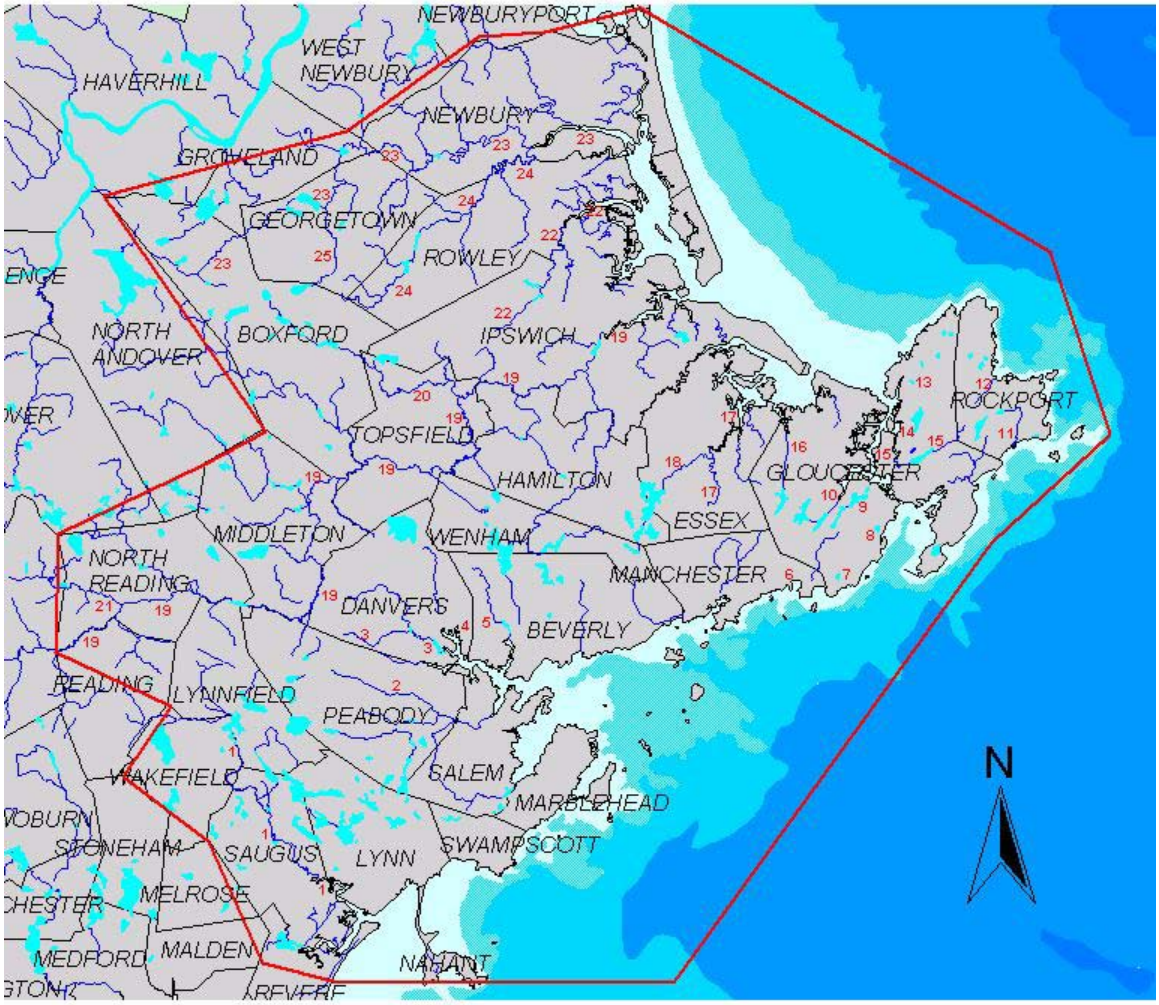
NORTH SHORE WATERSHEDS



Area outlined in red represents the towns included in this report as part of the North Shore watersheds.

Stream Names:

1 - Saugus River
2 - Proctor Brook
3 - Crane River
4 - Porter River
5 - Bass River
6 - Kettle Cove
7 - West Pond
8 - Buswell Pond
9 - Fernwood Lake
10 - Little River
11 - Sawmill Brook
12 - Mill Brook
13 - Langsford Pond
14 - Goose Cove Reservoir
15 - Alewife Brook
16 - Walker Creek
17 - Essex River
18 - Alewife Brook
19 - Ipswich River
20 - Howlett Brook
21 - Martins Brook
22 - Egypt River
23 - Parker River
24 - Mill River
25 - Penn Brook

North Shore Watersheds

Saugus River

Saugus, Lynn, Wakefield, Lynnfield

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
12.2	Third	6.9	Alewife, blueback, smelt

Obstruction # 1

Lynn Waterways Dam (Colonial Country Club Dam) Saugus

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
9.4	Dam	Concrete with metal stop logs	19.0	7.0	4.9	1915	City of Lynn	42º 30’ 49.033” N 71º 02’ 17.719” W

Lynn Waterways Dam at the Colonial Country Club

Fishway None

Obstruction # 2 Lake Quannapowitt Dam Wakefield

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
12.2	Dam	Concrete with wooden boards	7.0	3.9	254.0	1890	Town of Wakefield	42º 31’ 20.455” N 71º 04’ 38.884” W

Lake Ouannapowitt Dam

Fishway None

Remarks:

Since the breaching of the Saugus Iron Works dam, river herring have had access to the Colonial Golf and Country Club dam at river mile 9.4 and have been observed at the base of that dam as well as in Camp Nihan Pond at river mile 6.0. Further development would be costly due to outlet structure design at the first and second dams and is greatly reduced in priority by the fact that stream flows can be very low in summer and fall. Rainbow smelt are known to spawn in the area below the remains of the Saugus Iron Works dam.

Shute Brook — Saugus

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
2.0	First	N/A	Smelt

No photo available

No Obstructions

Fishway None

Remarks:

Rainbow smelt spawning has been noted in this small tributary to the Saugus River. There is no opportunity for further development.

Proctor Brook — Salem, Peabody

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
5.6	Second	7.6	None Known

No photo available

No Obstructions

Fishway None

Remarks:

This tributary to Beverly Harbor has no potential for development.

Crane River — Danvers

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
1.8	Second	8.3	River herring, smelt

Obstruction # 1 — Mill Pond Dam — Danvers

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
1.8	Dam	Concrete with wooden boards	7.8	3.0	4.6	1875	Town of Danvers C/O Select	42° 33’ 33.396” N 70° 56’ 32.043” W

Mill Pond Dam (from above)

Downstream of Mill Pond Dam

Fishway None

Remarks:

Crane River is another small tributary to Beverly Harbor. A 4.6 acre impoundment provides the only potential river herring habitat in the system. Small schools of river herring have been observed in the stream on occasion by DMF biologists. During the period 1995 to 1997 DMF introduced fertilized smelt eggs to this stream and removed a sluice gate, which blocked smelt passage to spawning habitat. In recent years small numbers of smelt eggs have been observed on the substrate and may be a result of this stocking.

Porter River

Danvers

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
1.7	First	7.2	Smelt

No photo available

No Obstructions

Fishway None

Remarks:

Rainbow smelt eggs have been observed in this tributary to Beverly Harbor. There is no opportunity for development of other anadromous species.

Bass River — Beverly

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
3.0	First	6.8	None known

Obstruction # 1 — Elliot Street Culvert — Beverly

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
1.3	Culvert, Circular	Concrete	8	8.0	0.0	-	-	42º 33’ 23.454” N 70º 53’ 18.793” W

Elliot Street culvert

Fishway None

Obstruction # 2 — Dam above Elliot Street Parking — Beverly

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
1.6	Dam	Concrete	70	2.2	3.2	-	-	42º 33’ 30.838” N 70º 53’ 17.332” W

Dam above Elliot Street parking

Fishway None

Obstruction # 3 Shoe Pond Dam Beverly

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
1.6	Dam	Concrete with wooden boards	31	5.5	12.1	1904	Cummings Properties	42° 33’ 37.232” N 70° 53’ 21.340” W

Shoe Pond Dam

Fishway None

Remarks:

Although this tributary to Beverly Harbor offers over 15 acres of potential river herring habitat in its two impoundments, the difficulty of providing fish passage at the obstructions gives it a very low priority for development.

Chubb Creek

Beverly, Manchester

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
1.0	First	6.3	Smelt

No photo available

No Obstructions

Fishway None

Remarks:

This small tributary to Manchester Bay offers no river herring habitat. Rainbow smelt, however, are known to spawn above the stream's tidal reaches.

Clark Pond

Manchester

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
.12	First	N/A	None known

Looking towards Clark Pond from downstream

No Obstructions

Fishway None

Remarks:

This pond in Manchester drains into Kettle Cove by way of a small stream. There is no river herring potential.

West Pond — Gloucester

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
0.3	First	6.5	None known

Obstruction # 1 — Shore Road Culvert — Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.0	Elevation change	-	2.6	~6'-8'	7.3	-	-	42º 34’ 30.581” N 70º 42’ 30.557” W

Outlet of Shore Road culvert

Fishway None

Remarks:

The stream draining this 7.3 acre pond enters Massachusetts Bay by way of a small corrugated metal culvert. There is no access to the culvert entrance across the rocky beach and no development potential.

Buswell Pond — Gloucester

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
0.6	First	4.8	None known

Obstruction # 1 — Duck Pond Culvert — Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.1	Culvert	Metal	0.9	~ 5	0.0	-	Private	42° 35’ 49.015” N 70°41’ 08.085” W

Outlet from Duck Pond culvert

Fishway None

Obstruction # 2 Duck Pond upstream edge Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.1	Elevation change	Stream bed	8.0	3.0	-	-	-	42° 35’ 49.682” N 70° 41’ 08.354” W

Ledge at upstream edge of Duck Pond

Fishway None

Obstruction # 3 Channel Spillway Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.1	Elevation change	Concrete	5.3	~ 3	-	-	Private	42° 35’ 49.837” N 70° 41’ 09.017” W

Channel leading to Duck Pond

Fishway None

Obstruction # 4 Buswell Pond Dam Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.2	Dam	Stone with concrete cap	6.0	6.0	4.3	1920	Private	42° 35’ 53.081” N 70° 41’ 08.795” W


Buswell Pond with covered spillway


Spillway

Fishway None

Remarks:

Four obstructions block passage to this 4.3 acre pond, making any anadromous fish development costly and unlikely due to the small potential resource return for the investment..

Fernwood Lake Gloucester

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
0.6	First	5.7	None known

Obstruction # 1 Railroad Tracks at Lower Banjo Pond Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.1	Earthen berm	N/A	N/A	N/A	5.8	-	-	42º 37’ 00.300” N 70º 41’ 28.860” W

Downstream end of Lower Banjo Pond with railroad tracks visible.

Fishway None

Obstruction # 2 Upper Banjo Pond Dam Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.3	Dam	Concrete	N/A	N/A	10.5	1908	LePage - Papercraft Corp.	42º36’ 47.173” N 70º 41’ 32.026” W

Dam on Upper Banjo Pond

Fishway None

Obstruction # 3 Fernwood Lake Dam Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.6	Dam	N/A	N/A	N/A	25.0	1877	Gloucester DPW	42º 36’ 41.080” N 70º 41’ 52.920” W

No photo available

Fishway None

Remarks:

Fernwood Lake is the uppermost of three impoundments on this unnamed stream. Although the USGS topographic map shows this stream, there is currently no outflow from the impoundments and no apparent outlet structures. There is no potential for development of an anadromous fish population in this system.

Little River Gloucester

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
4.0	First	6.1	Alewife, blueback, smelt

Obstruction # 1 West Gloucester Water Treatment Facility Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
1.4	Elevation change	-	-	-	0.0	-	City of Gloucester	42° 36’ 38.252” N 70° 42’ 29.395” W

Lower portion of fishway

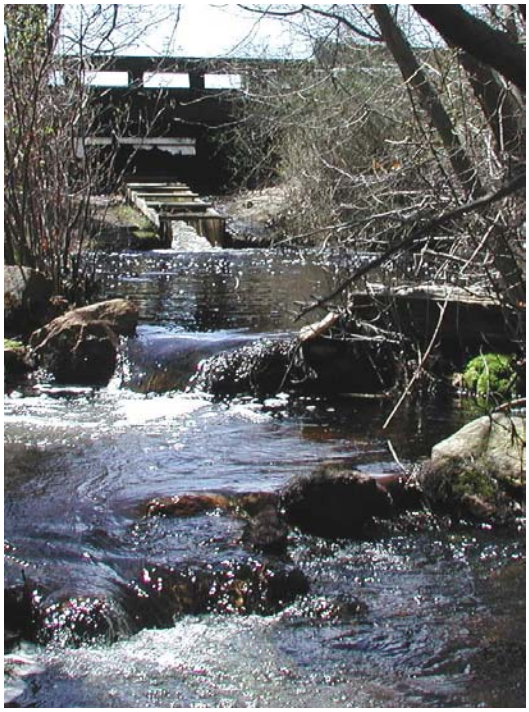
Upper portion of fishway at Treatment Facility

Fishway Present

Design	Material	Length (ft)	Inside W (ft)	Outside W (ft)	# of Baffles	Baffle H (ft)	Notch W (ft)	Pool L (ft)	Condition/ Function
Notched weir-pool	Concrete walls with cinder block and plywood weirs	310	3.1	Varied (4.5 & 5.1)	27	Varied (1.3-1.6)	1.5	Varied (2, 7-15)	Good Passable

Obstruction # 2 Lily Pond Dam Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
1.8	Dam and elevation change	Concrete and stone	2.0	~6	34.0	-	City of Gloucester	42º 36’ 22.357” N 70º 42’ 48.105” W



Stream baffles and denil ladder at Lily Pond

Fishway Present (in two sections)

Design	Material	Length (ft)	Inside W (ft)	Outside W (ft)	# of Baffles	Baffle H (ft)	Notch W (ft)	Pool L (ft)	Condition/ Function
Stream baffle	Stone	~460	Varied (5-12)	Varied (5-12)	10	Varied (0.7,1.2, 1.7)	Varied (1.4, 1.7, 2.0)	Varied (7, 10, 21)	Fair Passable
Denil	Wood	32.0	2.0	2.4	16	1.9	-	-	Good Passable

Obstruction # 3 Dykes Pond Dam Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
4.0	Dam	Concrete	30.0	42	110.0	1980	City of Gloucester	42º 36’ 10.735” N 70º 43’ 23.625” W

Lower section of Dykes Pond Dam

Fishway None

Remarks:

This stream has its source in Dykes Pond, a 110 acre water supply reservoir. It then flows to 34 acre Lily Pond and subsequently to the Annisquam River estuary. Four obstructions are formed along its course, the first of which is a rapid elevation change at the West Gloucester Water Treatment Facility. This is surmounted by a weir-pool fishway, which passes river herring adequately when properly adjusted. The second obstruction includes an elevation change and the Lily Pond dam. Stone stream baffles allow herring to traverse the elevation change, and a wooden Denil ladder, replaced in 2000, provides passage at Lily Pond Dam. The third obstruction is the dam at Dykes Pond. The lack of consistent outflow due to withdrawals from this impoundment eliminates it as a potential spawning habitat and Lily Pond provides the primary spawning/nursery area for the system. Rainbow smelt spawn in the river near Rt. 133.

Sleepy Hollow Pond Gloucester

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
0.8	First	6.5	None known

Obstruction # 1 Atlantic Street culvert Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.6	Culvert, circular	Concrete	2	2	3.6	-	-	42° 38’ 48.394” N 70° 41’ 53.121” W

Upstream view of culvert at Atlantic Street

Overgrown channel downstream of Atlantic Street culvert

Fishway None

Remarks:

This small system has been the focus of some interest by the City of Gloucester since a small culvert in a dyke was enlarged to allow full tidal flow. The elimination of this obstruction made the establishment of a small spawning population of river herring a possibility. Stocking of the pond has not taken place due to lack of access for the transport truck, however, it may be possible to hand carry a sufficient number of adult herring create a run. The small size of the pond makes this a low priority project.

Sawmill Brook Rockport

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
1.7	First	6.1	None known

Obstruction # 1 Frank Street culvert Rockport

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.5	Elevation change and culvert	Concrete	3.0	20	1.0	-	-	42º 38’ 16.246” N 70º 36’ 36.842” W

Culvert and elevation change at Frank Street

Fishway None

Remarks:

Both natural and manmade obstructions combined with minimal spawning area make this stream an unlikely candidate for anadromous fish development.

Mill Brook — Rockport

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
0.9	First	6.2	None known

Obstruction # 1 — Dam off King Street — Rockport

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.1	Dam	Granite	5.0	6.0	0.9	-	-	42° 39’ 30.550” N 70° 37’ 23.693” W

Dam off King Street

Fishway None

Obstruction # 2 Loop Pond Dam Rockport

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.9	Dam	Granite with wooden boards	10.0	5.0	2.4	-	-	42° 39’ 01.473” N 70°37’ 53.150” W

View looking down on Loop Pond Dam

Fishway None

Remarks:

Little potential river herring spawning habitat exists here. On one occasion smelt eggs were observed above the head of the tide but no evidence of spawning has been found since.

Langsford Pond Gloucester

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
0.2	First	5.8	None known

Obstruction # 1 Spillway under Route 127 Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.1	Elevation change	Granite culvert	1	~5	0.0	-	-	42º 39’ 39.842” N 70º 40’ 15.568” W

Upstream opening of culvert under Rte. 127

Fishway None

Obstruction # 2 Langsford Pond Dam Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.2	Dam	Granite blocks	2.5	3.0	3.8	1877	Gloucester DPW	42º 39’ 33.273” N 70º 40’ 06.829” W

Langsford Pond Dam

Fishway None

Remarks:

Two obstructions and lack of significant spawning habitat for river herring eliminate this system as a potential anadromous fish development site.

Goose Cove — Gloucester

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
0.4	First	5.4	None known

Obstruction # 1 — Falls above Denniston Street — Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.0	Elevation change	Rock rubble	2	7.6	1.2	-	-	42° 39’ 07.120” N 70° 39’ 54.417” W

Elevation change above Denniston St.

Fishway None

Obstruction # 2 — Boards in Duck Pond Culvert — Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.1	Dam	Concrete with wooden boards	3.0	2.6	1.2	-	-	42° 39’ 07.400” N 70° 39’ 52.422” W

Culvert at Duck Pond

Fishway None

Obstruction # 3 Goose Cove Reservoir Dam Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.4	Dam	Earthen berm	Submerged outlet	Submerged outlet	57.5	-	City of Gloucester	42° 38’ 54.529” N 70° 39’ 43.645” W

Gate house on Goose Cove Reservoir

Draw site on Goose Cove Reservoir

Fishway None

Remarks:

The fact that the primary potential habitat is a public water supply and the existence of several difficult obstructions make development of anadromous resources unlikely.

Alewife Brook Gloucester

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
4.6	First	4.9	None known

Obstruction # 1 Mill Pond Dam Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
1.0	Dam and tide gate	Concrete	5.6	6.0	17.4	1969-1970	City of Gloucester	42º 37’ 57.832” N 70º 40’ 38.084” W

Mill Pond Dam

Fishway None

Obstruction # 2 Babson Reservoir Dam Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
1.1	Dam	Concrete	40	35	27	1930	Gloucester Water Department	42º 37’ 33.162” N 70º 40’ 03.319” W

Babson Reservoir Dam

Fishway None

Remarks:

Alewife Brook has its source in Babson Reservoir, a 27 acre water supply for the City of Gloucester. Along its route to the Annisquam River it forms a 17.4 acre impoundment called Mill Pond. Mill Pond is brackish, reducing its suitability for spawning herring. This and the lack of sustained flows from the reservoir make this stream a poor candidate for development.

Walker Creek Gloucester

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
2.9	First	5.5	None known

Obstruction # 1 Unnamed Dam behind Forest Lane Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
2.4	Dam	Concrete and stone	5.4	5.4	1.6	-	Private	42° 37’ 23.819” N 70° 44’ 15.201” W

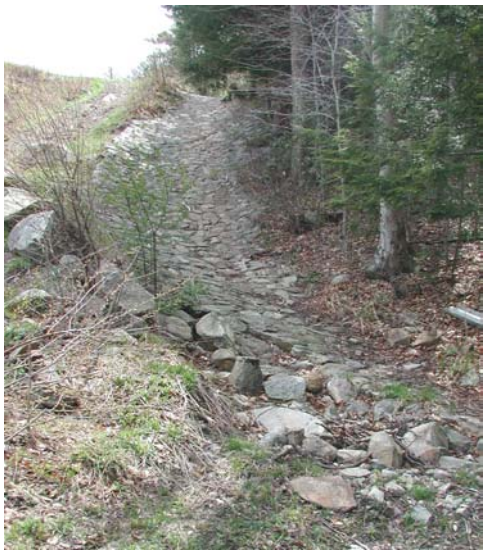
Dam at Forest Lane

Fishway None

Obstruction # 2 Haskell Pond Dam Gloucester

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
2.9	Dam	Concrete and stone	14.0	24	50.0	1902-1903	City of Gloucester	42° 36’ 57.785” N 70° 44’ 19.135” W

Upper section of Haskell Pond spillway (no outflow)



Lower section of spillway (dry)

Fishway None

Remarks:

Walkers Creek flows from 50 acre Haskell Pond to Essex Bay. Two obstructions, the dam at Haskell Pond and a smaller privately owned dam prevent anadromous fish access. In spite of the significant potential habitat available in the upper impoundment, the height of the dam and the lack of sustained outflow relegate this stream to a low priority for development. Smelt spawning was reported in the lower river in the past, but none have been observed in recent years.

Essex River / Alewife Brook Essex, Hamilton

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
7.5	First	6.0	River herring

Obstruction # 1 Elevation change off Apple Street Essex

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
1.0	Elevation change	-	-	-	0.0	-	-	42º 37' 30.514" N 70º 47' 24.096" W

Stream baffles off Apple Street

Fishway Present

Design	Material	Length (ft)	Inside W (ft)	Outside W (ft)	# of Baffles	Baffle H (ft)	Notch W (ft)	Pool L (ft)	Condition/ Function
Stream baffle	Stone	12.0	7.0	Stream edge	2	0.8	-	12.0	Poor Inefficient passage

Remarks:

The Essex River and its main tributary, Alewife Brook, flow from Chebacco Lake to Essex Bay. The only obstruction to fish passage is a natural elevation change at Essex Falls which is overcome by a series of stone stream baffles. While there are no man-made structures to block passage at the Chebacco Lake outlet, encroaching vegetation in the low gradient stream may make it difficult for river herring to reach the 206 acre spawning area. Additionally, beavers have created a dam in recent years that can block fish passage. Habitat in the lower river is favorable for rainbow smelt spawning, although the presence of this species has not been documented.

Ipswich River Ipswich, Lynnfield

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
33.8	Third	6.5	Alewife, blueback, smelt, lamprey

Obstruction # 1 Ipswich Mills Dam Ipswich

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
3.7	Dam	Granite blocks	136	6.7	9.5	1900	Town of Ipswich	42º 40’ 39.110” N 70º 50’ 15.572” W

Ipswich Mills Dam

Fishway Present

Design	Material	Length (ft)	Inside W (ft)	Outside W (ft)	# of Baffles	Baffle H (ft)	Notch W (ft)	Pool L (ft)	Condition/ Function
Denil	Concrete with wooden baffles	85.4	2.5	4.8	17	4.5	-	-	Good Passable

Old (left) and new (right) fishways at Ipswich Mills Dam

Obstruction # 2 Willowdale Dam Ipswich

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
8.5	Dam	Concrete with a wooden board	102	4.6	0.0	1900	Foote Brothers	42º 39’ 34.642” N 70º 53’ 39.007” W

Willowdale Dam

Fishway Present

Design	Material	Length (ft)	Inside W (ft)	Outside W (ft)	# of Baffles	Baffle H (ft)	Notch W (ft)	Pool L (ft)	Condition/ Function
Notched weir-pool	Concrete	61.0	3.1	5.0	13	Varied (2.6-5)	1.6	Varied (4-6.5)	Poor Inefficient passage

Fishway at Willowdale Dam

Obstruction # 3 Bostik Finley Dam Lynnfield, Middleton

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
25.6	Dam	Stone and concrete	47	6.0	13.7	-	Bostik Finley Co.	42º 34' 12.069" N 71º 01' 51.117" W

Bostik Finley Dam

Fishway None

Remarks:

The Ipswich River appears to offer significant potential for river spawning anadromous fish such as blueback herring and American shad. While no sizeable impoundments or ponds are available, many miles of riverine habitat are potentially available for these species. An inefficient ladder at Ipswich Mills was replaced with a modern Denil design in 1995 and a second obstruction, a dam at Willowdale with an inefficient fishway, is being considered for removal. In addition, DMF has stocked the stream with a total of 31,147 blueback herring from 1990 to 2002. Local volunteers have monitored up-running adults at the first fishway and have documented modest returns.

In addition to the lack of effective fish passage facilities in the past, the most critical factor in preventing the system from reaching its potential for anadromous fish production is probably the seasonal loss of flow due to withdrawals in the upper watershed. The inability of this stream to function reliably as a nursery area in summer and as a vehicle for out-migration of juveniles in the fall may ultimately be the limiting factor determining the success of restoration efforts in this river. The impact of these withdrawals must be taken into consideration when planning future attempts to develop anadromous fish resources in the system. It would be well advised to assess the results of recent stocking and fish passage improvement efforts before committing additional time and financial resources to this project. Should the numbers of river herring using the Ipswich Mills fishway increase significantly, the next logical step would be removal of the Willowdale dam or installation of a more efficient fish passage facility.

Howlett Brook Topsfield, Ipswich

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
2.2	First	6.4	None known

Obstruction # 1 Howlett Brook Dam Topsfield

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
0.1	Dam	Concrete with wooden boards	20	4.6	2.2	1930	-	42° 39' 19.887" N 70° 55' 03.090" W

Howlett Brook Dam

Fishway None

Remarks:

Howlett Brook enters the Ipswich River upstream of the Willowdale dam. It is impounded by a 4.6 foot dam immediately above the confluence and has no significant spawning habitat in its lower reaches, resulting in a low priority for development.

Martins Brook North Reading, Wilmington

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
4.5	Second	6.1	None known

No Obstructions

Culverts at Martin's Pond Outlet

Fishway None

Remarks:

Martins Brook enters the Ipswich River above the Bostik Finley Dam. Its headwaters, 89.3 acre Martins Pond, provide significant potential alewife spawning habitat. The need for efficient passage facilities at Willowdale and Bostik Finley Dams before a population can be developed, however, relegate this stream to a low priority.

Egypt River Ispwich, Rowley

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
5.5	Second	6.7	River herring, smelt

Obstruction # 1 Municipal Electrical Generating Plant Site Ipswich

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
5.3	Elevation change	-	-	-	0.4	-	Ipswich Hydroelectric	42º 41’ 53.259” N 70º 52’ 09.286” W

Stream baffle at Municipal Electrical Generating Plant

Fishway Present

Design	Material	Length (ft)	Inside W (ft)	Outside W (ft)	# of Baffles	Baffle H (ft)	Notch W (ft)	Pool L (ft)	Condition/ Function
Stream baffle	Stone	224.0	Varied (9-10')	Stream edge	7	0.9	-	Varied (21, 20, 20.5)	Poor Inefficient passage

Remarks:

The Egypt River is formed by the confluence of Bull and Dow Brooks and is known as the Rowley River in its estuarine section. River herring and smelt were present in the 1970's, but only limited numbers have been observed in recent years. This may be due to the low stream flows, which were noted during the survey. This factor and the cost of providing fish passage at the impoundments make this stream a low priority area for development.

Parker River — Newbury, Byfield

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
21.3	Third	6.9	Alewife, blueback, smelt, white perch, lamprey

Obstruction # 1 — Woolen Mill Dam — Newbury

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
9.3	Dam	Stone	38	9	8.7	1975	Byfield Water District	42° 45’ 00.072” N 70° 55’ 44.862” W

Woolen Mill Dam

Fishway — Present

Design	Material	Length (ft)	Inside W (ft)	Outside W (ft)	# of Baffles	Baffle H (ft)	Notch W (ft)	Pool L (ft)	Condition/ Function
Notched weir-pool	Concrete and stone	104.0	Varied (3-10)	Varied (2-3)	12	1.8	3.0	Varied (5-16.3)	Fair Passable

Fishway at Woolen Mill Dam

Obstruction # 2 Larkin Road Dam Newbury

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
10.6	Dam	Concrete	39	6.5	2.9	1874	Town of Newbury	42° 44’ 59.710” N 70° 56’ 32.239” W

Larkin Road Dam

Fishway Present

Design	Material	Length (ft)	Inside W (ft)	Outside W (ft)	# of Baffles	Baffle H (ft)	Notch W (ft)	Pool L (ft)	Condition/ Function
Notched weir-pool	Concrete and stone	152.0	Varied (2.4-4.1)	Varied (4.0-6.7)	14	Varied (0.7-1.4)	1.3	11.2	Fair Passable

Fishway at Larkin Road Dam

Obstruction # 3 Snuff Mill Dam Byfield

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
11.2	Dam	Concrete and stone	61	8.8	1.3	-	Private	42º 45’ 17.988” N 70º 56’ 49.405” W

Snuff Mill Dam

Fishway Present

Design	Material	Length (ft)	Inside W (ft)	Outside W (ft)	# of Baffles	Baffle H (ft)	Notch W (ft)	Pool L (ft)	Condition/ Function
Notched weir-pool	Concrete and stone	106.0	Varied (2.2-4.6)	Varied (4.1-5.8)	13	1.9	1.5	Varied (8.3-10.4)	Fair Inefficient passage

Fishway at Snuff Mill Dam

Obstruction # 4 Blacksmith Shop Dam Byfield

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
11.4	Dam	Concrete	74	5.0	2.8	1921	Private	42º 45’ 19.946” N 70º 56’ 59.210” W

Blacksmith Shop Dam with fishway (left side of photo)

Fishway Present

Design	Material	Length (ft)	Inside W (ft)	Outside W (ft)	# of Baffles	Baffle H (ft)	Notch W (ft)	Pool L (ft)	Condition/ Function
Alaskan steeppass	Aluminum	20.0	2.0	-		2.5	-	-	Excellent Passable

Obstruction # 5 River Street Dam Byfield

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
11.6	Dam	Concrete with wooden boards	34	5.2	0.8	-	Private	42° 45’ 23.291” N 70° 57’ 13.929” W

River Street Dam

Fishway Present

Design	Material	Length (ft)	Inside W (ft)	Outside W (ft)	# of Baffles	Baffle H (ft)	Notch W (ft)	Pool L (ft)	Condition/ Function
Notched weir-pool	Stone and concrete	65.0	3.9	7.0	8	1.5	3.1	Varied (7.1, 8.4, 6.9)	Poor Passable

Fishway at River Street Dam

Obstruction # 6 Pentucket Pond Dam Georgetown

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
16.3	Dam	Concrete and aluminum	6.7	~3	84.0	Rebuilt 1999-2000	Town of Georgetown	42° 43’ 52.958” N 70° 59’ 25.030” W

Pentucket Pond Dam and fishway (right side of photo)

Fishway Present

Design	Material	Length (ft)	Inside W (ft)	Outside W (ft)	# of Baffles	Baffle H (ft)	Notch W (ft)	Pool L (ft)	Condition/ Function
Alaskan steeppass	Aluminum	10.0	2.0	-		2.6	-	-	Excellent Inefficient passage

Remarks:

The Parker River has been the subject of a great deal of interest and anadromous fish restoration work in recent years. Despite the numerous obstructions to passage, the river has managed to sustain a river herring population over the years. There have been numerous improvements to the system due to the efforts of volunteer groups, conservation organizations as well as state and Federal agencies.

A number of problems for migrating river herring have occurred at the first dam. The first of these, difficult entrance to the ladder at low tidal stages, was alleviated in 2002 by the addition of stream baffles in the downstream culvert. The propensity for beavers to builds dams inside the fish ladder has also become a problem and current state regulations which protect the beaver make it difficult for managers to deal with this apparently simple problem. Downstream migration of juveniles is also an issue at this site. The rock rubble face of the dam can trap young herring since water tends to flow through rather than over it during low flow periods.

The second fishway, at Larkin Street, was improved 1997 by volunteers who modified the entrance to increase attraction flow. The ladder now functions adequately. The next fishway, at the Snuff Mill dam, is inefficient and needs to be redesigned and replaced. The fourth fishway at the Blacksmith Shop dam was replaced in 2001 with an aluminum Alaskan Steepass ladder. A notched weir-pool fishway at River St. is passable but in poor condition and will need repair work in the near future. And finally, a new aluminum steeppass ladder was installed in 2000 at the outlet of Pentucket Pond. Access for cleaning and a screen in the spillway channel of the dam are needed to provide maximum efficiency for this facility.

Rainbow smelt are known to utilize the streambed below the Woolen Mill dam for spawning.

Mill River Rowley

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
11.5	Second	6.7	River herring, smelt, lamprey

Obstruction # 1 Jewel Mill Dam Rowley

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
4.2	Dam	Concrete and stone	74	5.6	4.0	-	Private	42° 44’ 20.829” N 70° 54’ 01.723” W

Jewel Mill Dam

Fishway None

Remarks:

River herring and rainbow smelt ascend this tributary to the Parker River up to the Jewel Mill Dam. The lack of significant habitat in the impoundments, however, greatly reduces this stream's potential.

Penn Brook Boxford

Stream Length (mi)	Stream Order	pH	Anadromous Species Present
2.9	First	6.0	None known

Obstruction # 1 Baldpate Pond culvert Boxford

River Mile	Type	Material	Spillway W (ft)	Spillway H (ft)	Impoundment Acreage	Year Built	Owner	GPS
2.9	Culvert, circular	Steel	2	0	66.0	-	-	42º 42’01.750”N 70º 59’31.460”W

Culvert with screen at Baldpate Pond

Fishway None

Remarks:

Penn Brook enters the Parker River below Pentucket Pond. Although a 2 foot diameter culvert may inhibit fish movement, it is passable and fish can access the Baldpate Pond headwater. Stocking of this pond may be considered when passage facilities on the Parker have been improved.

North Shore Recommendations

1. Continue to monitor adult river herring returns in the Ipswich River at the Ipswich Mills fishway. If significant increases in returns are observed, consider removal of the Willowdale dam with fishway construction as an alternative.

2. Add stream baffles in the culvert below the Woolen Mill dam on the Parker River as described in the existing plan in order to improve access to the fishway entrance at lower tidal stages.

3. Replace the Snuff Mill and River Street ladders on the Parker River with more efficient designs.

4. Provide a low water passage channel for juvenile herring at the Woolen Mill dam on the Parker River.

5. Provide a screen in the spillway channel at the Pentucket Pond dam on the Parker River to prevent fish from bypassing the fishway entrance.

6. A clear channel should be maintained at the outlet of Chebacco Lake to the Essex River to insure that migrating herring will be able to reach the spawning habitat.