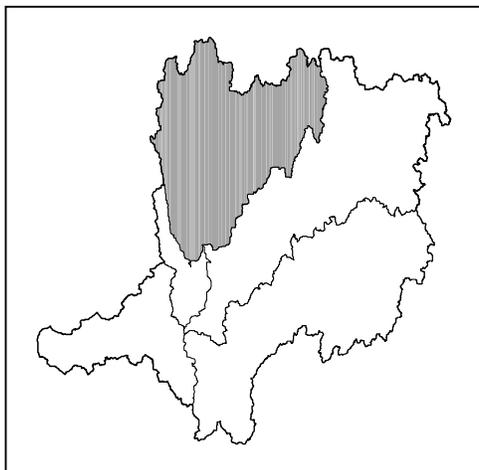
Total Area = 5087.7 acres (7.95 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	16213.6 pounds, or	2039.4 lbs/sq mi
Average Annual Phosphorus Load =	1560.5 pounds, or	196.3 lbs/sq mi
Average Annual Suspended Solids Load =	373620.8 pounds, or	46996.3 lbs/sq mi

The impervious area is 287.0 acres  
This makes the percentage of imperviousness 2.4%

**Swift River Watershed  
Quabbin Reservoir Subwatershed  
(187.6 sq mi)**



Land use Summary:

Agriculture:	2172.9	01.8%
Forest:	87226.4	72.7%
Wetlands:	2089.6	01.7%
Open land:	1942.3	01.6%
Residential:	1453.1	01.2%
Commercial:	22.0	00.0%
Industrial:	75.9	00.1%
Transport:	04.3	00.0%
Water:	25015.8	20.8%

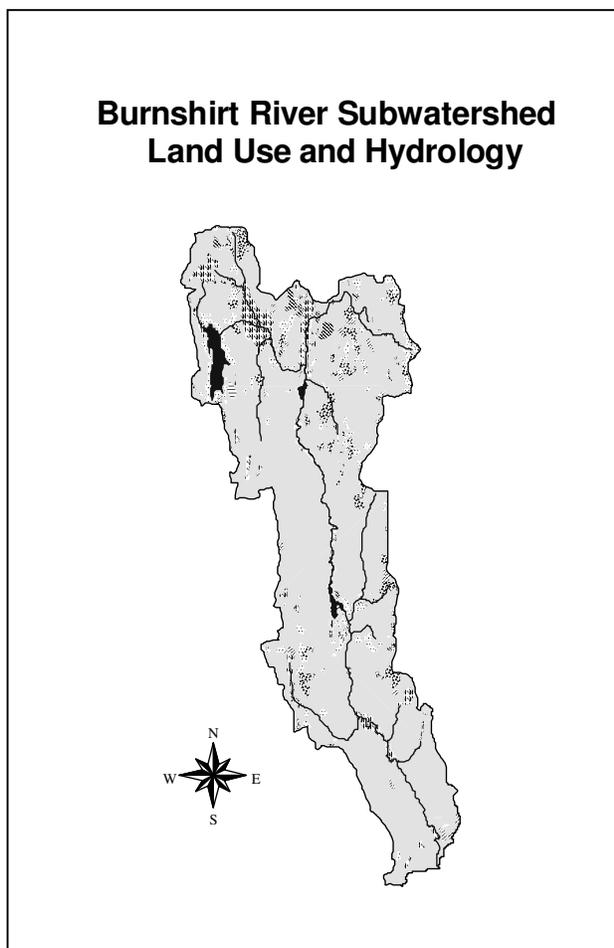
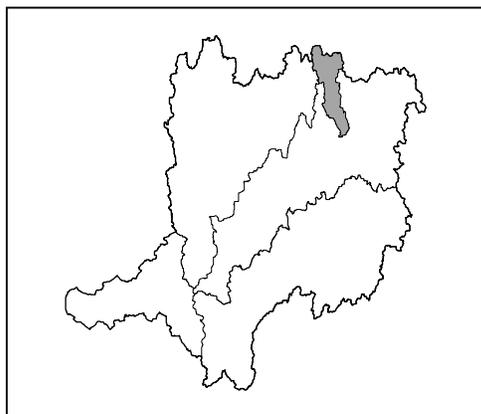
Total Area = 120002.2 acres (187.59 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 321857.6 pounds, or 1715.8 lbs/sq mi  
 Average Annual Phosphorus Load = 29052.2 pounds, or 154.9 lbs/sq mi  
 Average Annual Suspended Solids Load = 5727611.2 pounds, or 30532.6 lbs/sq mi

The impervious area is 1398.9 acres  
 This makes the percentage of imperviousness 1.2%

**Ware River Watershed  
Burnshirt River Subwatershed  
(17.3 sq mi)**



Land use Summary:

Agriculture:	418.3	03.8%
Forest:	9502.1	85.6%
Wetlands:	324.1	02.9%
Open land:	120.8	01.1%
Residential:	416.7	03.8%
Commercial:	02.8	00.0%
Industrial:	72.2	00.7%
Transport:	00.0	00.0%
Water:	242.2	02.2%

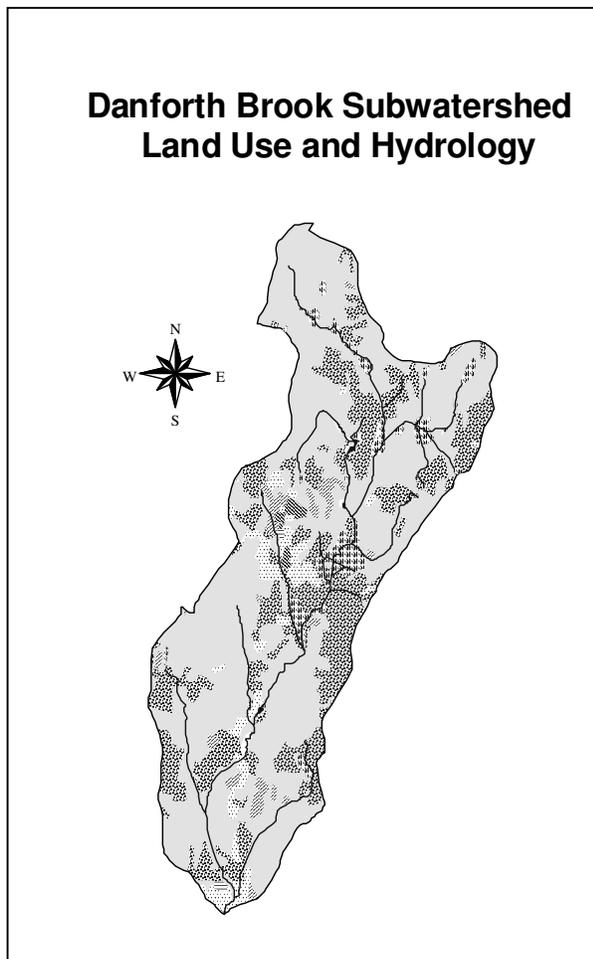
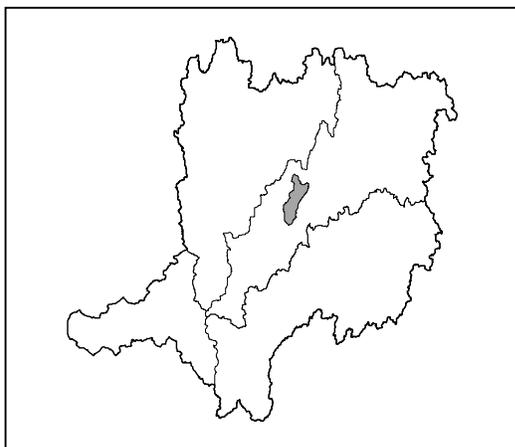
Total Area 11099.4 acres (17.34 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	31741.2 pounds, or	1830.5 lbs/sq mi
Average Annual Phosphorus Load =	2123.3 pounds, or	122.5 lbs/sq mi
Average Annual Suspended Solids Load =	512875.1 pounds, or	29577.6 lbs/sq mi

The impervious area is 162.8 acres  
This makes the percentage of imperviousness 1.5%

**Ware River Watershed  
Danforth Brook Subwatershed  
(5.4 sq mi)**



Land use Summary:

Agriculture:	901.1	26.0%
Forest:	2261.1	65.1%
Wetlands:	29.0	00.8%
Open land:	103.9	03.0%
Residential:	154.4	04.4%
Commercial:	10.4	00.3%
Industrial:	00.0	00.0%
Transport:	00.0	00.0%
Water:	10.8	00.3%

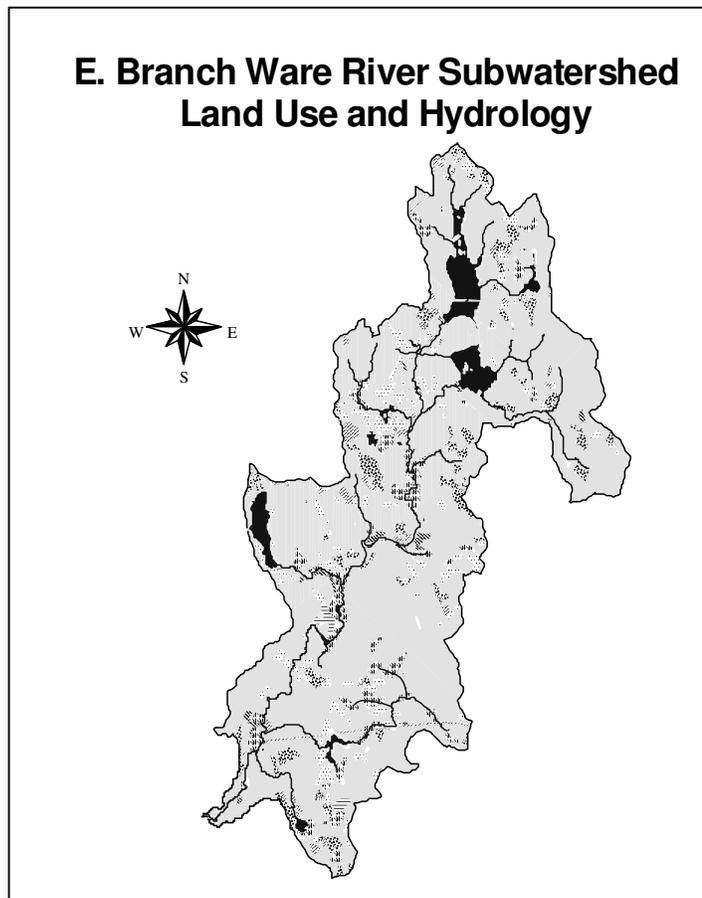
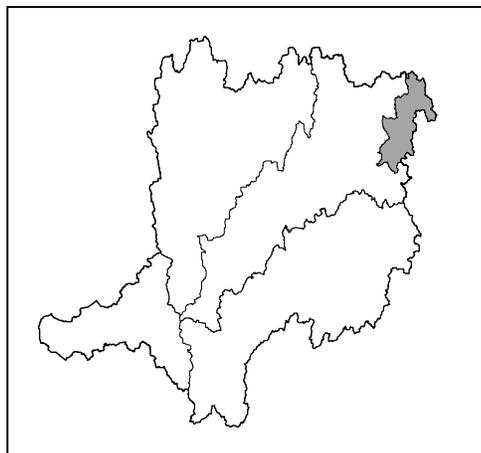
Total Area 3470.7 acres (5.42 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 10683.0 pounds, or 1971.0 lbs/sq mi  
 Average Annual Phosphorus Load = 1109.9 pounds, or 204.8 lbs/sq mi  
 Average Annual Suspended Solids Load = 363318.3 pounds, or 67032.9 lbs/sq mi

The impervious area 62.9 acres  
 This makes the percentage of imperviousness 1.8%

**Ware River Watershed  
E. Branch Ware River Subwatershed  
(22.3 sq mi)**



**Land use Summary:**

Agriculture:	582.0	04.1%
Forest:	11530.3	80.7%
Wetlands:	454.2	03.2%
Open land:	285.5	02.0%
Residential:	647.0	04.5%
Commercial:	21.0	00.1%
Industrial:	41.3	00.3%
Transport:	00.0	00.0%
Water:	718.5	05.0%

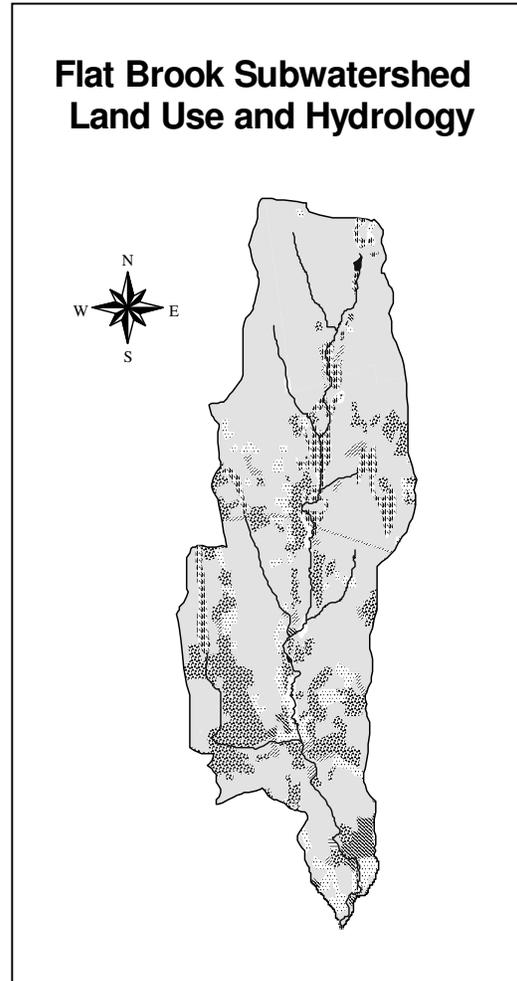
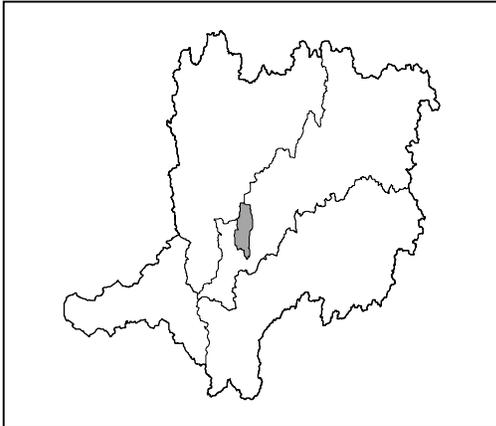
Total Area 14279.9 acres (22.31 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	41461.2 pounds, or	1858.4 lbs/sq mi
Average Annual Phosphorus Load =	3169.5 pounds, or	142.1 lbs/sq mi
Average Annual Suspended Solids Load =	771005.7 pounds, or	34558.7 lbs/sq mi

The impervious area is 224.5 acres  
This makes the percentage of imperviousness 1.6%

**Ware River Watershed  
Flat Brook Subwatershed  
(6.8 sq mi)**



Land use Summary:

Agriculture:	631.1	14.6%
Forest:	3214.7	74.5%
Wetlands:	80.4	01.9%
Open land:	126.9	02.9%
Residential:	232.8	05.4%
Commercial:	03.4	00.1%
Industrial:	17.4	00.4%
Transport:	00.0	00.0%
Water:	11.2	00.3%

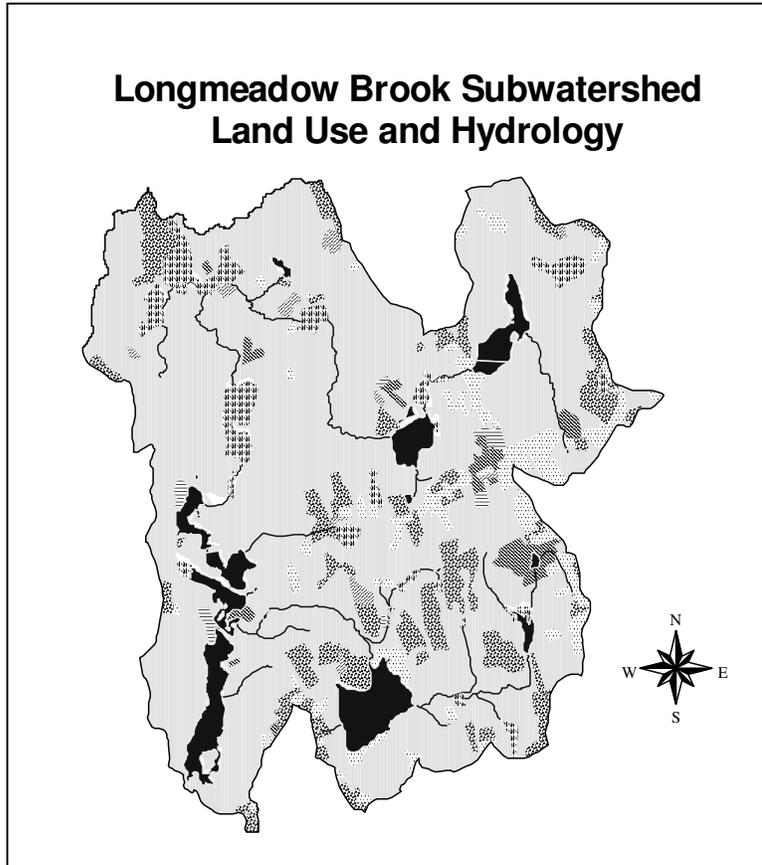
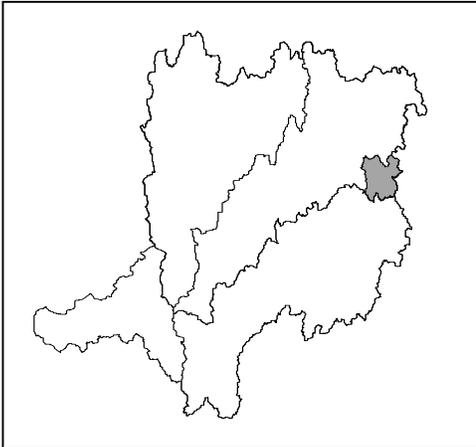
Total Area 4318.0 acres (6.75 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 13246.3 pounds, or 1963.3 lbs/sq mi  
 Average Annual Phosphorus Load = 1193.0 pounds, or 176.8 lbs/sq mi  
 Average Annual Suspended Solids Load = 351796.5 pounds, or 52142.1 lbs/sq mi

The impervious area is 80.6 acres  
 This makes the percentage of imperviousness 1.9%

**Ware River Watershed  
Longmeadow Brook Subwatershed  
(11.4 sq mi)**



**Land use Summary:**

Agriculture:	660.1	09.0%
Forest:	5403.6	74.0%
WeWetlands:	261.3	03.6%
Open land:	191.4	02.6%
Residential:	399.1	05.5%
Commercial:	37.5	00.5%
Industrial:	10.8	00.1%
Transport:	00.0	00.0%
Water:	340.9	04.7%

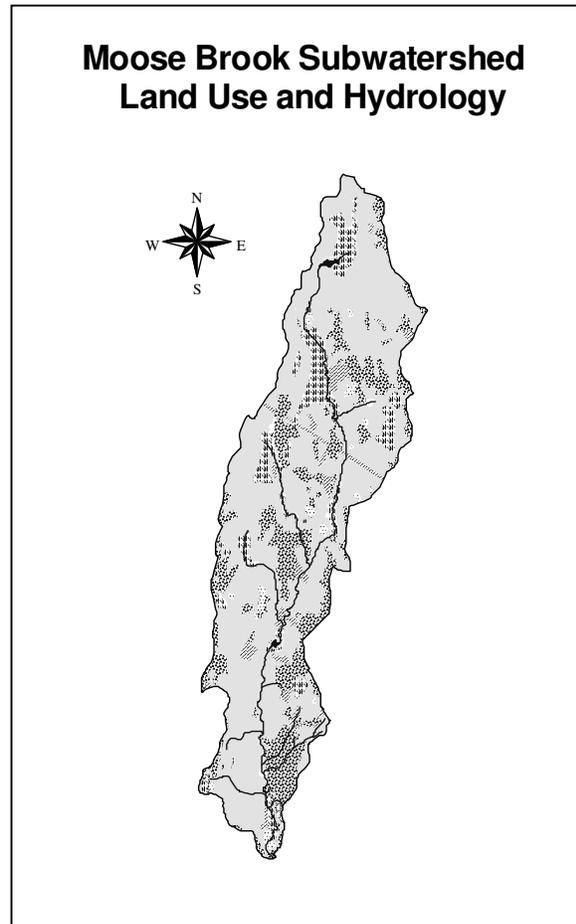
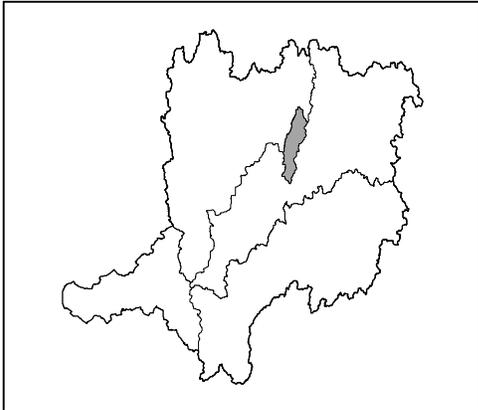
Total Area 7304.6 acres (11.41 mi<sup>2</sup>)

**Estimated Nonpoint Source Pollution loads based on Landuse:**

Average Annual Nitrogen Load =	22950.9 pounds, or	2011.5 lbs/sq mi
Average Annual Phosphorus Load =	2073.4 pounds, or	181.7 lbs/sq mi
Average Annual Suspended Solids Load =	573016.0 pounds, or	50220.5 lbs/sq mi

The impervious area is 142.8 acres  
This makes the percentage of imperviousness 2.0%

**Ware River Watershed  
Moose Brook Subwatershed  
(10.1 sq mi)**



Land use Summary:

Agriculture:	1165.6	18.1%
Forest:	4638.9	71.9%
Wetlands:	230.1	03.6%
Open land:	244.4	03.8%
Residential:	73.9	01.1%
Commercial:	00.0	00.0%
Industrial:	00.0	00.0%
Transport:	00.0	00.0%
Water:	101.6	01.6%

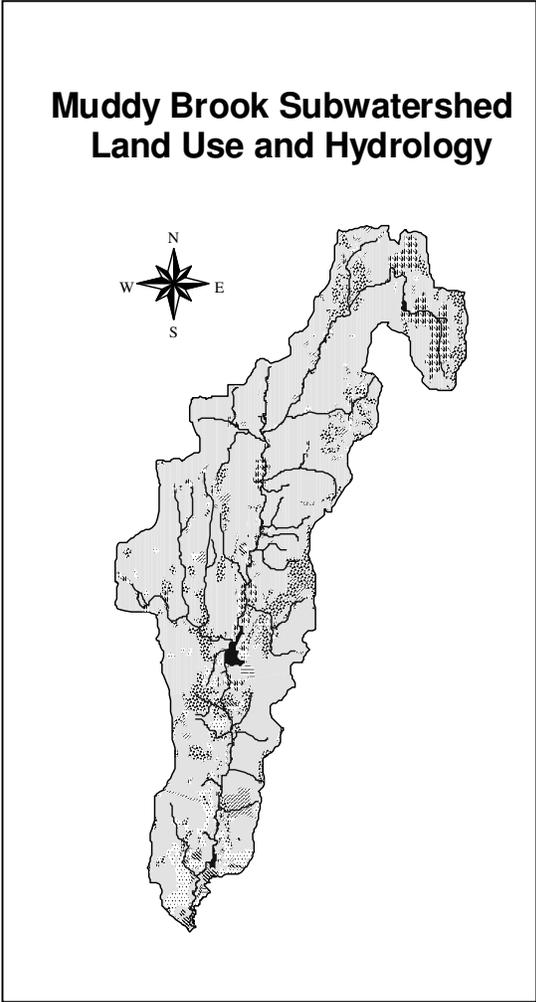
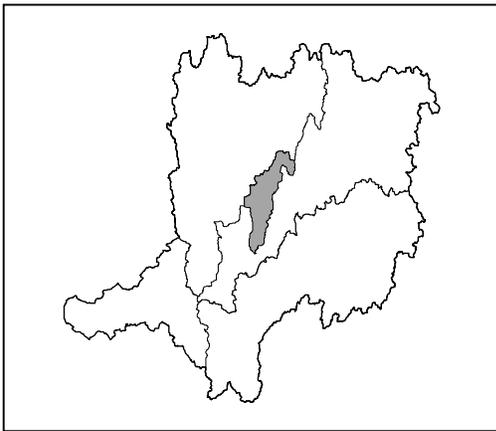
Total Area 6454.4 acres (10.09 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 17945.3 pounds, or 1778.5 lbs/sq mi  
 Average Annual Phosphorus Load = 1435.9 pounds, or 142.3 lbs/sq mi  
 Average Annual Suspended Solids Load = 475563.5 pounds, or 47132.2 lbs/sq mi

The impervious area 71.2 acres  
 This makes the percentage of imperviousness 1.1%

**Ware River Watershed  
Muddy Brook Subwatershed  
(20 sq mi)**



Land use Summary:

Agriculture:	1275.4	09.9%
Forest:	10106.7	78.8%
Wetlands:	381.9	03.0%
Open land:	360.0	02.8%
Residential:	527.4	04.1%
Commercial:	22.7	00.2%
Industrial:	25.7	00.2%
Transport:	00.0	00.0%
Water:	125.9	01.0%

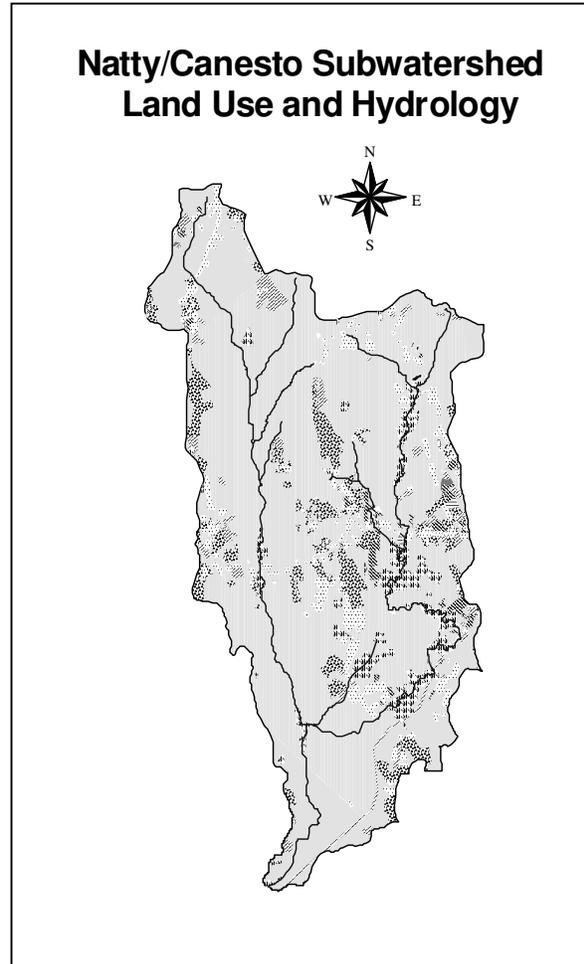
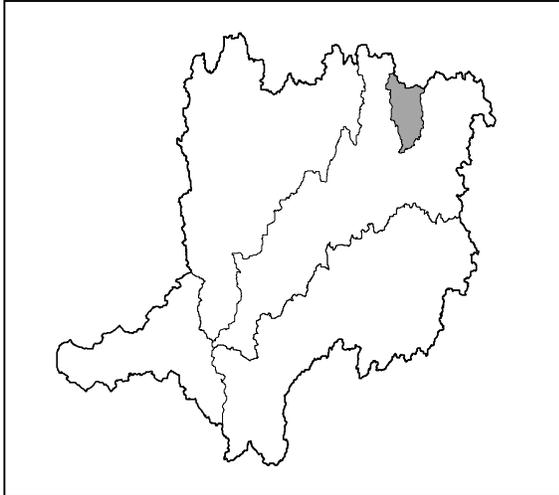
Total Area 12825.7 acres (20.04 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 38164.0 pounds, or 1904.4 lbs/sq mi  
 Average Annual Phosphorus Load = 3019.6 pounds, or 150.7 lbs/sq mi  
 Average Annual Suspended Solids Load = 841253.8 pounds, or 41978.7 lbs/sq mi

The impervious area is 229.9 acres  
 This makes the percentage of imperviousness 1.8%

**Ware River Watershed  
Natty/Canesto Subwatershed  
(13.2 sq mi)**



Land use Summary:

Agriculture:	592.3	07.0%
Forest:	6765.8	79.8%
Wetlands:	238.3	02.8%
Open land:	285.0	03.4%
Residential:	491.7	05.8%
Commercial:	23.9	00.3%
Industrial:	59.4	00.7%
Transport:	05.5	00.1%
Water:	12.5	00.1%

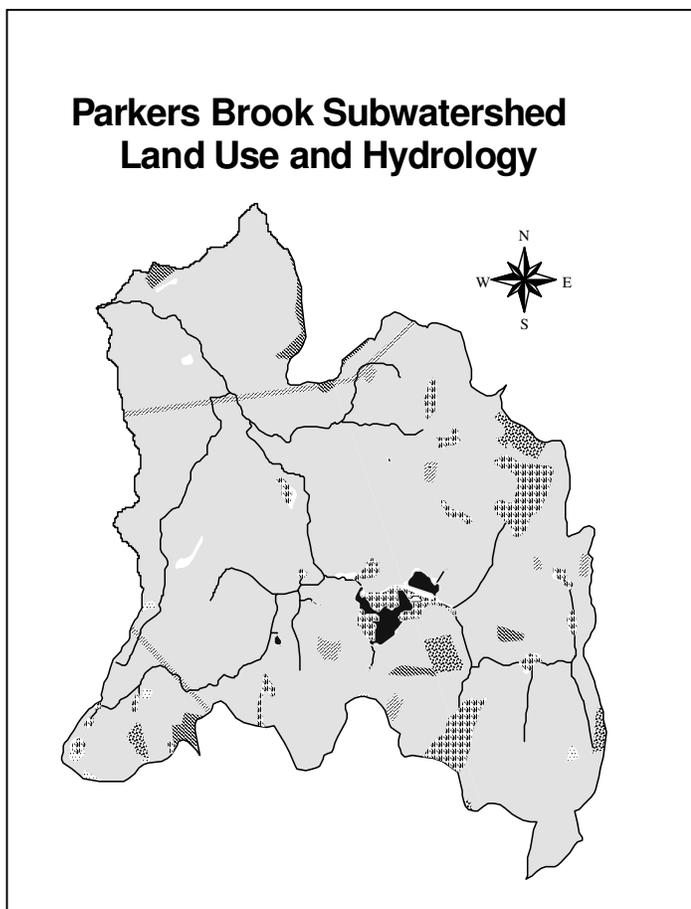
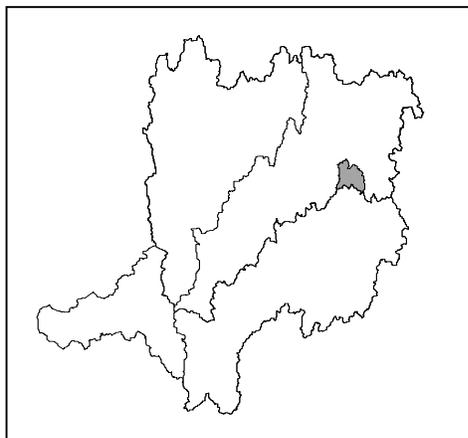
Total Area 8474.4 acres (13.24 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 25286.9 pounds, or 1909.9 lbs/sq mi  
 Average Annual Phosphorus Load = 1985.1 pounds, or 149.9 lbs/sq mi  
 Average Annual Suspended Solids Load = 530794.3 pounds, or 40090.2 lbs/sq mi

The impervious area is 164.2 acres  
 This makes the percentage of imperviousness 1.9%

**Ware River Watershed  
Parkers Brook Subwatershed  
(5.5 sq mi)**



**Land use Summary:**

Agriculture:	51.5	01.5%
Forest:	3275.6	92.9%
Wetlands:	54.7	01.6%
Open land:	74.8	02.1%
Residential:	10.6	00.3%
ReCommercial:	00.0	00.0%
Industrial:	34.5	01.0%
Transport:	00.0	00.0%
Water:	24.0	00.7%

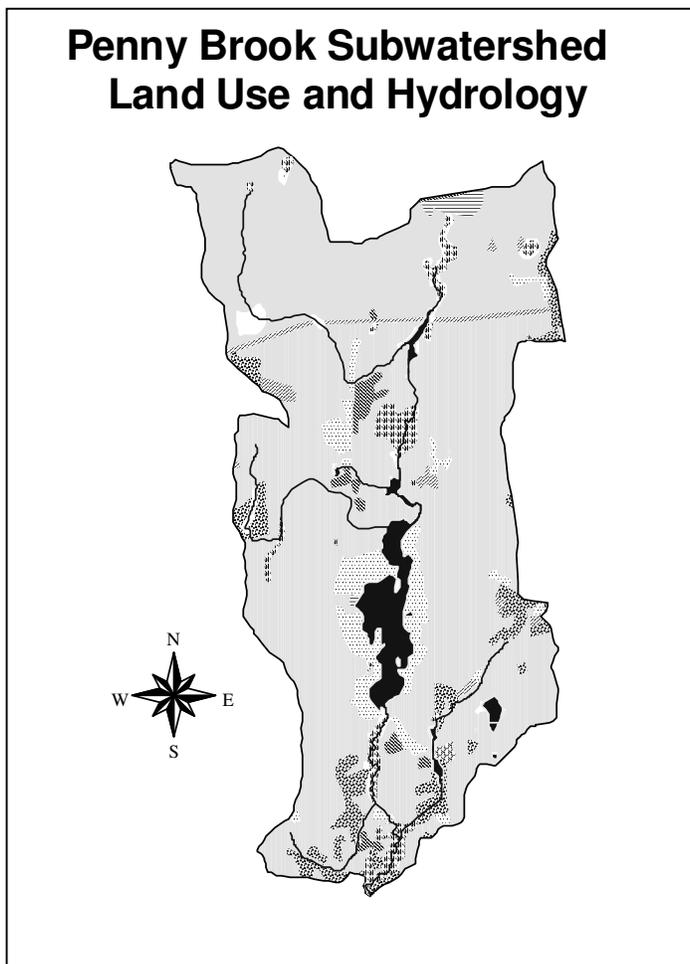
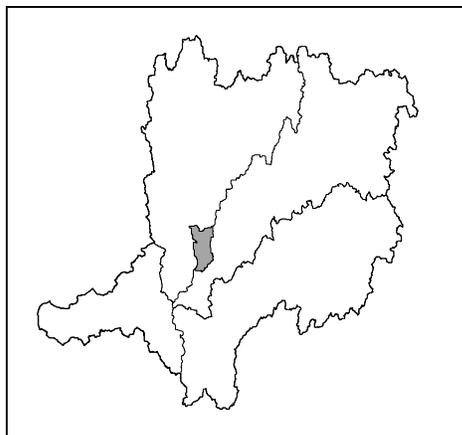
Total Area = 3525.6 acres (5.51 mi<sup>2</sup>)

**Estimated Nonpoint Source Pollution loads based on Landuse:**

Average Annual Nitrogen Load =	9225.0 pounds, or	1674.2 lbs/sq mi
Average Annual Phosphorus Load =	410.3 pounds, or	74.5 lbs/sq mi
Average Annual Suspended Solids Load =	90182.0 pounds, or	16367.0 lbs/sq mi

The impervious area is 36.2 acres  
This makes the percentage of imperviousness 1.0%

**Ware River Watershed  
Penny Brook Subwatershed  
(7.0 sq mi)**



Land use Summary:

Agriculture:	229.9	05.1%
Forest:	3557.1	79.2%
Wetlands:	147.5	03.3%
Open land:	126.5	02.8%
Residential:	228.5	05.1%
Commercial:	06.3	00.1%
Industrial:	21.6	00.5%
Transport:	00.0	00.0%
Water:	173.3	03.9%

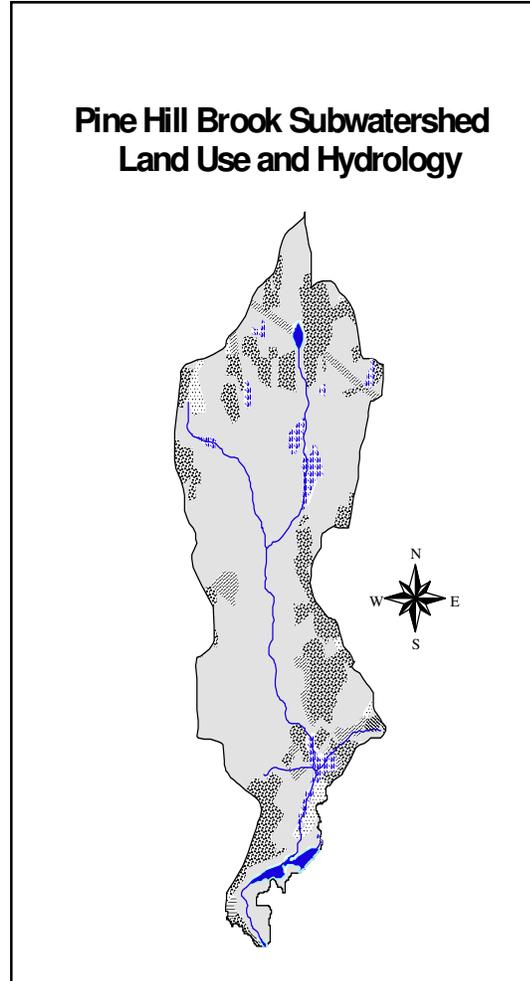
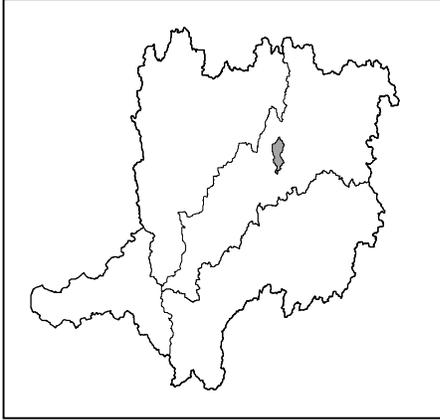
Total Area = 4490.8 acres (7.02 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	13593.7 pounds, or	1936.4 lbs/sq mi
Average Annual Phosphorus Load =	1108.7 pounds, or	157.9 lbs/sq mi
Average Annual Suspended Solids Load =	274889.1 pounds, or	39158.0 lbs/sq mi

The impervious area is 91.6 acres  
This makes the percentage of imperviousness 2.0%

**Ware River Watershed  
Pine Hill Brook Subwatershed  
(2.7 sq mi)**



Land use Summary:

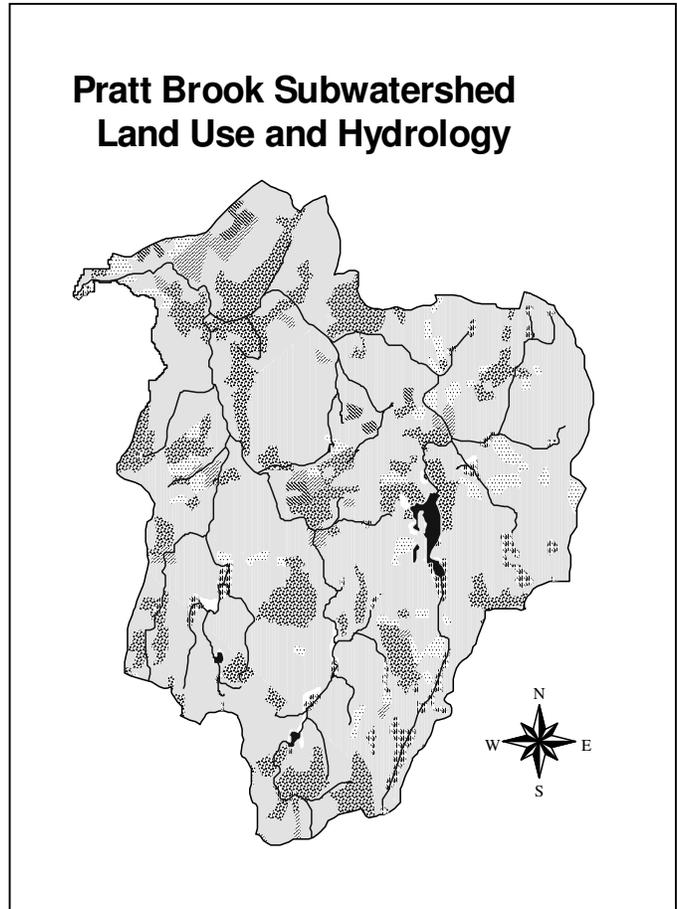
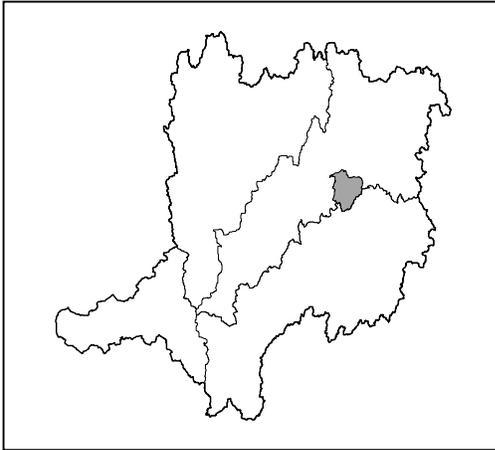
Agriculture:	328.5	19.1%
Forest:	1249.1	72.5%
Wetlands:	22.8	01.3%
Open land:	60.5	03.5%
Residential:	32.9	01.9%
Commercial:	03.3	00.2%
Industrial:	06.3	00.4%
Transport:	00.0	00.0%
Water:	19.0	01.1%
Total Area 1722.5 acres (2.69 mi <sup>2</sup> )		

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	4896.3 pounds, or	1820.2 lbs/sq mi
Average Annual Phosphorus Load =	412.6 pounds, or	153.4 lbs/sq mi
Average Annual Suspended Solids Load =	176285.9 pounds, or	65533.8 lbs/sq mi

The impervious area is 20.7 acres	0.7 acres
This makes the percentage of imperviousness 1.2%	imperviousness 1.2%

**Ware River Watershed  
Pratt Brook Subwatershed  
(7.5 sq mi)**



Land use Summary:

Agriculture:	793.1	16.5%
Forest:	3572.4	74.5%
Wetlands:	42.5	00.9%
Open land:	116.9	02.4%
Residential:	187.8	03.9%
Commercial:	00.0	00.0%
Industrial:	34.5	00.7%
Transport:	00.0	00.0%
Water:	46.8	01.0%

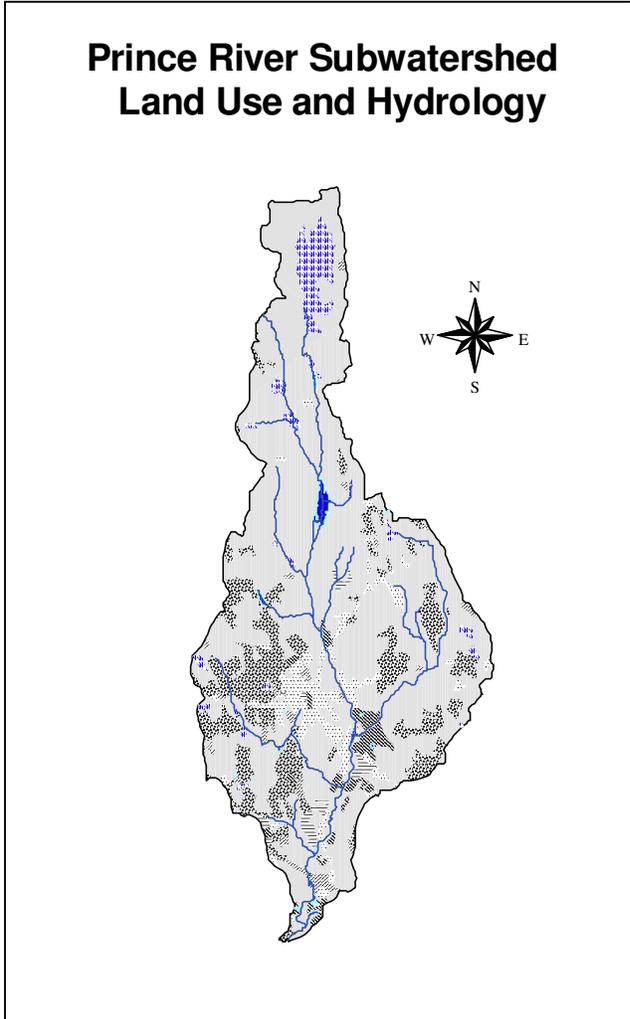
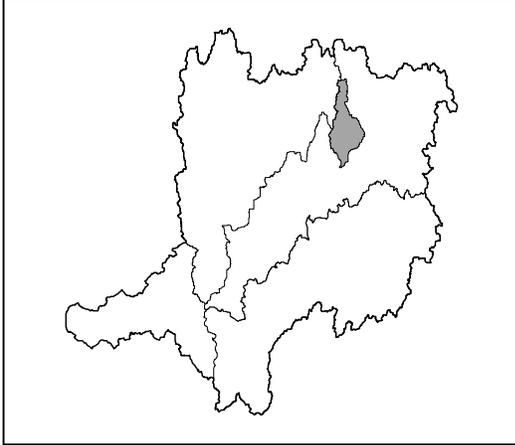
Total Area = 4794.0 acres (7.49 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	13941.0 pounds, or 1861.3 lbs/sq mi
Average Annual Phosphorus Load =	1211.5 pounds, or 161.7 lbs/sq mi
Average Annual Suspended Solids Load =	412065.1 pounds, or 55015.4 lbs/sq mi

The impervious area is 69.1 acres  
This makes the percentage of imperviousness 1.4%

**Ware River Watershed  
Natty/Canesto Subwatershed  
(13.2 sq mi)**



Land use Summary:

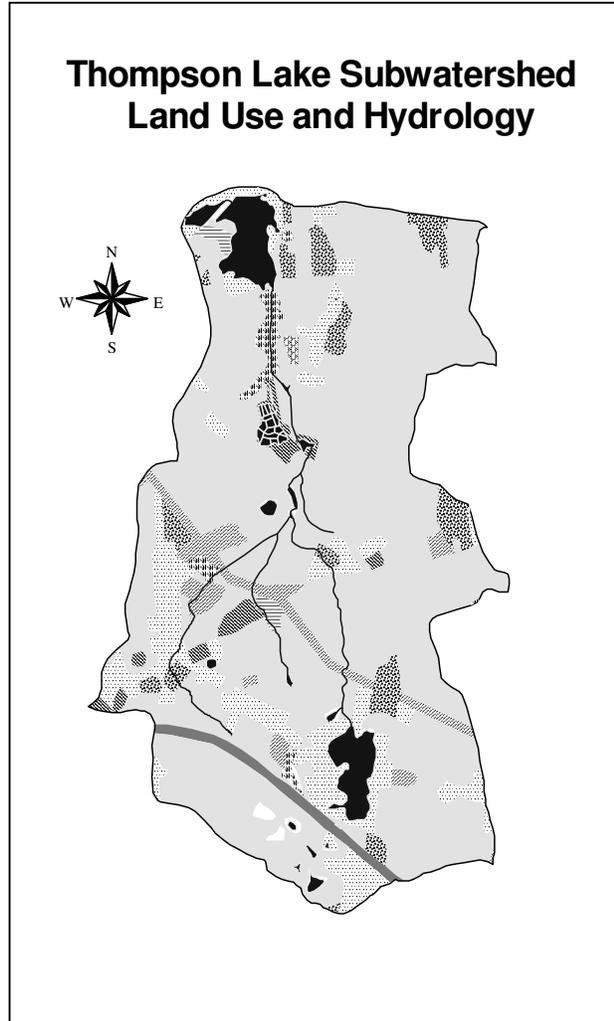
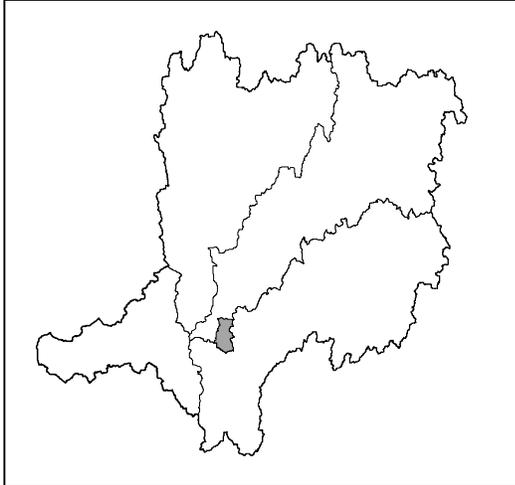
Agriculture:	1256.0	14.0%
Forest:	6705.3	75.0%
Wetlands:	29.2	00.3%
Open land:	306.0	03.4%
Residential:	459.0	05.1%
Commercial:	19.7	00.2%
Industrial:	118.2	01.3%
Transport:	00.0	00.0%
Water:	47.2	00.5%
 Total Area 8940.6 acres (13.99 mi <sup>2</sup> )		

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	27391.7 pounds, or	1957.9 lbs/sq mi
Average Annual Phosphorus Load =	2507.0 pounds, or	179.2 lbs/sq mi
Average Annual Suspended Solids Load =	846360.9 pounds, or	60497.6 lbs/sq mi

The impervious area is 180.5 acres  
This makes the percentage of imperviousness 2.0%

**Ware River Watershed  
Thompson Lake Subwatershed  
(3.6 sq mi)**



Land use Summary:

Agriculture:	105.1	04.5%
Forest:	1659.2	71.2%
Wetlands:	19.2	00.8%
Open land:	149.0	06.4%
Residential:	269.7	11.6%
Commercial:	03.3	00.1%
Industrial:	04.8	00.2%
Transport:	32.4	01.4%
Water:	87.9	03.8%

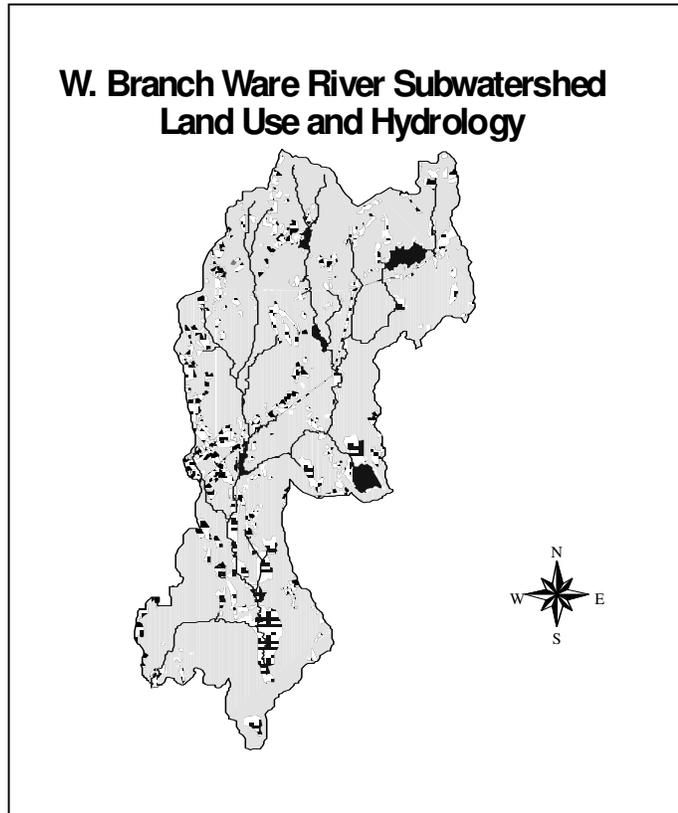
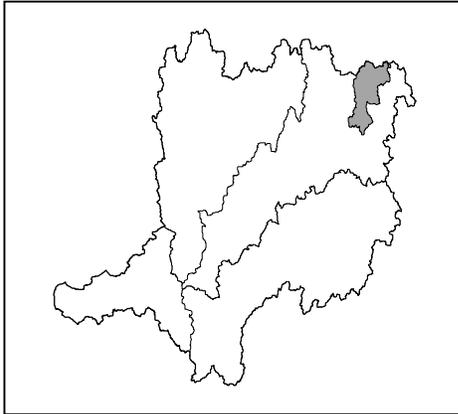
Total Area = 2330.5 acres (3.64 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	8179.2 pounds, or	2246.0 lbs/sq mi
Average Annual Phosphorus Load =	896.2 pounds, or	246.1 lbs/sq mi
Average Annual Suspended Solids Load =	227872.7 pounds, or	62578.2 lbs/sq m

The impervious area is 78.1 acres  
This makes the percentage of imperviousness 3.4%

**Ware River Watershed  
W. Branch Ware River Subwatershed  
(16.6 sq mi)**



**Land use Summary:**

Agriculture:	354.1	03.3%
Forest:	8915.4	83.8%
Wetlands:	254.3	02.4%
Open land:	332.1	03.1%
Residential:	424.2	04.0%
Commercial:	23.1	00.2%
Industrial:	41.5	00.4%
Transport:	01.8	00.0%
Water:	298.4	02.8%

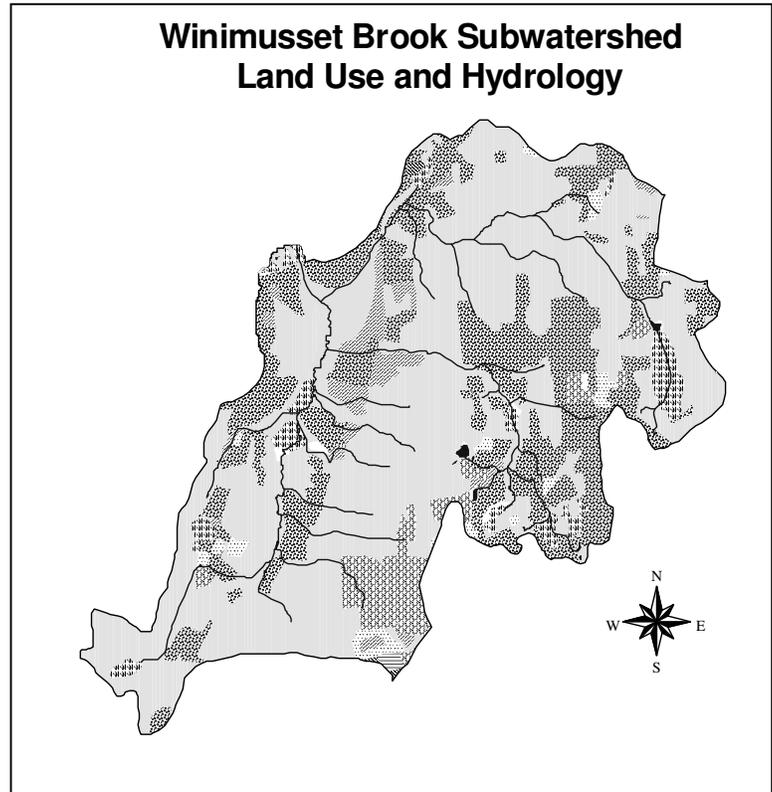
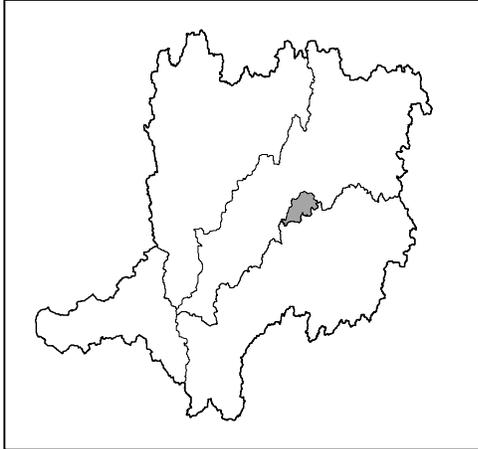
Total Area = 10644.7 acres (16.63 mi<sup>2</sup>)

**Estimated Nonpoint Source Pollution loads based on Landuse:**

Average Annual Nitrogen Load =	30441.9 pounds, or	1830.5 lbs/sq mi
Average Annual Phosphorus Load =	2120.7 pounds, or	127.5 lbs/sq mi
Average Annual Suspended Solids Load =	485225.1 pounds, or	29177.7 lbs/sq mi

The impervious area is 179.6 acres  
This makes the percentage of imperviousness 1.7%

**Ware River Watershed  
Winimuset Brook Subwatershed  
(5.6 sq mi)**



**Land use Summary:**

Agriculture:	931.0	26.1%
Forest:	2246.2	63.0%
Wetlands:	31.5	00.9%
Open land:	288.5	08.1%
Residential:	57.2	01.6%
Commercial:	06.0	00.2%
Industrial:	00.0	00.0%
Transport:	00.0	00.0%
Water:	06.3	00.2%

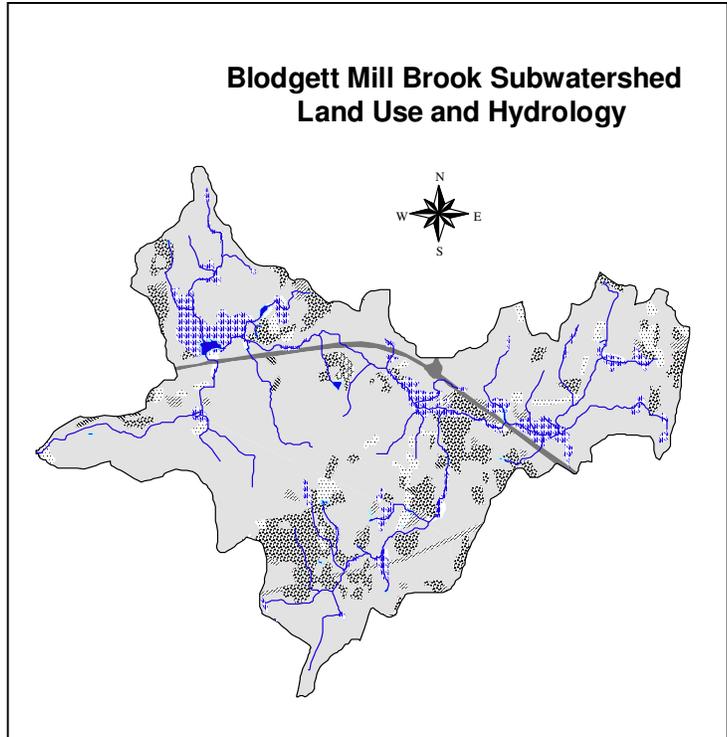
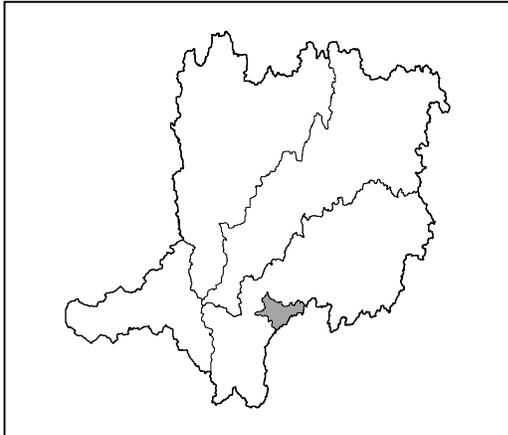
Total Area = 3566.7 acres (5.57 mi<sup>2</sup>)

**Estimated Nonpoint Source Pollution loads based on Landuse:**

Average Annual Nitrogen Load = 9826.8 pounds, or 1764.2 lbs/sq mi  
 Average Annual Phosphorus Load = 940.1 pounds, or 168.8 lbs/sq mi  
 Average Annual Suspended Solids Load = 385826.8 pounds, or 69268.7 lbs/sq mi

The impervious area is 41.3 acres  
 This makes the percentage of imperviousness 1.2%

**Quaboag River Watershed  
Blodgett Mill Brook Subwatershed  
(7.7 sq mi)**



Land use Summary:

Agriculture:	594.0	12.0%
Forest:	3845.0	77.9%
Wetlands:	142.5	02.9%
Open land:	122.3	02.5%
Residential:	144.4	02.9%
Commercial:	00.0	00.0%
Industrial:	04.2	00.1%
Transport:	82.1	01.7%
Water:	01.2	00.0%

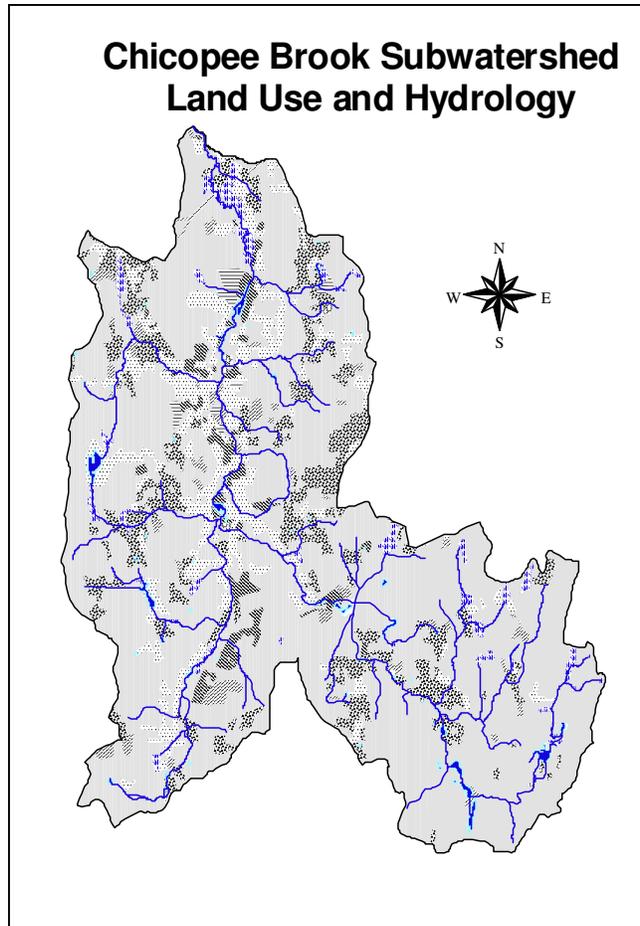
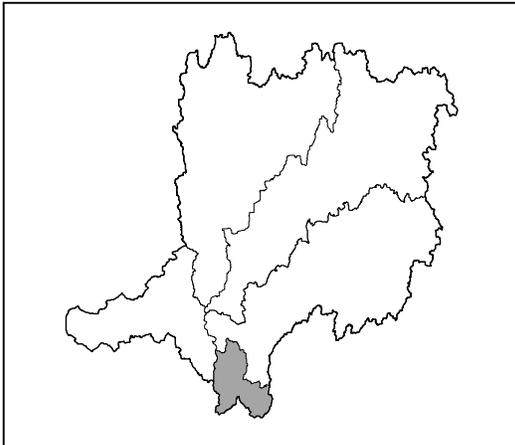
Total Area = 4935.5 acres (7.71 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 14777.4 pounds, or 1916.2 lbs/sq mi  
 Average Annual Phosphorus Load = 1251.8 pounds, or 162.3 lbs/sq mi  
 Average Annual Suspended Solids Load = 358297.9 pounds, or 46461.5 lbs/sq mi

The impervious area is 127.1 acres  
 This makes the percentage of imperviousness 2.6%

**Quaboag River Watershed  
Chicopee Brook Subwatershed  
(24 sq mi)**



Land use Summary:

Agriculture:	1663.9	10.8%
Forest:	11263.4	73.2%
Wetlands:	51.7	00.3%
Open land:	578.2	03.8%
Residential:	1424.5	09.3%
Commercial:	77.3	00.5%
Industrial:	222.5	01.4%
Transport:	00.0	00.0%
Water:	95.2	00.6%

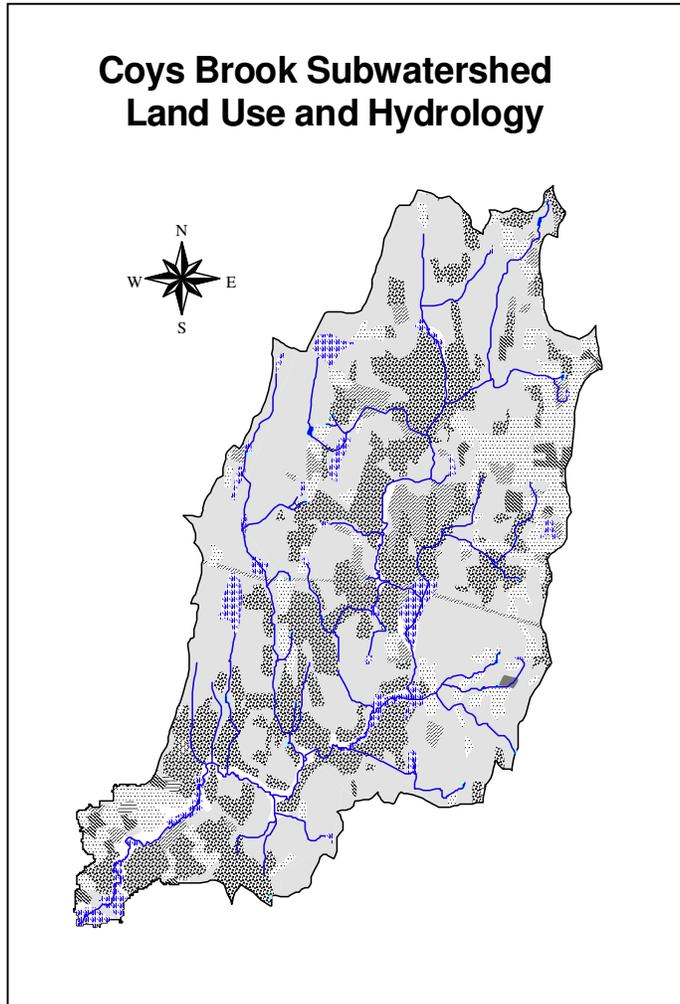
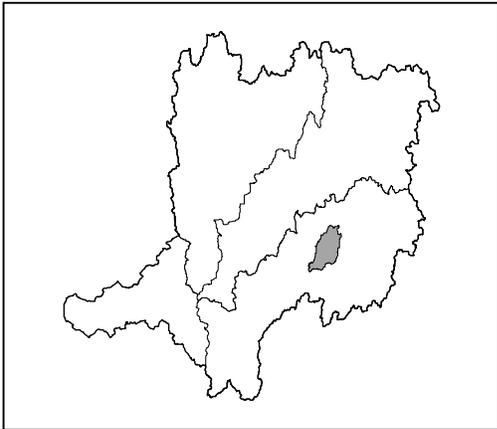
Total Area = 15376.8 acres (24.03 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 51147.3 pounds, or 2128.8 lbs/sq mi  
 Average Annual Phosphorus Load = 5139.9 pounds, or 213.9 lbs/sq mi  
 Average Annual Suspended Solids Load = 1403862.9 pounds, or 58430.4 lbs/sq mi

The impervious area is 442.8 acres  
 This makes the percentage of imperviousness 2.9%

**Quaboag River Watershed  
Coys Brook Subwatershed  
(8.3 sq mi)**



Land use Summary:

Agriculture:	1423.9	26.7%
Forest:	2782.3	52.2%
Wetlands:	179.8	03.4%
Open land:	300.0	05.6%
Residential:	585.1	11.0%
Commercial:	34.9	00.7%
Industrial:	22.3	00.4%
Transport:	04.6	00.1%
Water:	01.5	00.0%

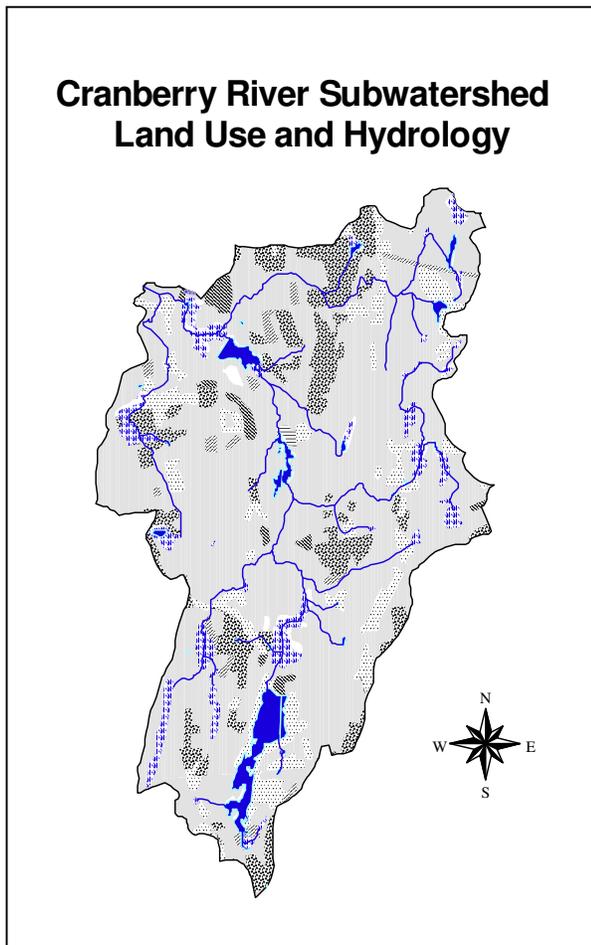
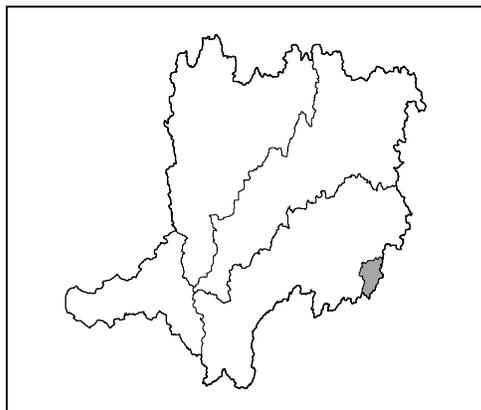
Total Area = 5334.6 acres (8.34 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 19075.4 pounds, or 2288.5 lbs/sq mi  
 Average Annual Phosphorus Load = 2397.2 pounds, or 287.6 lbs/sq mi  
 Average Annual Suspended Solids Load = 792810.0 pounds, or 95114.6 lbs/sq mi

The impervious area is 181.2 acres  
 This makes the percentage of imperviousness 3.4%

**Quaboag River Watershed  
Cranberry River Subwatershed  
(6.5 sq mi)**



Land use Summary:

Agriculture:	470.3	11.3%
Forest:	2961.6	71.3%
Wetlands:	124.1	03.0%
Open land:	87.1	02.1%
Residential:	372.4	09.0%
Commercial:	01.9	00.0%
Industrial:	50.6	01.2%
Transport:	00.0	00.0%
Water:	87.3	02.1%

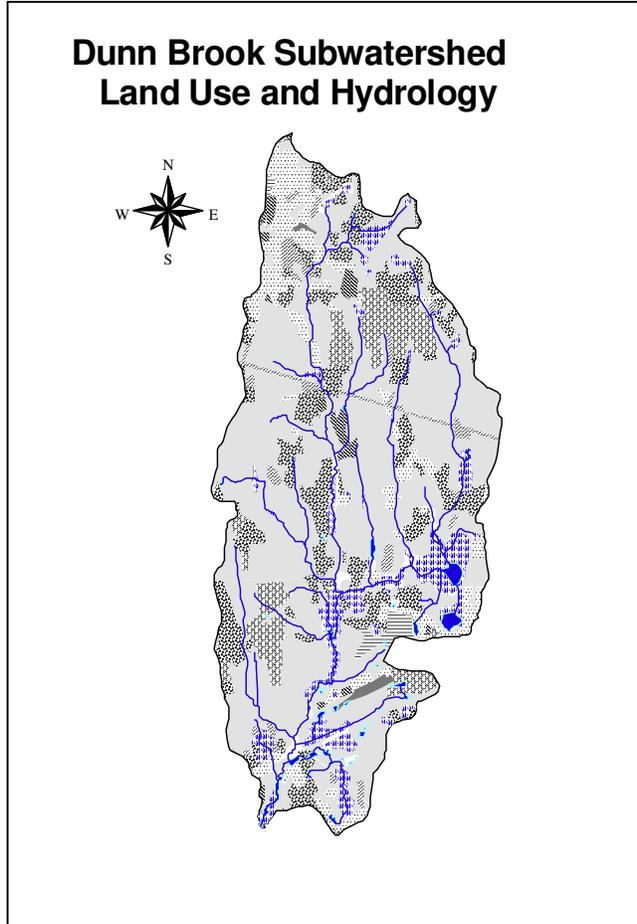
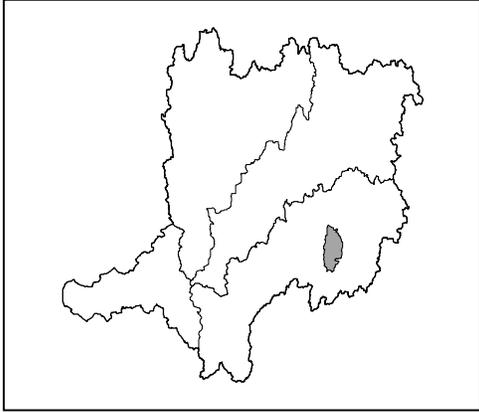
Total Area 4155.4 acres (6.49 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 13330.4 pounds, or 2053.1 lbs/sq mi  
 Average Annual Phosphorus Load = 1306.8 pounds, or 201.3 lbs/sq mi  
 Average Annual Suspended Solids Load = 393123.9 pounds, or 60547.6 lbs/sq mi

The impervious area is 84.9 acres  
 This makes the percentage of imperviousness 2.0%

**Quaboag River Watershed  
Dunn Brook Subwatershed  
(6.8 sq mi)**



Land use Summary:

Agriculture:	615.1	14.2%
Forest:	2576.9	59.4%
Wetlands:	210.0	04.8%
Open land:	470.3	10.8%
Residential:	373.8	08.6%
Commercial:	12.6	00.3%
Industrial:	36.0	00.8%
Transport:	19.3	00.4%
Water:	23.7	00.5%

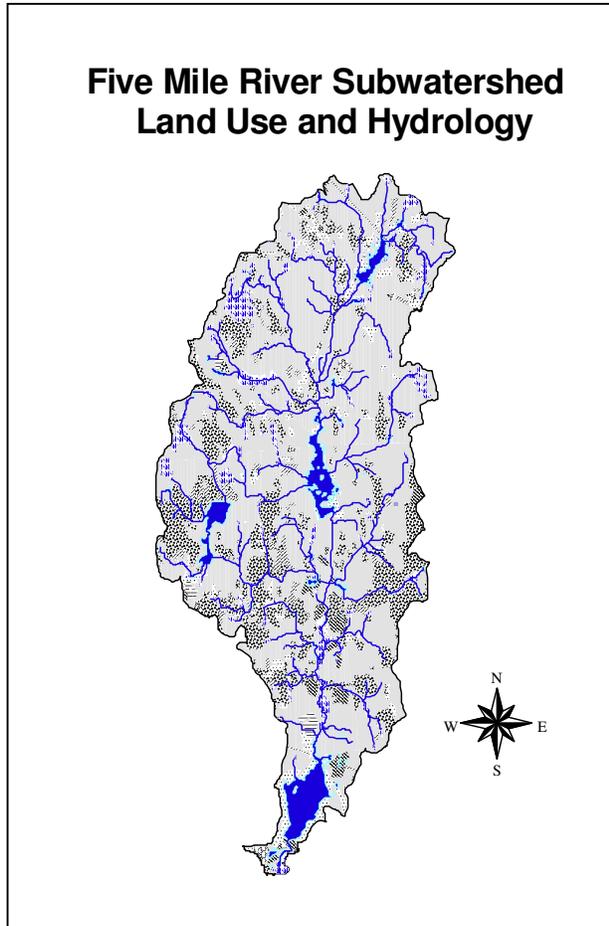
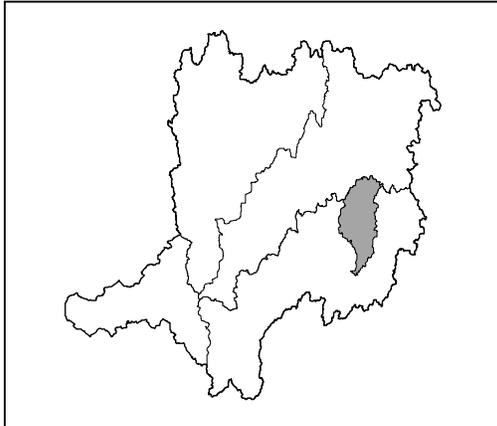
Total Area = 4337.7 acres (6.78 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	14176.8 pounds, or	2091.7 lbs/sq mi
Average Annual Phosphorus Load =	1560.7 pounds, or	230.3 lbs/sq mi
Average Annual Suspended Solids Load =	472395.8 pounds, or	69699.0 lbs/sq mi

The impervious area is 138.3 acres  
This makes the percentage of imperviousness 3.2%

**Quaboag River Watershed  
Five Mile River Subwatershed  
(24.9 sq mi)**



Land use Summary:

Agriculture:	2708.8	17.0%
Forest:	10793.2	67.8%
Wetlands:	280.8	01.8%
Open land:	605.3	03.8%
Residential:	674.8	04.2%
Commercial:	32.0	00.2%
Industrial:	169.8	01.1%
Transport:	01.6	00.0%
Water:	658.6	04.1%

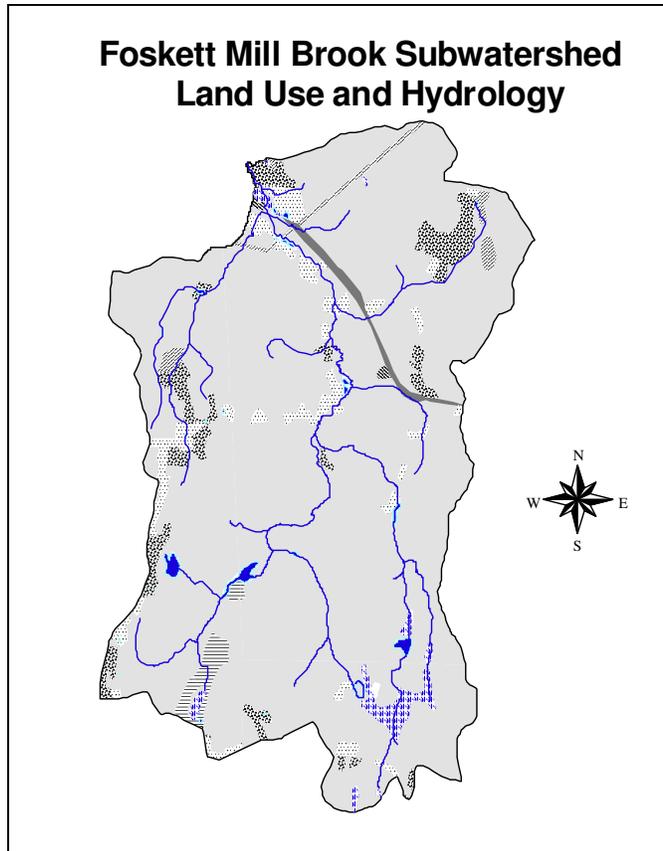
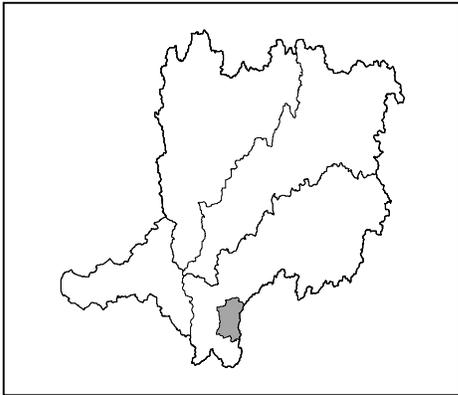
Total Area = 15924.9 acres (24.88 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	47550.9 pounds, or	1911.0 lbs/sq mi
Average Annual Phosphorus Load =	4619.6 pounds, or	185.7 lbs/sq mi
Average Annual Suspended Solids Load =	1507681.3 pounds, or	60591.7 lbs/sq mi

The impervious area is 80.6 acres  
This makes the percentage of imperviousness 1.9%

**Quaboag River Watershed  
Foskett Bill Brook Subwatershed  
(9.8 sq mi)**



Land use Summary:

Agriculture:	273.4	04.4%
Forest:	5496.7	87.8%
Wetlands:	09.7	00.2%
Open land:	135.5	02.2%
Residential:	250.0	04.0%
Commercial:	00.0	00.0%
Industrial:	07.7	00.1%
Transport:	50.3	00.8%
Water:	37.4	00.6%

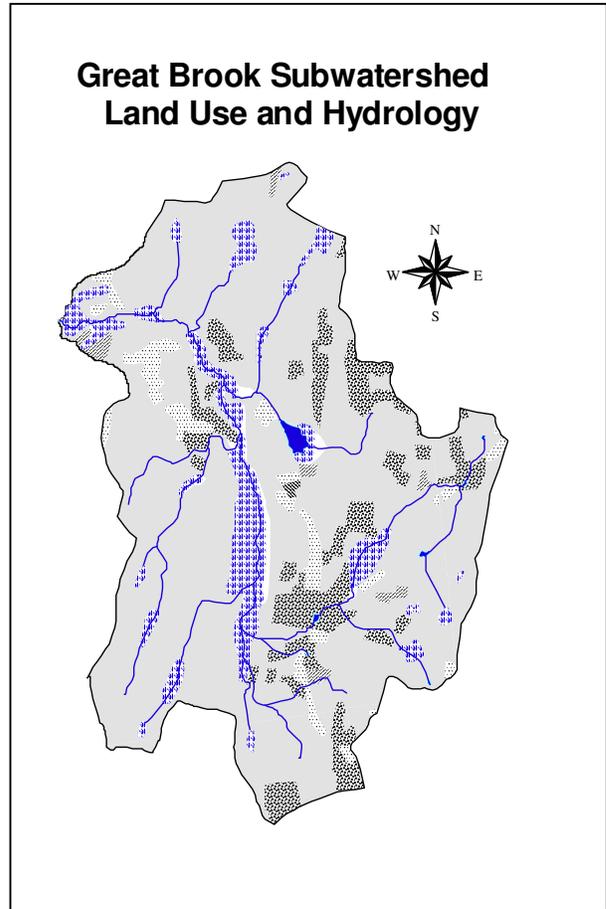
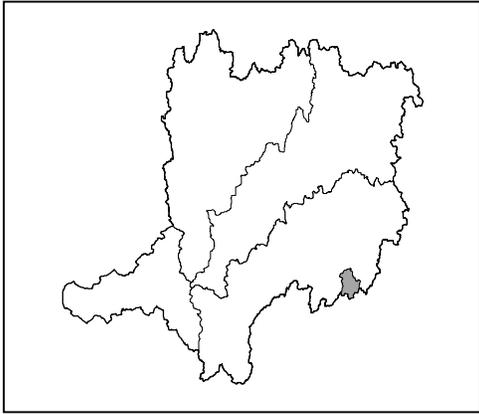
Total Area = 6260.8 acres (9.78 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 18324.5 pounds, or 1873.2 lbs/sq mi  
 Average Annual Phosphorus Load = 1344.8 pounds, or 137.5 lbs/sq mi  
 Average Annual Suspended Solids Load = 340537.7 pounds, or 34810.9 lbs/sq mi

The impervious area is 138.9 acres  
 This makes the percentage of imperviousness 2.2%

**Quaboag River Watershed  
Great Brook Subwatershed  
(4.2 sq mi)**



Land use Summary:

Agriculture:	277.0	10.3%
Forest:	2158.8	80.4%
Wetlands:	103.6	03.9%
Open land:	28.8	01.1%
Residential:	103.6	03.9%
Commercial:	00.0	00.0%
Industrial:	02.8	00.1%
Transport:	00.0	00.0%
Water:	09.0	00.3%

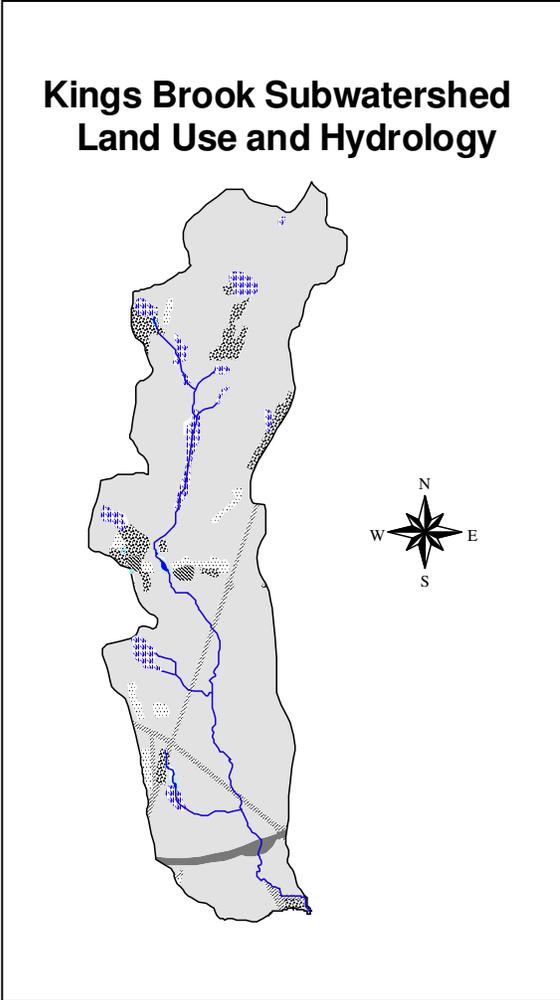
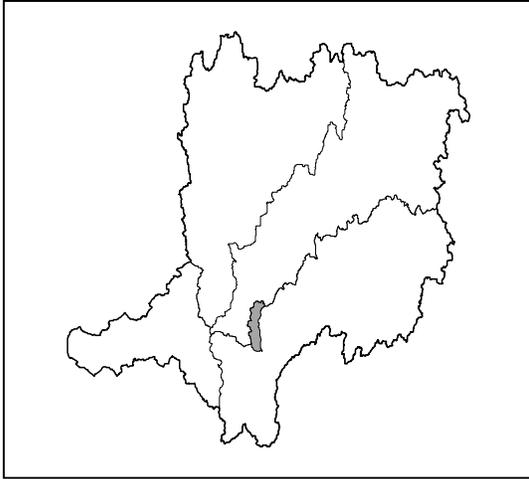
Total Area = 2683.6 acres (4.19 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	7812.8 pounds, or	1863.2 lbs/sq mi
Average Annual Phosphorus Load =	577.7 pounds, or	137.8 lbs/sq mi
Average Annual Suspended Solids Load =	170941.4 pounds, or	40767.1 lbs/sq mi

The impervious area is 36.2 acres  
This makes the percentage of imperviousness 1.3%

**Quaboag River Watershed  
Kings Brook Subwatershed  
(4.0 sq mi)**



Land use Summary:

Agriculture:	112.5	04.3%
Forest:	2289.4	88.4%
Wetlands:	14.3	00.6%
Open land:	72.7	02.8%
Residential:	52.9	02.0%
Commercial:	00.0	00.0%
Industrial:	11.5	00.4%
Transport:	30.4	01.2%
Water:	05.4	00.2%

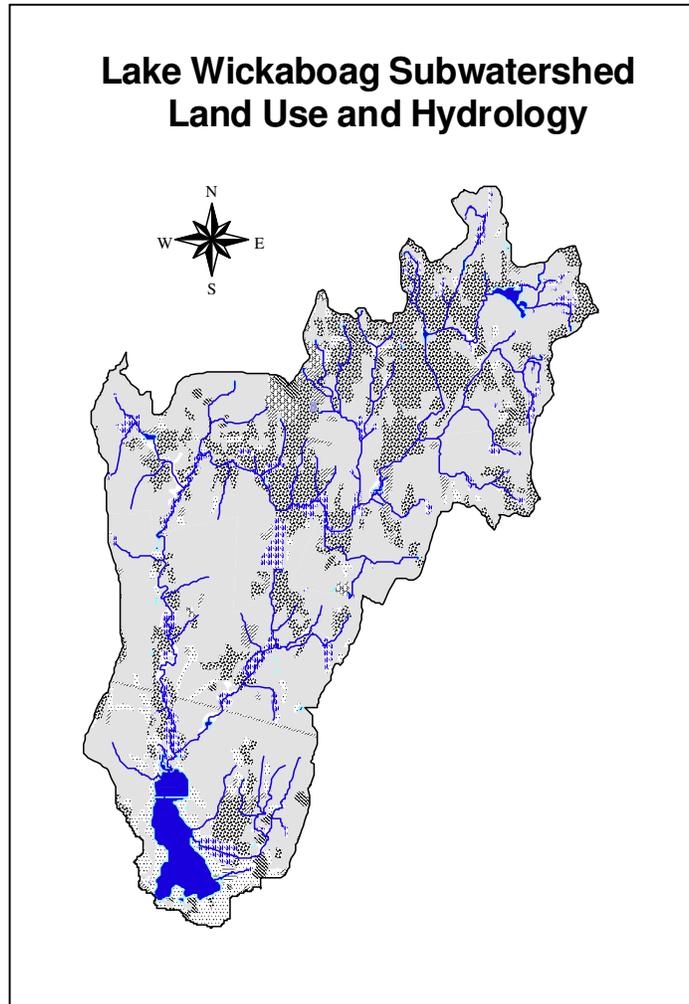
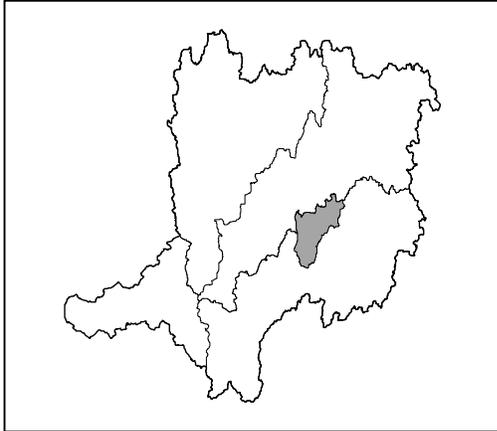
Total Area = 2589.0 acres (4.05 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	7238.3 pounds, or	1789.3 lbs/sq mi
Average Annual Phosphorus Load =	471.3 pounds, or	116.5 lbs/sq mi
Average Annual Suspended Solids Load =	134777.4 pounds, or	33316.9 lbs/sq mi

The impervious area is 53.1 acres  
This makes the percentage of imperviousness 2.1%

**Quaboag River Watershed  
Lake Wickaboag Subwatershed  
(17.7 sq mi)**



Land use Summary:

Agriculture:	2500.2	22.0%
Forest:	7092.5	62.5%
Wetlands:	328.7	02.9%
Open land:	466.8	04.1%
Residential:	554.0	04.9%
Commercial:	15.2	00.1%
Industrial:	29.9	00.3%
Transport:	00.4	00.0%
Water:	358.1	03.2%

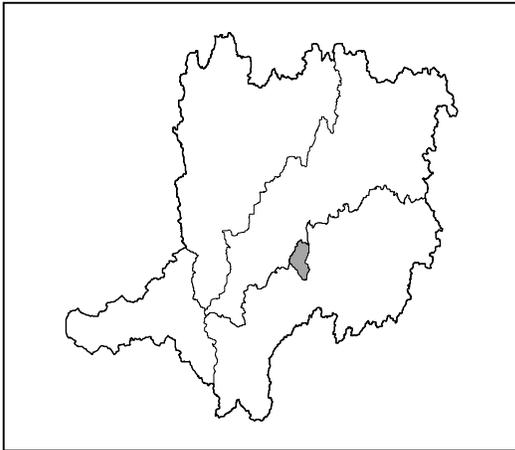
Total Area = 11345.8 acres (17.73 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

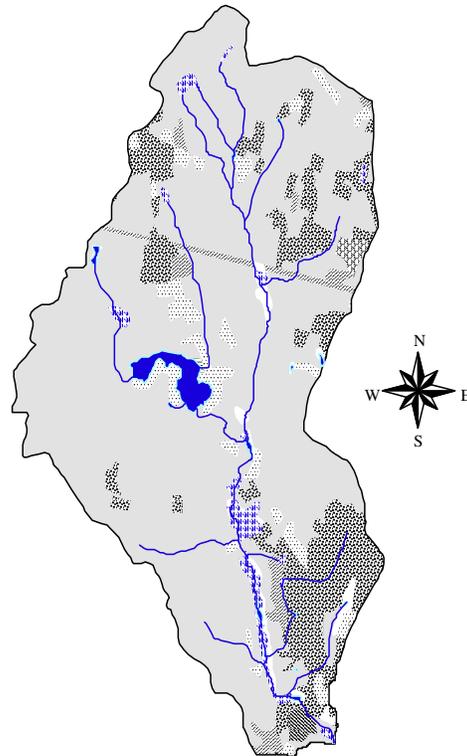
Average Annual Nitrogen Load =	35138.4 pounds, or	1982.1 lbs/sq mi
Average Annual Phosphorus Load =	3724.7 pounds, or	210.1 lbs/sq mi
Average Annual Suspended Solids Load =	1210074.8 pounds, or	68258.6 lbs/sq mi

The impervious area is 236.4 acres  
This makes the percentage of imperviousness 2.1%

**Quaboag River Watershed  
Lamberton Brook Subwatershed  
(4.5 sq mi)**



**Lamberton Brook Subwatershed  
Land Use and Hydrology**



Land use Summary:

Agriculture:	396.9	13.7%
Forest:	2180.1	75.0%
Wetlands:	61.5	02.1%
Open land:	84.3	02.9%
Residential:	128.1	04.4%
Commercial:	00.0	00.0%
Industrial:	12.9	00.4%
Transport:	00.0	00.0%
Water:	43.2	01.5%

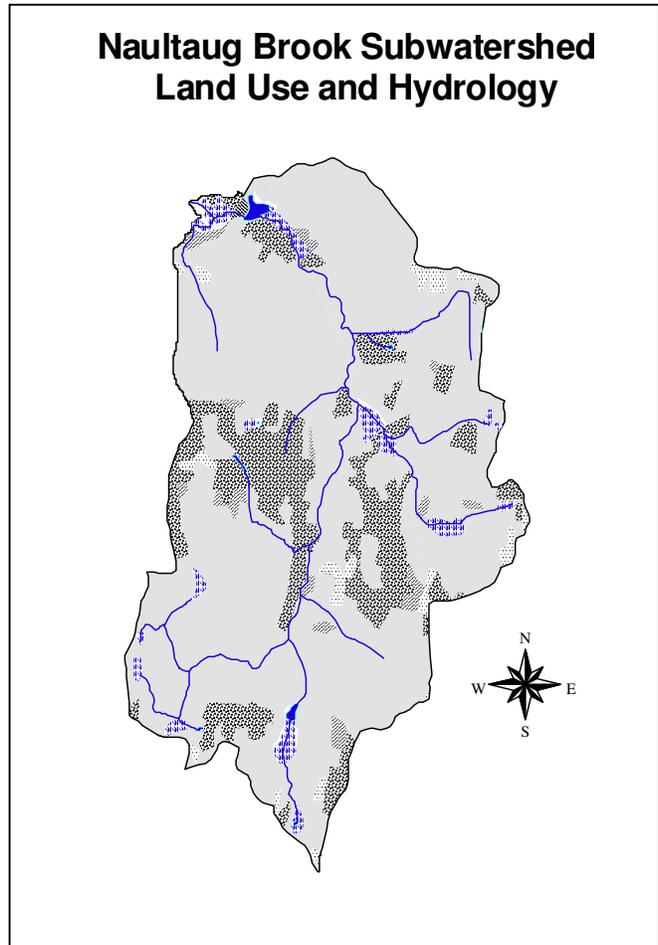
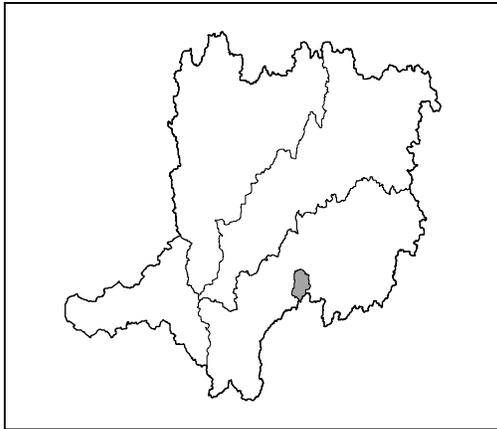
Total Area = 2906.9 acres (4.54 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 8459.6 pounds, or 1862.5 lbs/sq mi  
 Average Annual Phosphorus Load = 714.9 pounds, or 157.4 lbs/sq mi  
 Average Annual Suspended Solids Load = 211213.1 pounds, or 46501.9 lbs/sq mi

The impervious area is 42.6 acres  
 This makes the percentage of imperviousness 1.5%

**Quaboag River Watershed  
Naultaug Brook Subwatershed  
(3.9 sq mi)**



Land use Summary:

Agriculture:	404.7	16.3%
Forest:	1937.6	77.8%
Wetlands:	28.6	01.1%
Open land:	51.9	02.1%
Residential:	51.1	02.1%
Commercial:	03.2	00.1%
Industrial:	00.0	00.0%
Transport:	00.0	00.0%
Water:	13.2	00.5%

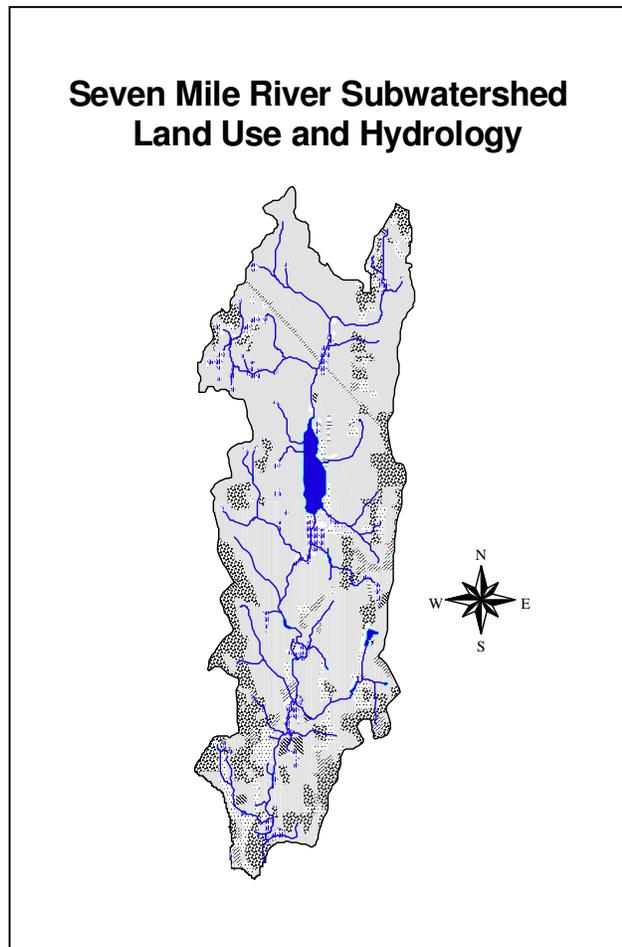
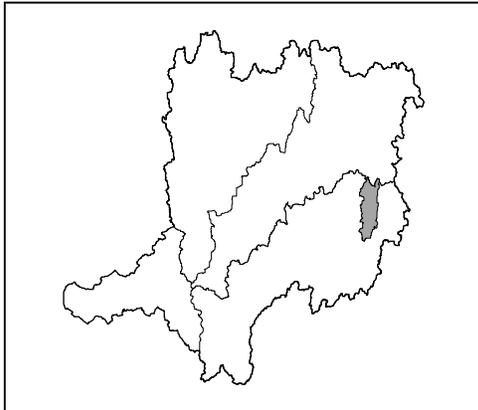
Total Area = 2490.3 acres (3.89 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	7010.6 pounds, or	1801.7 lbs/sq mi
Average Annual Phosphorus Load =	548.8 pounds, or	141.0 lbs/sq mi
Average Annual Suspended Solids Load =	197335.9 pounds, or	50714.8 lbs/sq mi

The impervious area is 32.4 acres  
This makes the percentage of imperviousness 1.3%

**Quaboag River Watershed  
Seven Mile River Subwatershed  
(9.5 sq mi)**



Land use Summary:

Agriculture:	931.6	15.4%
Forest:	4284.0	70.7%
Wetlands:	158.5	02.6%
Open land:	196.7	03.2%
Residential:	316.1	05.2%
Commercial:	10.0	00.2%
Industrial:	25.7	00.4%
Transport:	00.0	00.0%
Water:	137.5	02.3%

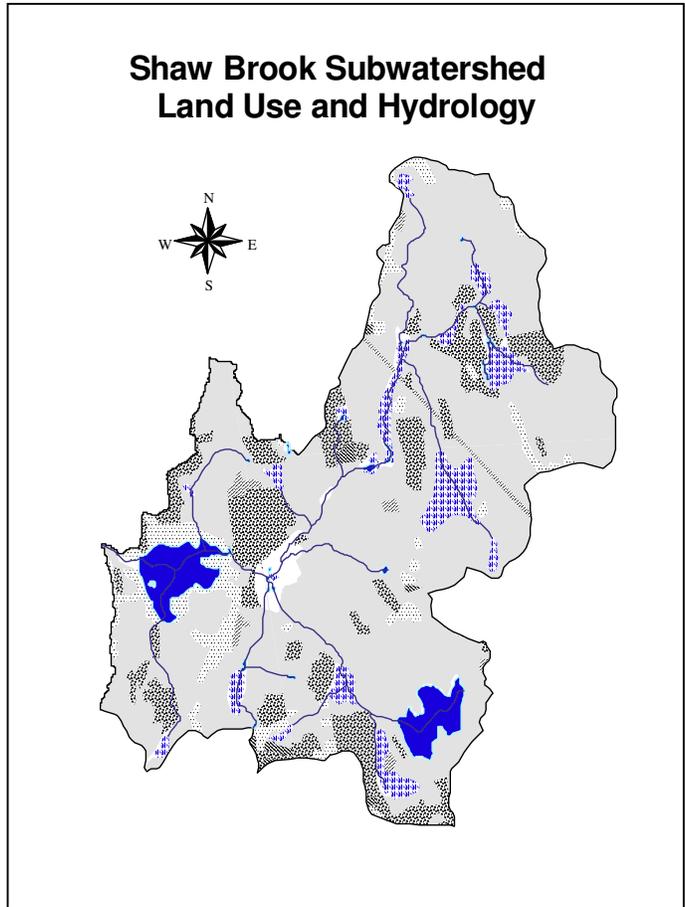
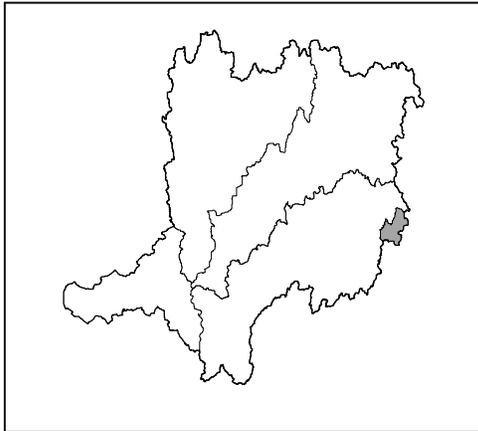
Total Area 6060.1 (9.47 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 18123.5 pounds, or 1914.0 lbs/sq mi  
 Average Annual Phosphorus Load = 1677.6 pounds, or 177.2 lbs/sq mi  
 Average Annual Suspended Solids Load = 505098.9 pounds, or 53342.9 lbs/sq mi

The impervious area is 98.0 acres  
 This makes the percentage of imperviousness 1.6%

**Quaboag River Watershed  
Shaw Brook Subwatershed  
(6.0 sq mi)**



Land use Summary:

Agriculture:	550.7	14.3%
Forest:	2718.6	70.4%
Wetlands:	97.5	02.5%
Open land:	48.3	01.3%
Residential:	228.0	05.9%
Commercial:	13.6	00.4%
Industrial:	06.6	00.2%
Transport:	00.1	00.0%
Water:	197.7	05.1%

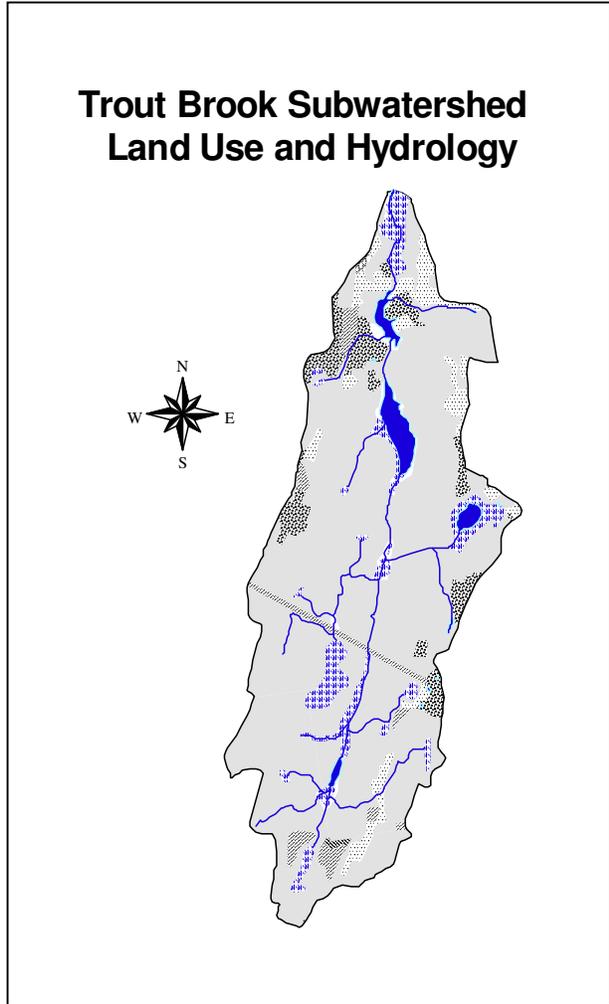
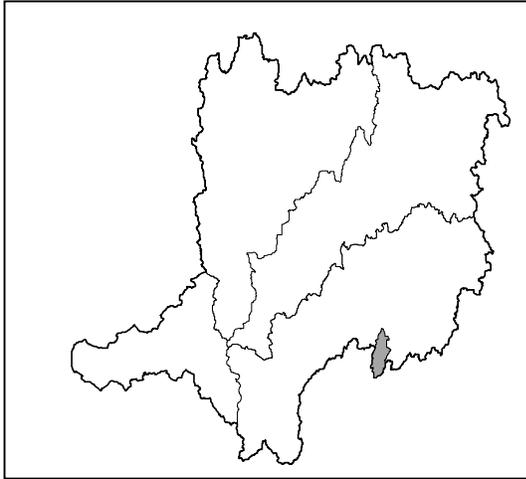
Total Area = 3861.1 acres (6.03 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 11937.0 pounds, or 1979.6 lbs/sq mi  
 Average Annual Phosphorus Load = 1177.6 pounds, or 195.3 lbs/sq mi  
 Average Annual Suspended Solids Load = 338505.7 pounds, or 56136.9 lbs/sq mi

The impervious area is 78.6 acres  
 This makes the percentage of imperviousness 2.0%

**Quaboag River Watershed  
Trout Brook Subwatershed  
(4.0 sq mi)**



Land use Summary:

Agriculture:	153.4	06.0%
Forest:	2035.6	80.2%
Wetlands:	65.4	02.6%
Open land:	80.2	03.2%
Residential:	127.8	05.0%
Commercial:	00.0	00.0%
Industrial:	03.7	00.1%
Transport:	00.0	00.0%
Water:	73.2	02.9%

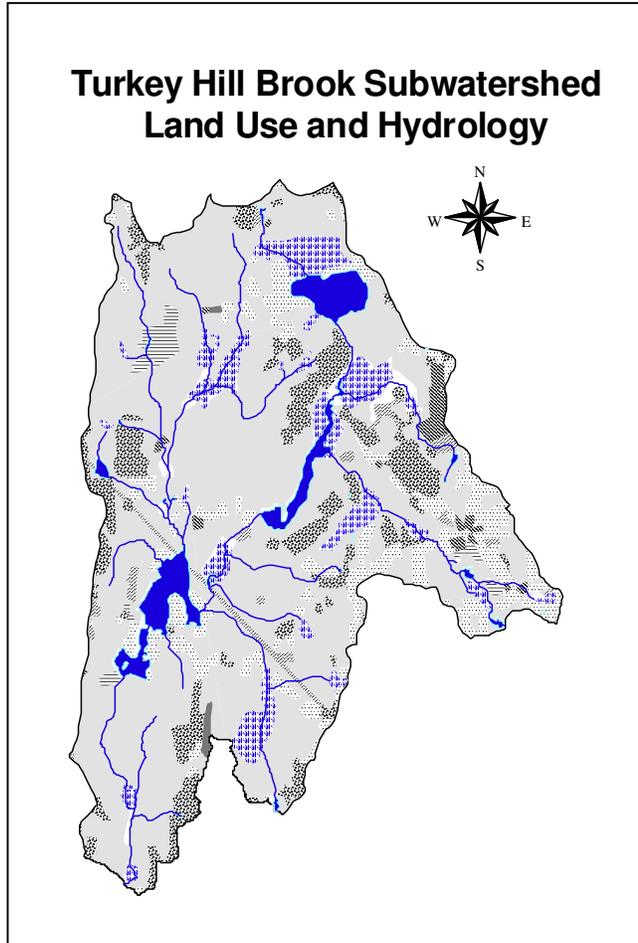
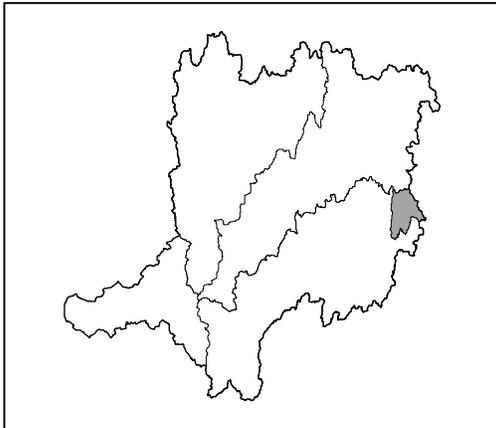
Total Area = 2539.3 acres (3.97 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 7461.0 pounds, or 1880.3 lbs/sq mi  
 Average Annual Phosphorus Load = 583.8 pounds, or 147.1 lbs/sq mi  
 Average Annual Suspended Solids Load = 162117.5 pounds, or 40856.2 lbs/sq mi

The impervious area is 50.1 acres  
 This makes the percentage of imperviousness 2.0%

**Quaboag River Watershed  
Turkey Hill Brook Subwatershed  
(10.2 sq mi)**



Land use Summary:

Agriculture:	651.1	10.0%
Forest:	4422.9	67.7%
Wetlands:	234.0	03.6%
Open land:	242.6	03.7%
Residential:	639.9	09.8%
Commercial:	23.4	00.4%
Industrial:	20.5	00.3%
Transport:	15.8	00.2%
Water:	280.6	04.3%

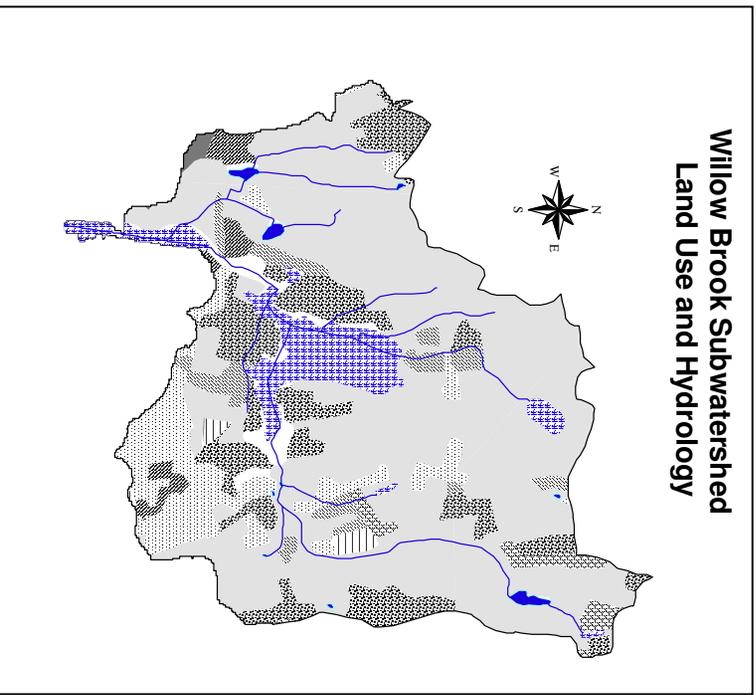
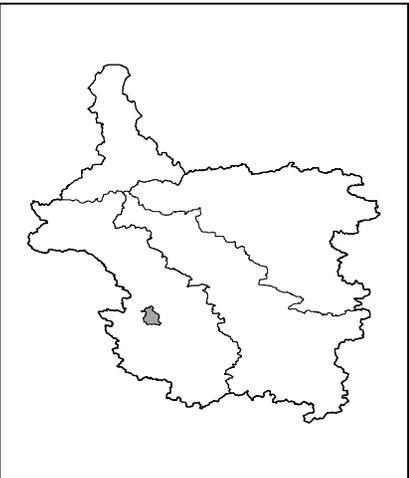
Total Area 6530.9 acres (10.2 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load = 21931.5 pounds, or 2149.2 lbs/sq mi  
 Average Annual Phosphorus Load = 2336.8 pounds, or 229.0 lbs/sq mi  
 Average Annual Suspended Solids Load = 638533.7 pounds, or 62573.5 lbs/sq mi

The impervious area is 174.2 acres  
 This makes the percentage of imperviousness 2.7%

**Quaboag River Watershed  
Willow Brook Subwatershed  
(2.4 sq mi)**



Land use Summary:

Agriculture:	202.2	13.3%
Forest:	961.9	63.2%
Wetlands:	79.9	05.3%
Open land:	94.7	06.2%
Residential:	137.1	09.0%
Commercial:	33.5	02.2%
Industrial:	00.0	00.0%
Transport:	04.8	00.3%
Water:	07.0	00.5%

Total Area = 1521.2 acres (2.38 mi<sup>2</sup>)

Estimated Nonpoint Source Pollution loads based on Landuse:

Average Annual Nitrogen Load =	5420.4 pounds, or	2280.5 lbs/sq mi
Average Annual Phosphorus Load =	587.2 pounds, or	247.1 lbs/sq mi
Average Annual Suspended Solids Load =	172779.1 pounds, or	72691.7 lbs/sq mi

The impervious area is 78.4 acres  
This makes the percentage of imperviousness 5.2%

# Appendix G. USGS StreamStats Lowflow Analyses for Chicopee River Basin Subwatersheds

NOTES: Following are the results of the lowflow analyses conducted for the subwatersheds of the Chicopee River Basin, using the USGS StreamStats program. This program works in conjunction with the MassGIS Watershed Analyst tools to estimate streamflows from subwatershed areas, based on the drainage area size, total length of streams, mean slope and proportion of the drainage area with stratified drift deposits.

The StreamStats program produces estimates of the 7-day, 2-year and the 7-day, 10-year recurrence interval low flows (i.e., “q72est” and “q710est” in the following printouts), streamflows that are exceeded 99, 98, 95, 90, 85, 80, 75, 70, 60 and 50% of the time (i.e., “p99est”, “p98est”,...”p50est” in the following printouts), and the August median flow (i.e., “paumeest”). Except for very small or very large drainage areas, the StreamStats program also calculates the 90% confidence intervals for the estimates.

More information about the StreamStats program is available at the USGS website (<http://ma.water.usgs.gov/streamstats/>).

## **A. Swift River Watershed:**

### 1. Quabbin Reservoir subwatershed:

Latitude: 42.2801  
Longitude: -72.3391  
Drainage Sq. Miles: 187.516  
Drift Sq. Miles: 0.129352  
Stream Length in Miles: 308.755  
Slope in Percent: 5.17388

p99est: 11.5161  
p98est: 13.9795  
p95est: 19.8224  
p90est: 26.9833  
p85est: 41.035

p80est: 50.5884  
p75est: 77.3157  
p70est: 95.4925  
p60est: 140.029

p50est: 198.734  
q72est: 22.0509  
q710est: 10.3243  
paumeest: 44.5704

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2. Swift River below Quabbin

Latitude: 42.2074  
Longitude: -72.3626  
Drainage Sq. Miles: 195.468  
Drift Sq. Miles: 3.01805  
Stream Length in Miles: 320.466  
Slope in Percent: 5.15032

p99est: 13.1998  
p98est: 15.9753  
p95est: 22.578  
p90est: 30.6552  
p85est: 45.7018

p80est: 56.0559  
p75est: 83.9169  
p70est: 102.938  
p60est: 147.823  
p50est: 207.334

q72est: 24.8456  
q710est: 11.9654  
paumeest: 49.6532

\*\*\*\*\*

3. Jabish Brook

Latitude: 42.2079  
Longitude: -72.3634  
Drainage Sq. Miles: 18.5849  
Drift Sq. Miles: 3.41434  
Stream Length in Miles: 36.3677  
Slope in Percent: 2.81972

p99est: 1.20488  
p99minInt: 0.335264  
p99plusInt: 4.01364  
  
p98est: 1.57326  
p98minInt: 0.476286  
p98plusInt: 4.91751  
  
p95est: 2.17661  
p95minInt: 0.778461  
p95plusInt: 5.88415  
  
p90est: 3.34162  
p90minInt: 1.33273  
p90plusInt: 8.19727  
  
p85est: 4.73037

p85minInt: 1.96423  
p85plusInt: 11.1896  
  
p80est: 6.13194  
p80minInt: 2.56644  
p80plusInt: 14.4479  
  
p75est: 8.46276  
p75minInt: 4.5313  
p75plusInt: 15.6173  
  
p70est: 10.1818  
p70minInt: 5.50674  
p70plusInt: 18.6389  
  
p60est: 13.4057  
p60minInt: 8.0965

p60plusInt: 22.0638  
  
p50est: 18.8068  
p50minInt: 11.3681  
p50plusInt: 30.9889  
  
q72est: 2.41265  
q72minInt: 0.791447  
q72plusInt: 7.08303  
  
q710est: 1.09897  
q710minInt: 0.28647  
q710plusInt: 3.928  
  
paumeest: 5.39003  
aumeminInt: 2.21262  
aumeplusInt: 12.8971

\*\*\*\*\*

**B. Chicopee River Watershed:**

1. Abbey Brook Subwatershed

Latitude: 42.1493  
Longitude: -72.5911  
Drainage Sq. Miles: 1.29426  
Drift Sq. Miles: 1.29426  
Stream Length in Miles: 1.49724  
Slope in Percent: 0.684405

p99est: 0.152383  
p98est: 0.225697  
p95est: 0.286293  
p90est: 0.521226  
p85est: 0.613969

p80est: 0.844146  
p75est: 0.952329  
p70est: 1.04331  
p60est: 0.995381  
p50est: 1.24174

q72est: 0.320235  
q710est: 0.156033  
paumeest: 0.782235

\*\*\*\*\*

2. Broad Brook Subwatershed

NOTE: The StreamStats program produced a watershed that includes the upper Jabish Brook subwatershed.

Latitude: 42.1804  
Longitude: -72.4059  
Drainage Sq. Miles: 21.097  
Drift Sq. Miles: 0.128408  
Stream Length in Miles: 53.632  
Slope in Percent: 2.88611

p99est: 0.716965  
p99minInt: 0.150036  
p99plusInt: 3.09929  
  
p98est: 0.949721  
p98minInt: 0.224825  
p98plusInt: 3.7963  
  
p95est: 1.33992  
p95minInt: 0.360681  
p95plusInt: 4.81271  
  
p90est: 2.06213  
p90minInt: 0.638396  
p90plusInt: 6.51687  
  
p85est: 3.38919

p85minInt: 1.03219  
p85plusInt: 10.9308  
  
p80est: 4.52632  
p80minInt: 1.48571  
p80plusInt: 13.5987  
  
p75est: 7.36541  
p75minInt: 3.49976  
p75plusInt: 15.3165  
  
p70est: 9.28437  
p70minInt: 4.4031  
p70plusInt: 19.3827  
  
p60est: 14.1579  
p60minInt: 6.51891

p60plusInt: 30.5648  
  
p50est: 21.403  
p50minInt: 12.9586  
p50plusInt: 35.2092  
  
q72est: 1.62019  
q72minInt: 0.398508  
q72plusInt: 6.34376  
  
q710est: 0.60733  
q710minInt: 0.120289  
q710plusInt: 2.85697  
  
paumeest: 3.8571  
aumeminInt: 1.19852  
aumeplusInt: 12.1925

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### 3. Calkins Brook

Latitude: 42.1484  
Longitude: -72.3994  
Drainage Sq. Miles: 3.26103  
Drift Sq. Miles: 0.393998  
Stream Length in Miles: 6.47247  
Slope in Percent: 4.87948

p99est: 0.157375  
p99minInt: 0.0361662  
p99plusInt: 0.562987  
  
p98est: 0.227705  
p98minInt: 0.0665116  
p98plusInt: 0.737666  
  
p95est: 0.330478  
p95minInt: 0.112624  
p95plusInt: 0.937588  
  
p90est: 0.52742  
p90minInt: 0.196256  
p90plusInt: 1.38672  
  
p85est: 0.722581

p85minInt: 0.280498  
p85plusInt: 1.82836  
  
p80est: 0.94571  
p80minInt: 0.38429  
p80plusInt: 2.29508  
  
p75est: 1.19185  
p75minInt: 0.495723  
p75plusInt: 2.83146  
  
p70est: 1.47969  
p70minInt: 0.611432  
p70plusInt: 3.54537  
  
p60est: 2.10728  
p60minInt: 0.952061

p60plusInt: 4.63637  
  
p50est: 3.18707  
p50minInt: 1.41628  
p50plusInt: 7.1433  
  
q72est: 0.333938  
q72minInt: 0.106358  
q72plusInt: 1.00974  
  
q710est: 0.152566  
q710minInt: 0.0383825  
q710plusInt: 0.565023  
  
paumeest: 0.788152  
aumeminInt: 0.302741  
aumeplusInt: 2.01543

\*\*\*\*\*

### 4. Cooley Brook

Latitude: 42.1628  
Longitude: -72.5679  
Drainage Sq. Miles: 5.32729  
Drift Sq. Miles: 0.56625  
Stream Length in Miles: 7.7085  
Slope in Percent: 0.838183

p99est: 0.140846  
p99minInt: 0.0109822  
p99plusInt: 1.01443  
  
p98est: 0.207363  
p98minInt: 0.0316298  
p98plusInt: 1.28641  
  
p95est: 0.276013  
p95minInt: 0.0472308

p95plusInt: 1.55952  
  
p90est: 0.480426  
p90minInt: 0.0913239  
p90plusInt: 2.47267  
  
p85est: 0.828722  
p85minInt: 0.158685  
p85plusInt: 4.25107

p80est: 1.19742  
p80minInt: 0.24588  
p80plusInt: 5.75055  
  
p75est: 2.09198  
p75minInt: 0.975084  
p75plusInt: 4.43483  
  
p70est: 2.56993  
p70minInt: 1.19436

p70plusInt: 5.4749  
p60est: 3.56086  
p60minInt: 1.84193  
p60plusInt: 6.84282  
p50est: 5.25782

p50minInt: 2.64548  
p50plusInt: 10.4081  
q72est: 0.384152  
q72minInt: 0.0607724  
q72plusInt: 2.33858  
q710est: 0.119734

q710minInt: 0.0151337  
q710plusInt: 0.882613  
paumeest: 1.04064  
aumeminInt: 0.199959  
aumeplusInt: 5.31962

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#### 5. Fuller Brook Subwatershed

Latitude: 42.1578  
Longitude: -72.5356  
Drainage Sq. Miles: 11.876  
Drift Sq. Miles: 2.3244  
Stream Length in Miles: 24.2613  
Slope in Percent: 2.41809

p99est: 0.673662  
p99minInt: 0.17337  
p99plusInt: 2.39011  
p98est: 0.899381  
p98minInt: 0.25695  
p98plusInt: 2.97888  
p95est: 1.24089  
p95minInt: 0.41523  
p95plusInt: 3.58541  
p90est: 1.95749  
p90minInt: 0.722678  
p90plusInt: 5.18745  
p85est: 2.82504

p85minInt: 1.08362  
p85plusInt: 7.23414  
p80est: 3.72958  
p80minInt: 1.46817  
p80plusInt: 9.34298  
p75est: 5.23976  
p75minInt: 2.73299  
p75plusInt: 9.92635  
p70est: 6.3277  
p70minInt: 3.31281  
p70plusInt: 11.9664  
p60est: 8.38687  
p60minInt: 4.98967

p60plusInt: 14.0128  
p50est: 11.9106  
p50minInt: 6.95444  
p50plusInt: 20.3173  
q72est: 1.40684  
q72minInt: 0.436238  
q72plusInt: 4.36935  
q710est: 0.608395  
q710minInt: 0.149359  
q710plusInt: 2.30899  
paumeest: 3.25878  
aumeminInt: 1.23465  
aumeplusInt: 8.44856

\*\*\*\*\*

#### 6. Minechoag Brook Subwatershed

Latitude: 42.1555  
Longitude: -72.4532  
Drainage Sq. Miles: 1.25669  
Drift Sq. Miles: 0.000279412  
Stream Length in Miles: 2.72085  
Slope in Percent: 3.35889

p99est: 0.0184318

p98est: 0.0407727

p95est: 0.0596171

p90est: 0.101795  
p85est: 0.164652  
p80est: 0.230686  
p75est: 0.346701

p70est: 0.450295  
p60est: 0.730372  
p50est: 1.20498  
q72est: 0.0683608

q710est: 0.0235746  
paumeest: 0.185128

\*\*\*\*\*

#### 7. Poor Brook Subwatershed

Latitude: 42.1587  
Longitude: -72.5587  
Drainage Sq. Miles: 1.57873  
Drift Sq. Miles: 1.57855  
Stream Length in Miles: 3.23255  
Slope in Percent: 0.0215207

p99est: 0.0175209  
p98est: 0.040825  
p95est: 0.044915  
p90est: 0.100881  
p85est: 0.217811

p80est: 0.382084  
p75est: 0.95334  
p70est: 1.08171  
p60est: 1.15395  
p50est: 1.5207

q72est: 0.102361  
q710est: 0.0185618  
paumeest: 0.366169

\*\*\*\*\*

#### 8. Twelve Mile Brook Subwatershed

Latitude: 42.148  
Longitude: -72.3993  
Drainage Sq. Miles: 10.3875  
Drift Sq. Miles: 0.491311  
Stream Length in Miles: 19.4068  
Slope in Percent: 5.81154

p99est: 0.522626  
p99minInt: 0.156437  
p99plusInt: 1.5954

p85est: 2.19146  
p85minInt: 0.9847  
p85plusInt: 4.79052

p60est: 6.89758  
p60minInt: 3.47255  
p60plusInt: 13.6189

p98est: 0.700632  
p98minInt: 0.232008  
p98plusInt: 2.00212

p80est: 2.80824  
p80minInt: 1.34137  
p80plusInt: 5.79775

p50est: 10.3899  
p50minInt: 5.957  
p50plusInt: 18.0494

p95est: 1.02096  
p95minInt: 0.399386  
p95plusInt: 2.52336

p75est: 3.73915  
p75minInt: 1.86026  
p75plusInt: 7.42636

q72est: 1.04668  
q72minInt: 0.383966  
q72plusInt: 2.7478

p90est: 1.54448  
p90minInt: 0.669266  
p90plusInt: 3.48711

p70est: 4.67547  
p70minInt: 2.31963  
p70plusInt: 9.33039

q710est: 0.482143  
q710minInt: 0.13715  
q710plusInt: 1.5792

paumeest: 2.35772

aumeminInt: 1.06345

aumeplusInt: 5.13435

\*\*\*\*\*

**C. Ware River Watershed:**

1. Burnshirt River Subwatershed

Latitude: 42.4274

Longitude: -72.051

Drainage Sq. Miles: 17.3433

Drift Sq. Miles: 0.862601

Stream Length in Miles: 27.6284

Slope in Percent: 4.6024

p99est: 0.907291

p99minInt: 0.271723

p99plusInt: 2.80169

p98est: 1.19099

p98minInt: 0.387825

p98plusInt: 3.46096

p95est: 1.70617

p95minInt: 0.65678

p95plusInt: 4.28531

p90est: 2.56326

p90minInt: 1.10193

p90plusInt: 5.83353

p85est: 3.71748

p85minInt: 1.6481

p85plusInt: 8.2363

p80est: 4.77441

p80minInt: 2.21931

p80plusInt: 10.1289

p75est: 6.63501

p75minInt: 3.47871

p75plusInt: 12.5046

p70est: 8.22561

p70minInt: 4.34476

p70plusInt: 15.4184

p60est: 11.8825

p60minInt: 6.39318

p60plusInt: 21.9531

p50est: 17.5261

p50minInt: 10.5679

p50plusInt: 28.95

q72est: 1.82379

q72minInt: 0.649868

q72plusInt: 4.92922

q710est: 0.822558

q710minInt: 0.229642

q710plusInt: 2.74513

paumeest: 4.07467

aumeminInt: 1.81711

aumeplusInt: 8.97471

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2. Danforth Brook Subwatershed

Latitude: 42.3123

Longitude: -72.207

Drainage Sq. Miles: 5.42317

Drift Sq. Miles: 0

Stream Length in Miles: 16.3497

Slope in Percent: 3.62989

p99est: 0.151523

p99minInt: 0.0281074

p99plusInt: 0.636556

p98est: 0.21947

p98minInt: 0.0550487

p98plusInt: 0.827975

p95est: 0.317363

p95minInt: 0.0905007

p95plusInt: 1.07601

p90est: 0.508701

p90minInt: 0.160092

p90plusInt: 1.58144

p85est: 0.814062  
p85minInt: 0.256707  
p85plusInt: 2.53568

p70est: 2.15188  
p70minInt: 0.867365  
p70plusInt: 5.28568

q72est: 0.364059  
q72minInt: 0.0960272  
q72plusInt: 1.32923

p80est: 1.10224  
p80minInt: 0.38602  
p80plusInt: 3.10375  
p75est: 1.68109  
p75minInt: 0.69182  
p75plusInt: 4.03641

p60est: 3.39053  
p60minInt: 1.33287  
p60plusInt: 8.57329

q710est: 0.135588  
q710minInt: 0.0282815  
q710plusInt: 0.605647

p50est: 5.35436  
p50minInt: 2.70529  
p50plusInt: 10.5552

paumeest: 0.909633  
aumeminInt: 0.293937  
aumeplusInt: 2.765

\*\*\*\*\*

### 3. E. Branch Ware River Subwatershed

Latitude: 42.4008  
Longitude: -71.9986  
Drainage Sq. Miles: 22.3132  
Drift Sq. Miles: 0.153427  
Stream Length in Miles: 38.5359  
Slope in Percent: 4.07749

p99est: 0.903872  
p99minInt: 0.229241  
p99plusInt: 3.27634

p85minInt: 1.45568  
p85plusInt: 10.6765

p60plusInt: 32.107

p98est: 1.18526  
p98minInt: 0.330559  
p98plusInt: 4.02156

p80est: 5.18611  
p80minInt: 2.02671  
p80plusInt: 13.0868

p50est: 22.6623  
p50minInt: 13.7145  
p50plusInt: 37.2984

p95est: 1.69668  
p95minInt: 0.545872  
p95plusInt: 5.09878

p75est: 7.87719  
p75minInt: 3.77027  
p75plusInt: 16.262

q72est: 1.92143  
q72minInt: 0.566943  
q72plusInt: 6.27136

p90est: 2.55044  
p90minInt: 0.935173  
p90plusInt: 6.80515

p70est: 9.91247  
p70minInt: 4.74456  
p70plusInt: 20.5039

q710est: 0.788729  
q710minInt: 0.186004  
q710plusInt: 3.11612

p85est: 3.97776

p60est: 15.0445  
p60minInt: 7.00738

paumeest: 4.40342  
aumeminInt: 1.63856  
aumeplusInt: 11.6234

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### 4. Flat Brook Subwatershed

Latitude: 42.2414  
Longitude: -72.2662  
Drainage Sq. Miles: 6.74702  
Drift Sq. Miles: 0.107848

Stream Length in Miles: 12.0182  
Slope in Percent: 4.27245

p99est: 0.234324  
p99minInt: 0.0549284  
p99plusInt: 0.857122  
p98est: 0.328224  
p98minInt: 0.0925131  
p98plusInt: 1.10192  
p95est: 0.475807  
p95minInt: 0.154531  
p95plusInt: 1.41646  
p90est: 0.747658  
p90minInt: 0.26773  
p90plusInt: 2.04271

p80est: 1.52129  
p80minInt: 0.603982  
p80plusInt: 3.77869

p75est: 2.20883  
p75minInt: 0.980559  
p75plusInt: 4.91651

p70est: 2.80312  
p70minInt: 1.22651  
p70plusInt: 6.34274

p85est: 1.14551  
p85minInt: 0.416234  
p85plusInt: 3.09653

p60est: 4.30984  
p60minInt: 1.86545  
p60plusInt: 9.89776

p50est: 6.69058  
p50minInt: 3.54796  
p50plusInt: 12.5665

q72est: 0.52437  
q72minInt: 0.158313  
q72plusInt: 1.67267

q710est: 0.210683  
q710minInt: 0.0500042  
q710plusInt: 0.827051

paumeest: 1.2633  
aumeminInt: 0.467089  
aumeplusInt: 3.35606

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#### 5. Longmeadow Brook Subwatershed

Latitude: 42.4005  
Longitude: -71.9987  
Drainage Sq. Miles: 11.4139  
Drift Sq. Miles: 1.3635  
Stream Length in Miles: 22.3026  
Slope in Percent: 4.51783

p99est: 0.684858  
p99minInt: 0.212113  
p99plusInt: 2.03687

p98est: 0.910193  
p98minInt: 0.308111  
p98plusInt: 2.54433

p95est: 1.29998  
p95minInt: 0.524743  
p95plusInt: 3.11375

p90est: 1.98252  
p90minInt: 0.883219  
p90plusInt: 4.35375

p85est: 2.74469  
p85minInt: 1.2815

p85plusInt: 5.77412

p80est: 3.52035  
p80minInt: 1.71751  
p80plusInt: 7.11563

p75est: 4.6146  
p75minInt: 2.43325  
p75plusInt: 8.64742

p70est: 5.65703  
p70minInt: 2.99847  
p70plusInt: 10.5668

p60est: 7.85402  
p60minInt: 4.50472  
p60plusInt: 13.6118

p50est: 11.438  
p50minInt: 6.64481  
p50plusInt: 19.6103

q72est: 1.34892  
q72minInt: 0.509782  
q72plusInt: 3.43749

q710est: 0.636326  
q710minInt: 0.186111  
q710plusInt: 2.02706

paumeest: 3.01225  
aumeminInt: 1.39601  
aumeplusInt: 6.3843

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6. Moose Brook Subwatershed

Latitude: 42.343  
Longitude: -72.1589  
Drainage Sq. Miles: 10.0853  
Drift Sq. Miles: 0.42548  
Stream Length in Miles: 16.6561  
Slope in Percent: 4.05025

p99est: 0.431943  
p99minInt: 0.116503  
p99plusInt: 1.44453  
  
p98est: 0.585068  
p98minInt: 0.177619  
p98plusInt: 1.82363  
  
p95est: 0.839018  
p95minInt: 0.29735  
p95plusInt: 2.28893  
  
p90est: 1.29901  
p90minInt: 0.508857  
p90plusInt: 3.24437  
  
p85est: 1.93859

p85minInt: 0.778257  
p85plusInt: 4.74316  
  
p80est: 2.54352  
p80minInt: 1.09519  
p80plusInt: 5.82536  
  
p75est: 3.62462  
p75minInt: 1.79801  
p75plusInt: 7.21998  
  
p70est: 4.53298  
p70minInt: 2.24162  
p70plusInt: 9.07558  
  
p60est: 6.68846  
p60minInt: 3.35901

p60plusInt: 13.2385  
  
p50est: 10.0816  
p50minInt: 5.75458  
p50plusInt: 17.5918  
  
q72est: 0.919065  
q72minInt: 0.303201  
q72plusInt: 2.68296  
  
q710est: 0.387707  
q710minInt: 0.100126  
q710plusInt: 1.39875  
  
paumeest: 2.14679  
aumeminInt: 0.870567  
aumeplusInt: 5.19988

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7. Muddy Brook Subwatershed

Latitude: 42.2546  
Longitude: -72.2495  
Drainage Sq. Miles: 20.0414  
Drift Sq. Miles: 1.98816  
Stream Length in Miles: 46.4119  
Slope in Percent: 5.54413

p99est: 1.27408  
p99minInt: 0.413031  
p99plusInt: 3.65864  
  
p98est: 1.65242  
p98minInt: 0.576762  
p98plusInt: 4.47977  
  
p95est: 2.37739

p95minInt: 0.994512  
p95plusInt: 5.49477  
  
p90est: 3.50681  
p90minInt: 1.63838  
p90plusInt: 7.34356  
  
p85est: 4.85472  
p85minInt: 2.37138

p85plusInt: 9.76216  
  
p80est: 6.11578  
p80minInt: 3.08739  
p80plusInt: 11.9469  
  
p75est: 8.04588  
p75minInt: 4.31468  
p75plusInt: 14.8253

p70est: 9.89713  
p70minInt: 5.37541  
p70plusInt: 18.0416

p50est: 20.3113  
p50minInt: 12.295  
p50plusInt: 33.4201

q710est: 1.18484  
q710minInt: 0.357544  
q710plusInt: 3.65824

p60est: 13.9757  
p60minInt: 7.8672  
p60plusInt: 24.6788

q72est: 2.42958  
q72minInt: 0.942812  
q72plusInt: 6.0296

paumeest: 5.24207  
aumeminInt: 2.55756  
aumeplusInt: 10.5535

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#### 8. Natty/Canesto Subwatershed

Latitude: 42.4281  
Longitude: -72.0496  
Drainage Sq. Miles: 13.2422  
Drift Sq. Miles: 0.228179  
Stream Length in Miles: 22.4372  
Slope in Percent: 3.53187

p99est: 0.488454  
p99minInt: 0.117941  
p99plusInt: 1.81921

p85minInt: 0.808171  
p85plusInt: 6.31205

p60plusInt: 18.3582

p98est: 0.657521  
p98minInt: 0.179849  
p98plusInt: 2.27471

p80est: 3.02082  
p80minInt: 1.16061  
p80plusInt: 7.75364

p50est: 13.3097  
p50minInt: 7.86777  
p50plusInt: 22.4259

p95est: 0.938371  
p95minInt: 0.295427  
p95plusInt: 2.88175

p75est: 4.59713  
p75minInt: 2.22638  
p75plusInt: 9.37945

q72est: 1.0768  
q72minInt: 0.313365  
q72plusInt: 3.56347

p90est: 1.45181  
p90minInt: 0.512982  
p90plusInt: 4.01989

p70est: 5.79003  
p70minInt: 2.78876  
p70plusInt: 11.9019

q710est: 0.425952  
q710minInt: 0.098165  
q710plusInt: 1.72205

p85est: 2.27891

p60est: 8.76061  
p60minInt: 4.15563

paumeest: 2.55179  
aumeminInt: 0.921079  
aumeplusInt: 6.94403

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#### 9. Parkers Brook Subwatershed

Latitude: 42.3938  
Longitude: -72.0514  
Drainage Sq. Miles: 5.50905  
Drift Sq. Miles: 0.232888  
Stream Length in Miles: 13.4676  
Slope in Percent: 3.1966

p99est: 0.174252  
p99minInt: 0.0350522  
p99plusInt: 0.701302  
  
p98est: 0.249856  
p98minInt: 0.064915  
p98plusInt: 0.910015  
  
p95est: 0.357413  
p95minInt: 0.106358  
p95plusInt: 1.16126  
  
p90est: 0.575707  
p90minInt: 0.187595  
p90plusInt: 1.72855  
  
p85est: 0.902871

p85minInt: 0.298251  
p85plusInt: 2.68464  
  
p80est: 1.22172  
p80minInt: 0.442088  
p80plusInt: 3.32947  
  
p75est: 1.83184  
p75minInt: 0.806413  
p75plusInt: 4.11168  
  
p70est: 2.31659  
p70minInt: 1.00696  
p70plusInt: 5.2766  
  
p60est: 3.51523  
p60minInt: 1.53885

p60plusInt: 7.98195  
  
p50est: 5.44086  
p50minInt: 2.75902  
p50plusInt: 10.6867  
  
q72est: 0.410488  
q72minInt: 0.113302  
q72plusInt: 1.43224  
  
q710est: 0.156159  
q710minInt: 0.0340086  
q710plusInt: 0.668078  
  
paumeest: 1.01902  
aumeminInt: 0.342647  
aumeplusInt: 2.9766

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#### 10. Penny Brook Subwatershed

Latitude: 42.2345  
Longitude: -72.3073  
Drainage Sq. Miles: 7.01702  
Drift Sq. Miles: 0.335365  
Stream Length in Miles: 12.0858  
Slope in Percent: 5.93923

p99est: 0.33791  
p99minInt: 0.0953537  
p99plusInt: 1.07278  
  
p98est: 0.462882  
p98minInt: 0.148647  
p98plusInt: 1.36395  
  
p95est: 0.67742  
p95minInt: 0.255834  
p95plusInt: 1.73427  
  
p90est: 1.03933  
p90minInt: 0.43267  
p90plusInt: 2.4426  
  
p85est: 1.46346

p85minInt: 0.632855  
p85plusInt: 3.3241  
  
p80est: 1.88556  
p80minInt: 0.866332  
p80plusInt: 4.04703  
  
p75est: 2.46826  
p75minInt: 1.16682  
p75plusInt: 5.15917  
  
p70est: 3.094  
p70minInt: 1.45266  
p70plusInt: 6.52443  
  
p60est: 4.57978  
p60minInt: 2.20275

p60plusInt: 9.46505  
  
p50est: 6.96378  
p50minInt: 3.72301  
p50plusInt: 12.9736  
  
q72est: 0.687126  
q72minInt: 0.243676  
q72plusInt: 1.866  
  
q710est: 0.315179  
q710minInt: 0.0869122  
q710plusInt: 1.06491  
  
paumeest: 1.57172  
aumeminInt: 0.680945  
aumeplusInt: 3.56334

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11. Pine Hill Subwatershed

Latitude: 42.3591  
Longitude: -72.1322  
Drainage Sq. Miles: 2.6915  
Drift Sq. Miles: 0.177754  
Stream Length in Miles: 5.917  
Slope in Percent: 4.83887

p99est: 0.0966504  
p99minInt: 0.0172909  
p99plusInt: 0.384377  
  
p98est: 0.146725  
p98minInt: 0.0397473  
p98plusInt: 0.512526  
  
p95est: 0.214689  
p95minInt: 0.0670992  
p95plusInt: 0.664141  
  
p90est: 0.346476  
p90minInt: 0.117781  
p90plusInt: 0.997171  
p85est: 0.500034  
p85minInt: 0.175837

p85plusInt: 1.39671  
  
p80est: 0.664765  
p80minInt: 0.247491  
p80plusInt: 1.76083  
  
p75est: 0.88364  
p75minInt: 0.340254  
p75plusInt: 2.26752  
  
p70est: 1.11683  
p70minInt: 0.424641  
p70plusInt: 2.90818  
  
p60est: 1.67814  
p60minInt: 0.66298  
p60plusInt: 4.22235

p50est: 2.62037  
p50minInt: 1.10475  
p50plusInt: 6.1905  
  
q72est: 0.22346  
q72minInt: 0.0644813  
q72plusInt: 0.745792  
  
q710est: 0.094412  
q710minInt: 0.021697  
q710plusInt: 0.382767  
  
paumeest: 0.545891  
aumeminInt: 0.192917  
aumeplusInt: 1.51726

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12. Pratt Brook Subwatershed

Latitude: 42.3757  
Longitude: -72.1143  
Drainage Sq. Miles: 7.49106  
Drift Sq. Miles: 0.194498  
Stream Length in Miles: 25.0629  
Slope in Percent: 3.40454

p99est: 0.237432  
p99minInt: 0.050725  
p99plusInt: 0.940859  
  
p98est: 0.332559  
p98minInt: 0.0868629  
p98plusInt: 1.2048  
  
p95est: 0.476856  
p95minInt: 0.142444  
p95plusInt: 1.54343

p90est: 0.756703  
p90minInt: 0.250331  
p90plusInt: 2.23787  
  
p85est: 1.20029  
p85minInt: 0.399023  
p85plusInt: 3.54647  
  
p80est: 1.61497  
p80minInt: 0.590977

p80plusInt: 4.35208  
  
p75est: 2.46109  
p75minInt: 1.10561  
p75plusInt: 5.41326  
  
p70est: 3.1226  
p70minInt: 1.38326  
p70plusInt: 6.97904  
  
p60est: 4.80358

p60minInt: 2.0979  
p60plusInt: 10.9331

p50est: 7.44395  
p50minInt: 4.03237  
p50plusInt: 13.6871

q72est: 0.549514  
q72minInt: 0.152199  
q72plusInt: 1.91072

q710est: 0.209101

q710minInt: 0.0457123  
q710plusInt: 0.891164

paumeest: 1.348  
aumeminInt: 0.457513  
aumeplusInt: 3.90118

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### 13. Prince River Subwatershed

Latitude: 42.3831  
Longitude: -72.1087  
Drainage Sq. Miles: 13.9709  
Drift Sq. Miles: 0.931758  
Stream Length in Miles: 24.8496  
Slope in Percent: 3.73374

p99est: 0.675542  
p99minInt: 0.189458  
p99plusInt: 2.20867

p98est: 0.897967  
p98minInt: 0.277432  
p98plusInt: 2.75029

p95est: 1.27525  
p95minInt: 0.462646  
p95plusInt: 3.3986

p90est: 1.95605  
p90minInt: 0.788419  
p90plusInt: 4.74788

p85est: 2.88932

p85minInt: 1.19803  
p85plusInt: 6.84449

p80est: 3.76776  
p80minInt: 1.64607  
p80plusInt: 8.5047

p75est: 5.36023  
p75minInt: 2.81444  
p75plusInt: 10.0874

p70est: 6.63633  
p70minInt: 3.50303  
p70plusInt: 12.4474

p60est: 9.52355  
p60minInt: 5.19591

p60plusInt: 17.3514

p50est: 14.0572  
p50minInt: 8.35285  
p50plusInt: 23.5629

q72est: 1.40461  
q72minInt: 0.472096  
q72plusInt: 4.02468

q710est: 0.606091  
q710minInt: 0.159976  
q710plusInt: 2.13945

paumeest: 3.22023  
aumeminInt: 1.3432  
aumeplusInt: 7.58314

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### 14. Thompson Lake Subwatershed

Latitude: 42.2088  
Longitude: -72.3147  
Drainage Sq. Miles: 3.64147  
Drift Sq. Miles: 0.00568869  
Stream Length in Miles: 5.82636  
Slope in Percent: 5.46826

p99est: 0.112387

p99minInt: 0.020736

p99plusInt: 0.450786

p98est: 0.167331  
p98minInt: 0.0445726  
p98plusInt: 0.594426

p80est: 0.78675  
p80minInt: 0.290512  
p80plusInt: 2.10112

p50est: 3.56674  
p50minInt: 1.63221  
p50plusInt: 7.76303

p95est: 0.24738  
p95minInt: 0.0754242  
p95plusInt: 0.784468

p75est: 1.098  
p75minInt: 0.418978  
p75plusInt: 2.84324

q72est: 0.261657  
q72minInt: 0.0736011  
q72plusInt: 0.895846

p90est: 0.392894  
p90minInt: 0.131664  
p90plusInt: 1.14705

p70est: 1.41007  
p70minInt: 0.526086  
p70plusInt: 3.74188

q710est: 0.10624  
q710minInt: 0.023735  
q710plusInt: 0.443063

p85est: 0.592066  
p85minInt: 0.201968  
p85plusInt: 1.70481

p60est: 2.23441  
p60minInt: 0.81809  
p60plusInt: 6.06626

paumeest: 0.640233  
aumeminInt: 0.222288  
aumeplusInt: 1.81125

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#### 15. W. Branch Ware River Subwatershed

Latitude: 42.4294

Longitude: -72.0211

Drainage Sq. Miles: 16.6329

Drift Sq. Miles: 0.00344454

Stream Length in Miles: 29.8156

Slope in Percent: 3.10576

p99est: 0.545933  
p99minInt: 0.116661  
p99plusInt: 2.28809

p85minInt: 0.820978  
p85plusInt: 8.25497

p60plusInt: 24.3239

p98est: 0.731101  
p98minInt: 0.178563  
p98plusInt: 2.83254

p80est: 3.51243  
p80minInt: 1.19688  
p80plusInt: 10.165

p50est: 16.7941  
p50minInt: 10.106  
p50plusInt: 27.7971

p95est: 1.03807  
p95minInt: 0.288422  
p95plusInt: 3.6123

p75est: 5.64237  
p75minInt: 2.64013  
p75plusInt: 11.9152

q72est: 1.23928  
q72minInt: 0.316375  
q72plusInt: 4.67506

p90est: 1.60616  
p90minInt: 0.509101  
p90plusInt: 4.95761

p70est: 7.14139  
p70minInt: 3.3169  
p70plusInt: 15.223

q710est: 0.465006  
q710minInt: 0.0949453  
q710plusInt: 2.1219

p85est: 2.62672

p60est: 10.9997  
p60minInt: 4.94455

paumeest: 2.97194  
aumeminInt: 0.94909  
aumeplusInt: 9.14095

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16. Winnimusset Brook Subwatershed

Latitude: 42.344  
Longitude: -72.1455  
Drainage Sq. Miles: 5.5733  
Drift Sq. Miles: 0.0312164  
Stream Length in Miles: 18.7403  
Slope in Percent: 5.06578

p99est: 0.18565  
p99minInt: 0.0415643  
p99plusInt: 0.690597  
  
p98est: 0.264122  
p98minInt: 0.0738109  
p98plusInt: 0.894342  
  
p95est: 0.387399  
p95minInt: 0.124416  
p95plusInt: 1.16627  
p90est: 0.607659  
p90minInt: 0.21532  
p90plusInt: 1.67778  
  
p85est: 0.924125

p85minInt: 0.33216  
p85plusInt: 2.52541  
  
p80est: 1.22312  
p80minInt: 0.480219  
p80plusInt: 3.07213  
p75est: 1.74381  
p75minInt: 0.726633  
p75plusInt: 4.13513  
  
p70est: 2.22879  
p70minInt: 0.910622  
p70plusInt: 5.40092  
  
p60est: 3.49626  
p60minInt: 1.39703

p60plusInt: 8.69756  
p50est: 5.5056  
p50minInt: 2.79931  
p50plusInt: 10.785  
  
q72est: 0.416967  
q72minInt: 0.124331  
q72plusInt: 1.34672  
  
q710est: 0.169421  
q710minInt: 0.0398066  
q710plusInt: 0.671828  
  
paumeest: 1.00543  
aumeminInt: 0.368038  
aumeplusInt: 2.69791

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D. Quaboag River Watershed:

1. Blodgett Mill Brook Subwatershed

Latitude: 42.1703  
Longitude: -72.2615  
Drainage Sq. Miles: 7.71224  
Drift Sq. Miles: 0.000713816  
Stream Length in Miles: 25.713  
Slope in Percent: 4.38951

p99est: 0.253826  
p99minInt: 0.0583946  
p99plusInt: 0.949655  
  
p98est: 0.353433  
p98minInt: 0.0972756  
p98plusInt: 1.21513

p95est: 0.513651  
p95minInt: 0.162121  
p95plusInt: 1.57346  
  
p90est: 0.802458  
p90minInt: 0.281314

p90plusInt: 2.2395  
  
p85est: 1.25012  
p85minInt: 0.440687  
p85plusInt: 3.48333  
  
p80est: 1.66045

p80minInt: 0.644436  
p80plusInt: 4.21905  
  
p75est: 2.45927  
p75minInt: 1.07212  
p75plusInt: 5.57409  
  
p70est: 3.13685  
p70minInt: 1.34345  
p70plusInt: 7.2516

p60est: 4.90747  
p60minInt: 2.04291  
p60plusInt: 11.7183  
  
p50est: 7.66821  
p50minInt: 4.1775  
p50plusInt: 14.0196  
  
q72est: 0.57086

q72minInt: 0.1673  
q72plusInt: 1.87592  
  
q710est: 0.225791  
q710minInt: 0.0521284  
q710plusInt: 0.911208  
  
paumeest: 1.37581  
aumeminInt: 0.495175  
aumeplusInt: 3.75472

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## 2. Chicopee Brook Subwatershed

Latitude: 42.1467  
Drainage Sq. Miles: 24.0592  
Drift Sq. Miles: 0.775351  
Stream Length in Miles: 57.543  
Slope in Percent: 6.05686

p99est: 1.28451  
p99minInt: 0.391957  
p99plusInt: 3.91392  
p98est: 1.66216  
p98minInt: 0.546566  
p98plusInt: 4.78318  
p95est: 2.41372  
p95minInt: 0.937052  
p95plusInt: 6.01131  
p90est: 3.5268  
p90minInt: 1.54386  
p90plusInt: 7.88226  
  
p85est: 5.09452  
p85minInt: 2.28531  
p85plusInt: 11.1553

p80est: 6.43639  
p80minInt: 3.02299  
p80plusInt: 13.5142  
  
p75est: 8.87359  
p75minInt: 4.4155  
p75plusInt: 17.6207  
  
p70est: 11.085  
p70minInt: 5.55187  
p70plusInt: 21.9131  
  
p60est: 16.4589  
p60minInt: 8.13274  
p60plusInt: 33.1103

p50est: 24.4724  
p50minInt: 14.7834  
p50plusInt: 40.3501  
  
q72est: 2.51129  
q72minInt: 0.900493  
q72plusInt: 6.74475  
  
q710est: 1.17035  
q710minInt: 0.330512  
q710plusInt: 3.86121  
  
paumeest: 5.46347  
aumeminInt: 2.4707  
aumeplusInt: 11.8668

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## 3. Coys Brook Subwatershed

Latitude: 42.2257  
Longitude: -72.1439  
Drainage Sq. Miles: 8.33584  
Drift Sq. Miles: 0.323058  
Stream Length in Miles: 28.4397  
Slope in Percent: 3.34519

p99est: 0.277795  
p99minInt: 0.0617502  
p99plusInt: 1.07833

p98est: 0.385351  
p98minInt: 0.102272  
p98plusInt: 1.37395

p95est: 0.550967  
p95minInt: 0.167666  
p95plusInt: 1.75051

p90est: 0.871111  
p90minInt: 0.293865  
p90plusInt: 2.52637

p85est: 1.37437

p85minInt: 0.466804  
p85plusInt: 3.97456

p80est: 1.84409  
p80minInt: 0.68603  
p80plusInt: 4.88836

p75est: 2.80163  
p75minInt: 1.29647  
p75plusInt: 5.98221

p70est: 3.54213  
p70minInt: 1.62096  
p70plusInt: 7.66349

p60est: 5.39569  
p60minInt: 2.4477

p60plusInt: 11.8232

p50est: 8.30115  
p50minInt: 4.58887  
p50plusInt: 14.9567

q72est: 0.634719  
q72minInt: 0.179137  
q72plusInt: 2.16586

q710est: 0.244096  
q710minInt: 0.0543619  
q710plusInt: 1.02119

paumeest: 1.54562  
aumeminInt: 0.535061  
aumeplusInt: 4.3855

\*\*\*\*\*

#### 4. Cranberry River Subwatershed

Latitude: 42.2291

Longitude: -72.017

Drainage Sq. Miles: 6.4936

Drift Sq. Miles: 0.00164685

Stream Length in Miles: 20.2672

Slope in Percent: 4.3775

p99est: 0.20592  
p99minInt: 0.0451764  
p99plusInt: 0.787191

p98est: 0.290838  
p98minInt: 0.0788823  
p98plusInt: 1.0147

p95est: 0.423349  
p95minInt: 0.131474  
p95plusInt: 1.318

p90est: 0.666054  
p90minInt: 0.228922  
p90plusInt: 1.89595

p85est: 1.03789

p85minInt: 0.359176  
p85plusInt: 2.94588

p80est: 1.38351  
p80minInt: 0.527582  
p80plusInt: 3.57782

p75est: 2.04285  
p75minInt: 0.867596  
p75plusInt: 4.7529

p70est: 2.61007  
p70minInt: 1.08729  
p70plusInt: 6.20336

p60est: 4.09691  
p60minInt: 1.66171

p60plusInt: 10.0405

p50est: 6.43436  
p50minInt: 3.38452  
p50plusInt: 12.1837

q72est: 0.469894  
q72minInt: 0.135394  
q72plusInt: 1.57055

q710est: 0.184491  
q710minInt: 0.0419062  
q710plusInt: 0.75675

paumeest: 1.14249  
aumeminInt: 0.403864  
aumeplusInt: 3.17461

\*\*\*\*\*

5. Dunn Brook Subwatershed

Latitude: 42.2055  
Longitude: -72.0834  
Drainage Sq. Miles: 6.77971  
Drift Sq. Miles: 0.00140651  
Stream Length in Miles: 25.7488  
Slope in Percent: 3.30912

p99est: 0.191355  
p99minInt: 0.0365743  
p99plusInt: 0.811477  
  
p98est: 0.272037  
p98minInt: 0.0670601  
p98plusInt: 1.04425  
  
p95est: 0.390862  
p95minInt: 0.109409  
p95plusInt: 1.35006  
  
p90est: 0.624452  
p90minInt: 0.194095  
p90plusInt: 1.96554  
  
p85est: 1.01229

p85minInt: 0.313685  
p85plusInt: 3.20871  
  
p80est: 1.3726  
p80minInt: 0.4732  
p80plusInt: 3.92629  
  
p75est: 2.13998  
p75minInt: 0.915057  
p75plusInt: 4.94509  
  
p70est: 2.73305  
p70minInt: 1.14671  
p70plusInt: 6.44922  
  
p60est: 4.2865  
p60minInt: 1.7503

p60plusInt: 10.435  
  
p50est: 6.72364  
p50minInt: 3.5691  
p50plusInt: 12.6158  
  
q72est: 0.457097  
q72minInt: 0.118413  
q72plusInt: 1.69929  
  
q710est: 0.167992  
q710minInt: 0.0344258  
q710plusInt: 0.76379  
  
paumeest: 1.13953  
aumeminInt: 0.361969  
aumeplusInt: 3.52369

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6. Five Mile River Subwatershed

Latitude: 42.2193  
Longitude: -72.0523  
Drainage Sq. Miles: 24.8836  
Drift Sq. Miles: 0.207182  
Stream Length in Miles: 75.8618  
Slope in Percent: 3.54868

p99est: 0.955039  
p99minInt: 0.224254  
p99plusInt: 3.73253  
  
p98est: 1.25042  
p98minInt: 0.324674  
p98plusInt: 4.557  
  
p95est: 1.77752  
p95minInt: 0.529054  
p95plusInt: 5.77417

p90est: 2.68344  
p90minInt: 0.917298  
p90plusInt: 7.68015  
  
p85est: 4.28031  
p85minInt: 1.44882  
p85plusInt: 12.4209  
  
p80est: 5.62174  
p80minInt: 2.02938

p80plusInt: 15.3575  
  
p75est: 8.81538  
p75minInt: 4.184  
p75plusInt: 18.3525  
  
p70est: 11.091  
p70minInt: 5.27081  
p70plusInt: 23.1066  
  
p60est: 16.8442

p60minInt: 7.77677  
p60plusInt: 36.2662

p50est: 25.328  
p50minInt: 15.2815  
p50plusInt: 41.8122

q72est: 2.07117  
q72minInt: 0.562619  
q72plusInt: 7.34291

q710est: 0.822473

q710minInt: 0.179882  
q710plusInt: 3.50377

paumeest: 4.79135  
aumeminInt: 1.65102  
aumeplusInt: 13.6579

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#### 7. Foskett Mill Brook Subwatershed

Latitude: 42.1435  
Longitude: -72.2701  
Drainage Sq. Miles: 9.8217  
Drift Sq. Miles: 0.53877  
Stream Length in Miles: 21.9652  
Slope in Percent: 8.73519

p99est: 0.580097  
p99minInt: 0.174323  
p99plusInt: 1.76912

p98est: 0.772851  
p98minInt: 0.25751  
p98plusInt: 2.19488

p95est: 1.14791  
p95minInt: 0.452523  
p95plusInt: 2.81533

p90est: 1.69784  
p90minInt: 0.74702  
p90plusInt: 3.77537

p85est: 2.27797

p85minInt: 1.04598  
p85plusInt: 4.87295

p80est: 2.84808  
p80minInt: 1.37109  
p80plusInt: 5.83417

p75est: 3.51008  
p75minInt: 1.73097  
p75plusInt: 7.03313

p70est: 4.39358  
p70minInt: 2.15839  
p70plusInt: 8.85472

p60est: 6.49856  
p60minInt: 3.23706

p60plusInt: 12.9683

p50est: 9.81297  
p50minInt: 5.57826  
p50plusInt: 17.1936

q72est: 1.09172  
q72minInt: 0.408456  
q72plusInt: 2.81017

q710est: 0.55265  
q710minInt: 0.159998  
q710plusInt: 1.77855

paumeest: 2.3722  
aumeminInt: 1.08355  
aumeplusInt: 5.10122

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#### 8. Great Brook Subwatershed

Latitude: 42.2021  
Longitude: -72.0571  
Drainage Sq. Miles: 4.19451  
Drift Sq. Miles: 0.102202  
Stream Length in Miles: 13.443  
Slope in Percent: 3.07818

p99est: 0.110606  
p99minInt: 0.0171244

p99plusInt: 0.497098

p98est: 0.165416  
p98minInt: 0.0395583

p98plusInt: 0.654535  
p95est: 0.237501  
p95minInt: 0.0644596  
p95plusInt: 0.846062  
p90est: 0.388112  
p90minInt: 0.115253  
p90plusInt: 1.27868  
p85est: 0.624658  
p85minInt: 0.186671  
p85plusInt: 2.05318  
p80est: 0.855834

p80minInt: 0.283448  
p80plusInt: 2.54828  
p75est: 1.31475  
p75minInt: 0.530578  
p75plusInt: 3.21914  
p70est: 1.67802  
p70minInt: 0.6647  
p70plusInt: 4.19407  
p60est: 2.61235  
p60minInt: 1.02654  
p60plusInt: 6.60828

p50est: 4.12007  
p50minInt: 1.95552  
p50plusInt: 8.64594  
q72est: 0.277284  
q72minInt: 0.0694833  
q72plusInt: 1.06566  
q710est: 0.100561  
q710minInt: 0.0199642  
q710plusInt: 0.471946  
paumeest: 0.707208  
aumeminInt: 0.216354  
aumeplusInt: 2.27064

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#### 9. Kings Brook Subwatershed

Latitude: 42.1604  
Longitude: -72.2677  
Drainage Sq. Miles: 4.04551  
Drift Sq. Miles: 0.00940222  
Stream Length in Miles: 6.26072  
Slope in Percent: 7.07873

p99est: 0.145314  
p99minInt: 0.0306681  
p99plusInt: 0.55025  
p98est: 0.210728  
p98minInt: 0.0586987  
p98plusInt: 0.715864  
p95est: 0.314795  
p95minInt: 0.10091  
p95plusInt: 0.949469  
p90est: 0.490051  
p90minInt: 0.173907  
p90plusInt: 1.35103  
p85est: 0.711198

p85minInt: 0.258475  
p85plusInt: 1.92212  
p80est: 0.927362  
p80minInt: 0.359094  
p80plusInt: 2.36174  
p75est: 1.2329  
p75minInt: 0.482194  
p75plusInt: 3.11483  
p70est: 1.58103  
p70minInt: 0.605053  
p70plusInt: 4.09028  
p60est: 2.49701  
p60minInt: 0.937573

p60plusInt: 6.61049  
p50est: 3.97084  
p50minInt: 1.86741  
p50plusInt: 8.40987  
q72est: 0.317539  
q72minInt: 0.0943876  
q72plusInt: 1.0288  
q710est: 0.138049  
q710minInt: 0.0325586  
q710plusInt: 0.545361  
paumeest: 0.753334  
aumeminInt: 0.27685  
aumeplusInt: 2.01348

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10. Lake Wickaboag Subwatershed

Latitude: 42.2359  
Longitude: -72.1604  
Drainage Sq. Miles: 17.7292  
Drift Sq. Miles: 1.51613  
Stream Length in Miles: 54.3021  
Slope in Percent: 4.55869

p99est: 0.902441 p99minInt: 0.266714 p99plusInt: 2.82241	p85minInt: 1.62524 p85plusInt: 8.39108	p60plusInt: 22.7054
p98est: 1.18469 p98minInt: 0.381031 p98plusInt: 3.48548	p80est: 4.79281 p80minInt: 2.19597 p80plusInt: 10.3156	p50est: 17.924 p50minInt: 10.8176 p50plusInt: 29.5804
p95est: 1.69738 p95minInt: 0.643851 p95plusInt: 4.32643	p75est: 6.72022 p75minInt: 3.49856 p75plusInt: 12.755	q72est: 1.82454 q72minInt: 0.64003 q72plusInt: 5.00911
p90est: 2.5502 p90minInt: 1.08191 p90plusInt: 5.88103	p70est: 8.34534 p70minInt: 4.37419 p70plusInt: 15.7637	q710est: 0.815007 q710minInt: 0.224433 q710plusInt: 2.7575
p85est: 3.72614	p60est: 12.1222 p60minInt: 6.43327	paumeest: 4.08738 aumeminInt: 1.79591 aumeplusInt: 9.13742

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11. Lambertton Brook Subwatershed

Latitude: 42.2334  
Longitude: -72.1711  
Drainage Sq. Miles: 4.54224  
Drift Sq. Miles: 0.0521038  
Stream Length in Miles: 12.0317  
Slope in Percent: 4.9648

p99est: 0.147151 p99minInt: 0.0306722 p99plusInt: 0.563499	p95minInt: 0.0986665 p95plusInt: 0.961514	p85plusInt: 2.09669
p98est: 0.213493 p98minInt: 0.0585724 p98plusInt: 0.736356	p90est: 0.49581 p90minInt: 0.171576 p90plusInt: 1.40175	p80est: 0.998647 p80minInt: 0.382729 p80plusInt: 2.56965
p95est: 0.313245	p85est: 0.751507 p85minInt: 0.264575	p75est: 1.41385 p75minInt: 0.572889 p75plusInt: 3.44779

p70est: 1.80725  
p70minInt: 0.718017  
p70plusInt: 4.50371

p50est: 4.46873  
p50minInt: 2.16373  
p50plusInt: 9.19242

q710est: 0.136077  
q710minInt: 0.0313656  
q710plusInt: 0.550042

p60est: 2.82944  
p60minInt: 1.10732  
p60plusInt: 7.18664

q72est: 0.33649  
q72minInt: 0.0981888  
q72plusInt: 1.11054

paumeest: 0.818921  
aumeminInt: 0.293435  
aumeplusInt: 2.24487

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## 12. Naultaug Brook Subwatershed

Latitude: 42.2258  
Drainage Sq. Miles: 3.89179  
Drift Sq. Miles: 0.062435  
Stream Length in Miles: 10.9134  
Slope in Percent: 4.93521

p99est: 0.12281  
p99minInt: 0.0237807  
p99plusInt: 0.483513

p85minInt: 0.22143  
p85plusInt: 1.8244

p60plusInt: 6.2611

p98est: 0.181296  
p98minInt: 0.0488742  
p98plusInt: 0.636374

p80est: 0.85458  
p80minInt: 0.320237  
p80plusInt: 2.24892

p50est: 3.81699  
p50minInt: 1.77726  
p50plusInt: 8.16499

p95est: 0.266235  
p95minInt: 0.0823078  
p95plusInt: 0.832623

p75est: 1.20336  
p75minInt: 0.474625  
p75plusInt: 3.01473

q72est: 0.285333  
q72minInt: 0.0815368  
q72plusInt: 0.961617

p90est: 0.424092  
p90minInt: 0.143684  
p90plusInt: 1.22464

p70est: 1.53905  
p70minInt: 0.595082  
p70plusInt: 3.94089

q710est: 0.115001  
q710minInt: 0.0260272  
q710plusInt: 0.473434

p85est: 0.641312

p60est: 2.40952  
p60minInt: 0.92174

paumeest: 0.699167  
aumeminInt: 0.245598  
aumeplusInt: 1.95503

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13. Seven Mile River Subwatershed

Latitude: 42.2582  
Longitude: -72.0063  
Drainage Sq. Miles: 9.46933  
Drift Sq. Miles: 0.189525  
Stream Length in Miles: 29.5143  
Slope in Percent: 5.12716

p99est: 0.371888  
p99minInt: 0.0983825  
p99plusInt: 1.25794

p98est: 0.506459  
p98minInt: 0.152374  
p98plusInt: 1.59291

p95est: 0.738271  
p95minInt: 0.257767  
p95plusInt: 2.04438

p90est: 1.13217  
p90minInt: 0.439292  
p90plusInt: 2.85476

p85est: 1.7002

p85minInt: 0.67058  
p85plusInt: 4.23416

p80est: 2.21946  
p80minInt: 0.950176  
p80plusInt: 5.11247

p75est: 3.15283  
p75minInt: 1.45451  
p75plusInt: 6.75291

p70est: 3.99465  
p70minInt: 1.82081  
p70plusInt: 8.67683

p60est: 6.13427  
p60minInt: 2.74363

p60plusInt: 13.6332

p50est: 9.454  
p50minInt: 5.3428  
p50plusInt: 16.662

q72est: 0.791943  
q72minInt: 0.257705  
q72plusInt: 2.34378

q710est: 0.334523  
q710minInt: 0.0852857  
q710plusInt: 1.22252

paumeest: 1.84792  
aumeminInt: 0.739782  
aumeplusInt: 4.53397

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14. Shaw Brook Subwatershed

Latitude: 42.2739  
Longitude: -71.9767  
Drainage Sq. Miles: 6.03377  
Drift Sq. Miles: 0  
Stream Length in Miles: 14.8045  
Slope in Percent: 3.40447

p99est: 0.167898  
p99minInt: 0.0312986  
p99plusInt: 0.713436

p98est: 0.241136  
p98minInt: 0.0595993  
p98plusInt: 0.923204

p95est: 0.347318  
p95minInt: 0.0974832

p95plusInt: 1.19641

p90est: 0.556517  
p90minInt: 0.1729  
p90plusInt: 1.7525

p85est: 0.898669  
p85minInt: 0.278905  
p85plusInt: 2.84421

p80est: 1.2192  
p80minInt: 0.421014  
p80plusInt: 3.48172

p75est: 1.8864  
p75minInt: 0.791073  
p75plusInt: 4.44484

p70est: 2.41211  
p70minInt: 0.991538

p70plusInt: 5.80968  
p60est: 3.79245  
p60minInt: 1.51876  
p60plusInt: 9.41344  
p50est: 5.96994

p50minInt: 3.09034  
p50plusInt: 11.4868  
q72est: 0.403605  
q72minInt: 0.10481  
q72plusInt: 1.49679

q710est: 0.148635  
q710minInt: 0.0305278  
q710plusInt: 0.67426  
paumeest: 1.00934  
aumeminInt: 0.321139  
aumeplusInt: 3.11599

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#### 15. Trout Brook Subwatershed

Latitude: 42.2068  
Longitude: -72.102  
Drainage Sq. Miles: 3.96321  
Drift Sq. Miles: 0.181428  
Stream Length in Miles: 11.128  
Slope in Percent: 4.26794

p99est: 0.130934  
p99minInt: 0.0262579  
p99plusInt: 0.507632  
p98est: 0.192308  
p98minInt: 0.0523924  
p98plusInt: 0.667947  
p95est: 0.279687  
p95minInt: 0.0876593  
p95plusInt: 0.862789  
p90est: 0.448558  
p90minInt: 0.153247  
p90plusInt: 1.28453  
p85est: 0.676739

p85minInt: 0.236641  
p85plusInt: 1.90095  
p80est: 0.905291  
p80minInt: 0.342949  
p80plusInt: 2.35661  
p75est: 1.27887  
p75minInt: 0.52418  
p75plusInt: 3.08302  
p70est: 1.62366  
p70minInt: 0.655407  
p70plusInt: 3.98241  
p60est: 2.48496  
p60minInt: 1.01215

p60plusInt: 6.06445  
p50est: 3.88846  
p50minInt: 1.81905  
p50plusInt: 8.27895  
q72est: 0.303855  
q72minInt: 0.0882051  
q72plusInt: 1.00807  
q710est: 0.122014  
q710minInt: 0.0279855  
q710plusInt: 0.495637  
paumeest: 0.746342  
aumeminInt: 0.264771  
aumeplusInt: 2.06644

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#### 16. Turkey Hill Brook Subwatershed

Latitude: 42.2743  
Longitude: -71.9766  
Drainage Sq. Miles: 10.2051  
Drift Sq. Miles: 0  
Stream Length in Miles: 26.8654  
Slope in Percent: 3.23083

p99est: 0.31029  
p99minInt: 0.0644945  
p99plusInt: 1.28803  
  
p98est: 0.42736  
p98minInt: 0.106185  
p98plusInt: 1.62756  
  
p95est: 0.610875  
p95minInt: 0.172594  
p95plusInt: 2.09044  
  
p90est: 0.961528  
p90minInt: 0.305138  
p90plusInt: 2.96432  
  
p85est: 1.56419

p85minInt: 0.492467  
p85plusInt: 4.87999  
  
p80est: 2.10695  
p80minInt: 0.733511  
p80plusInt: 5.96821  
  
p75est: 3.32752  
p75minInt: 1.50243  
p75plusInt: 7.28204  
  
p70est: 4.23254  
p70minInt: 1.88335  
p70plusInt: 9.4176  
  
p60est: 6.58507  
p60minInt: 2.84162

p60plusInt: 15.1688  
  
p50est: 10.2038  
p50minInt: 5.8348  
p50plusInt: 17.7731  
  
q72est: 0.720561  
q72minInt: 0.188229  
q72plusInt: 2.65648  
  
q710est: 0.267586  
q710minInt: 0.0554331  
q710plusInt: 1.20347  
  
paumeest: 1.76418  
aumeminInt: 0.568613  
aumeplusInt: 5.37636

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#### 17. Willow Brook Subwatershed

Latitude: 42.2104  
Longitude: -72.1167  
Drainage Sq. Miles: 2.37759  
Drift Sq. Miles: 0.431699  
Stream Length in Miles: 8.11996  
Slope in Percent: 2.94784

p99est: 0.0787069  
p99minInt: 0.0110038  
p99plusInt: 0.344919  
  
p98est: 0.123077  
p98minInt: 0.0307627  
p98plusInt: 0.465954  
  
p95est: 0.175441  
p95minInt: 0.0503492  
p95plusInt: 0.591055  
  
p90est: 0.292607  
p90minInt: 0.0900215  
p90plusInt: 0.930507  
  
p85est: 0.435483  
p85minInt: 0.138663  
p85plusInt: 1.34338

p80est: 0.593916  
p80minInt: 0.201782  
p80plusInt: 1.72388  
  
p75est: 0.829497  
p75minInt: 0.316889  
p75plusInt: 2.14549  
  
p70est: 1.03689  
p70minInt: 0.392728  
p70plusInt: 2.71047  
  
p60est: 1.50321  
p60minInt: 0.615697  
p60plusInt: 3.64813  
  
p50est: 2.30902  
p50minInt: 0.940081  
p50plusInt: 5.64879

q72est: 0.195335  
q72minInt: 0.0517909  
q72plusInt: 0.709511  
  
q710est: 0.0767807  
q710minInt: 0.0162302  
q710plusInt: 0.338424  
  
paumeest: 0.494568  
aumeminInt: 0.157791  
aumeplusInt: 1.5226

## Appendix H: LITERATURE CITED

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