



GROWING AREA WQ
Damariscotta River
Boothbay, Edgecomb, Newcastle and Damariscotta

Triennial Report for 2007-2009

Report Date: December 28, 2010

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APPROVAL

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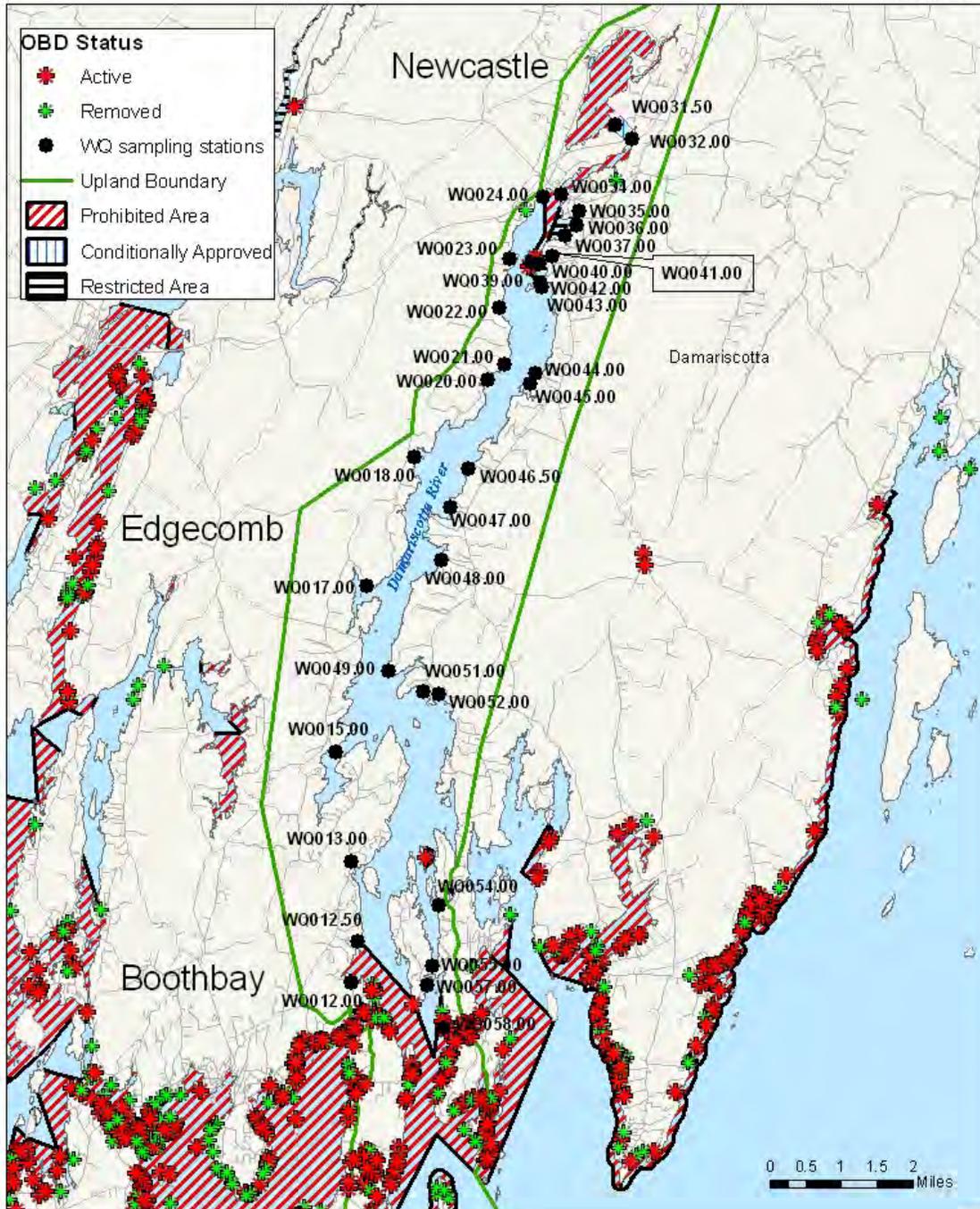
Figure 1. Growing Area WQ, with Active Water Stations



Maine Department of Marine Resources Growing Area WQ - Damariscotta River



02/01/10





Executive Summary

This is a triennial report for growing area WQ written in compliance with the requirements of the 2007 Model Ordinance and the National Shellfish Sanitation Program. The next sanitary survey for growing area WQ is due after the completion of the 2011 field season.

Over the triennial review period, there have been no notable changes in pollution sources in growing area WQ. Several pollution sources that were noted in past sanitary surveys have been remediated, and are no longer public health concerns. Over the past three review years, one over board discharges (OBD) was removed from growing area WQ; it was removed in 2008 in the town of Boothbay. Two stations located in Great Bay prohibited area were deactivated; no stations were created or reactivated over the past three years. Over the past three review years, there were two classification changes; there were also two closures resulting from an oil spill, and one closure resulting from a sewage spill at a pump station. Generally, there has been little change in water quality over the past three years, with most stations that are classified as approved showing P90 calculations that are under 50 percent of the approved standard limit. At the end of 2009, only one approved station was showing upward trends and was over 80 percent of the standard limit. Several approved stations have shown an improvement in water quality, with P90 calculations significantly declining over the review period. As a result of this report, no classification changes are required.

Growing Area Description

Growing Area WQ is the Damariscotta River estuary, located in Lincoln County along the midcoast region of Maine (Figure 1). The growing area boundary begins at Linnekin Neck, East Boothbay; includes the Gut, South Bristol and ends at the southeast tip of Rutherford Island, South Bristol (including Turnip and Thrumcap Islands). A description of the upland boundary can be found in the central files of the Department of Marine Resources in West Boothbay Harbor. The river flows through the following towns: Nobleboro, Damariscotta, Newcastle, South Bristol, Edgecomb, Bristol and Boothbay. The growing area's head of tide is located below the outlet of Damariscotta Lake on the town line between Newcastle and Nobleboro and the river empties into the Atlantic Ocean 15 miles south of the two towns.

Pollution sources in this growing area include two waste water treatment plants, with discharges into the Damariscotta River and 83 licenses OBDs.

Current Classification(s)

Shellfish growing area WQ currently has areas classified as:

Approved:

- Middle Damariscotta River; 21 sample stations (WQ 13, 15, 17, 18, 20, 21, 22, 23, 24, 43, 44, 45, 46.5, 47, 48, 49, 51, 52, 54, 55 and 57)



Conditionally Approved:

- Area No. 23-A, Area between the Narrows and US Route 1 (Newcastle, Damariscotta), due to Great Salt Bay Sewage Treatment Plant 2 stations: WQ 31.5 and 32.

Restricted:

- Area No. 23-A, Days Cove, (Damariscotta); WQ 35, 36 and 37; due to non-point pollution, due to water quality not meeting approved standards
- Area No. 23-A, Huston Cove, (Damariscotta); WQ 40, 41 and 42; due to non-point pollution, due to water quality not meeting approved standards

Prohibited:

- Area No. 23-A, Damariscotta River south of Route 1 bridge (Newcastle, Damariscotta); WQ 24 and 39; due to presence of waste water treatment plant outfall.
- Area No. 23-C, Farmers Island, (South Bristol), due to OBD; no sample stations
- Area No. 23-C, Lower Damariscotta River (Boothbay and South Bristol); due to the presence of OBDs, marinas and non-point source pollution: WQ 12, 12.5 and 58.

For a complete list of Legal Notices, please visit Maine DMR website:

http://www.maine.gov/dmr/rm/public_health/closures/closedarea.htm#Q

Activity during Review Period (2007-2009)

Activity in 2007:

March 1, 2007- Based on a recommendation made in the 2006 triennial report for area WQ, the conditionally restricted area, located in Pollution Area No. 23-A (formerly No. 24-A), has been reclassified to conditionally approved based on the proper function of the Great Salt Bay Mills Facility. The reason for this reclassification was based on improved water quality scores at sample stations WQ31.5 and WQ32.0. Due to this change, sample station WQ 32.0 has been reclassified from conditionally restricted to conditionally approved.

March 3, 2007- Based on the recommendation made in the 2006 Triennial report for area WQ, the closure boundary line in Pollution Area No. 23-C (formerly 24-A) was moved in order to monitor the extent of the restricted water quality impact in an area which is currently classified as prohibited due to a presence of over board discharges (OBDs), marinas and boatyards. As a result of this boundary line move, station WQ 12.50 was reclassified from approved to prohibited.

April 6, 2007- the upper portion of the Damariscotta River, Pollution Area No. 23-A (formerly No. 24-A) was closed due to a sewage spill from a pump station for the Great Salt Bay Sewage Treatment Plant (STP), which occurred on April 6, 2007. The closure included approved, conditionally approved and restricted areas in the Upper portion of the river. Water samples were collected from this area on April 29, 2007, fecal coliform scores from all stations met their current classification standard, and the closure was repealed on May 2, 2007.



July 5, 2007- the restricted and conditionally approved areas in Pollution Area No. 23-A (formerly No. 24-A) were closed due to an oil spill, which occurred on July 2, 2007 in Damariscotta. Clam meats were collected and analyzed using sensory analysis ("sniff test"). The closure for the approved and restricted areas was repealed on July 7, 2007; the closure for the conditionally approved area was repealed in July 13, 2007.

Activity in 2008:

June 11, 2008- A fire destroyed Washburn and Doughty in East Boothbay; Seth Barker, DMR Oil Spill Response Coordinator responded to assess the impact. The in-field assessment determined that due to petroleum sheen on the water a section of the river (Jones Cove, Area No. 23C) in South Bristol needed to be closed until further assessment and product testing could be conducted. Shellfish samples (clams and mussels) were collected on August 8 and sensory tested. All came back acceptable and the closure was repealed on August 12, 2008.

There were no classification changes in growing area WQ in 2008.

Activity in 2009:

There were no classification changes in growing area WQ in 2009.

Current Management Plan(s) for Conditional Areas

There is one conditional area located in growing area WQ:

Pollution Area No. 23-A: Damariscotta River Conditional Area; due to Great Salt Bay Sewage Treatment Plant; Stations WQ 31.5 and 32.

A copy of the management plan for this conditional area can be found in DMR central files; this plan was last updated on December 14, 2009.

Current Annual Review of Conditional Area Management Plan

There were no conditional area closures due to a sewage treatment plant malfunction during the 2009 review year. Stations WQ 31.5 and 32 were sampled monthly. For a complete review of this conditional area, please see Appendix A.

Documentation of Pollution Sources

The following sections include information on pollution sources which do or may impact water quality in growing area WQ. Pollution sources that are reviewed in this section include domestic waste, including both private inground systems and over board discharges (OBDs), marinas and mooring fields, stormwater and pollution from non-point sources (streams), farms and other agricultural activities, domestic animals and wildlife areas, and recreational areas.



Evaluation of New Pollution Sources

No new pollution sources were identified during the review period 2007-2009.

Re-Evaluation of Existing Pollution Sources

The following sections are a review of existing pollution sources in growing area WQ. Pollution problems associated with domestic waste, including OBDs, which were identified prior to the last triennial re-evaluated, are evaluated in this section. Other pollution sources, including marinas and mooring fields, municipal wastewater treatment facilities, pollution associated with farms and agricultural activities, and farms which were present at the time of the last triennial review, are also reviewed.

Domestic Waste

The shoreline along the Damariscotta River has been surveyed between 2000 and 2002. All of the shoreline is scheduled to be resurveyed over the next two review years, with the findings being presented in the next sanitary survey report, to be written after the 2011 field season is completed. Table 1 and Figure 2 present information on those properties that were identified as potential or actual problems during the last sanitary survey; any recent remediation action or follow up work conducted by the town CEO and/or DMR staff is noted in the table in bold.

Table 1. Existing Pollution Problems, Growing Area WQ

PS ID	Town	Description	Distance to Water	Impact Direct vs. Indirect	Action Taken	Date of Survey
BOOTH Q PS 1	Boothbay	Old metal tank with wooden cover	50	D	Located in a large Prohibited Area	09-Aug-01
BOOTH Q PS 2	Boothbay	Breakout on shore	0	D	Located in a large Prohibited Area	25-Oct-00
DAM PS 1	Damariscotta	Seepage coming out of bank below system	150	D	System rechecked and confirmed to be dry and in good working order; currently not a problem	15-Jan-02
DAM PS 2	Damariscotta	Problematic system; working on replacing	300 (to stream draining to shore)	D	New system installed in 2007; confirmed to be in good working order; no longer a problem	15-Jan-02
SBRI Q PS 1	South Bristol	Failing Septic-breakout in woods north of house	50	D	New system installed; no longer a problem	09-Apr-02



There are 83 over board discharges (OBDs) that discharge their treated effluent into the waters of the Damariscotta River (Figure 2). The majority of these OBDs are located in the lower river, inside a large prohibited area. However, there are three OBDs situated in the upper Damariscotta River, off Hall Point, Damariscotta (1519, 2851, 2278), one OBD located on the east side of Farmers Island, South Bristol (7279) and one OBD located on the southern most tip of Jones Point, South Bristol (1848). No OBDs have been removed over the past three review years.

An overboard discharge (OBD) is the discharge of wastewater from residential, commercial, and publicly owned facilities to Maine's streams, rivers lakes, and the ocean. Commercial and residential discharges of sanitary waste have been regulated since the mid-1970's when most direct discharges of untreated waste were banned. Between 1974 and 1987 most of the "straight pipes" were connected to publicly-owned treatment works or replaced with standard septic systems. Overboard discharge treatment systems were installed for those facilities that were unable to connect to publicly-owned treatment works or unable to install a septic system because of poor soil conditions or small lot sizes.

All overboard discharge systems include a process to clarify the wastewater and disinfect it prior to discharge. There are two general types of treatment systems; mechanical package plants and sand filters. Sand filter systems consist of a septic tank and a sand filter. In such systems, the wastewater is first directed to a holding tank where the wastewater solids are settled out and undergo partial microbial digestion. The partially treated wastewater then flows from the tank into a sand filter, consisting of distribution pipes, layers of stone and filter sand, and collection pipes within a plastic liner. The wastewater is biologically treated as it filters down through the sand, and is then collected and discharged to a disinfection unit. Mechanical package plants consist of a tank, where waste is mechanically broken up, mixed and aerated; mechanical systems require electric power, and must have an operating alarm on a separate electrical circuit that will activate if the treatment unit malfunctions due to a power failure. The aerated treated wastewater is held in a calm condition for a time, allowing for solids to settle and for the waste to be partially digested by naturally occurring bacteria. The clarified water from the tank is then pumped off the top into a disinfection unit. There are two types of disinfection units, UV and chlorinators (most common). In a chlorinator, the treated water contacts chlorine tablets and remains in a tank for at least 20 minutes where bacteria and other pathogens are killed. The treated and disinfected water is discharged from the disinfection unit to below the low water mark of the receiving waterbody (the ocean, a river, or a stream) via an outfall pipe.

OBDs are licensed and inspected by the Maine Department of Environmental Protection. At each inspection, DEP looks for tags on each treatment unit identifying the service contractor and the last date of service. If an OBD is not properly maintained, or if the OBD malfunctions, it has the potential to directly discharge untreated wastewater to the shore; therefore, preventative closures are implemented surrounding every OBD located in growing area WQ (Table 2). The size of each closure is determined based on a dilution, using on the permitted flow rate of the OBD (in gallons per day, GPD), and the depth of the receiving water that each OBD discharges to; the fecal concentration used for this dilution calculation is 1.4×10^5 FC /100 ml. All current closures are of adequate size to protect public health.



Figure 2. Damariscotta River, Domestic Pollution Sources and Over Board Discharges (OBD)

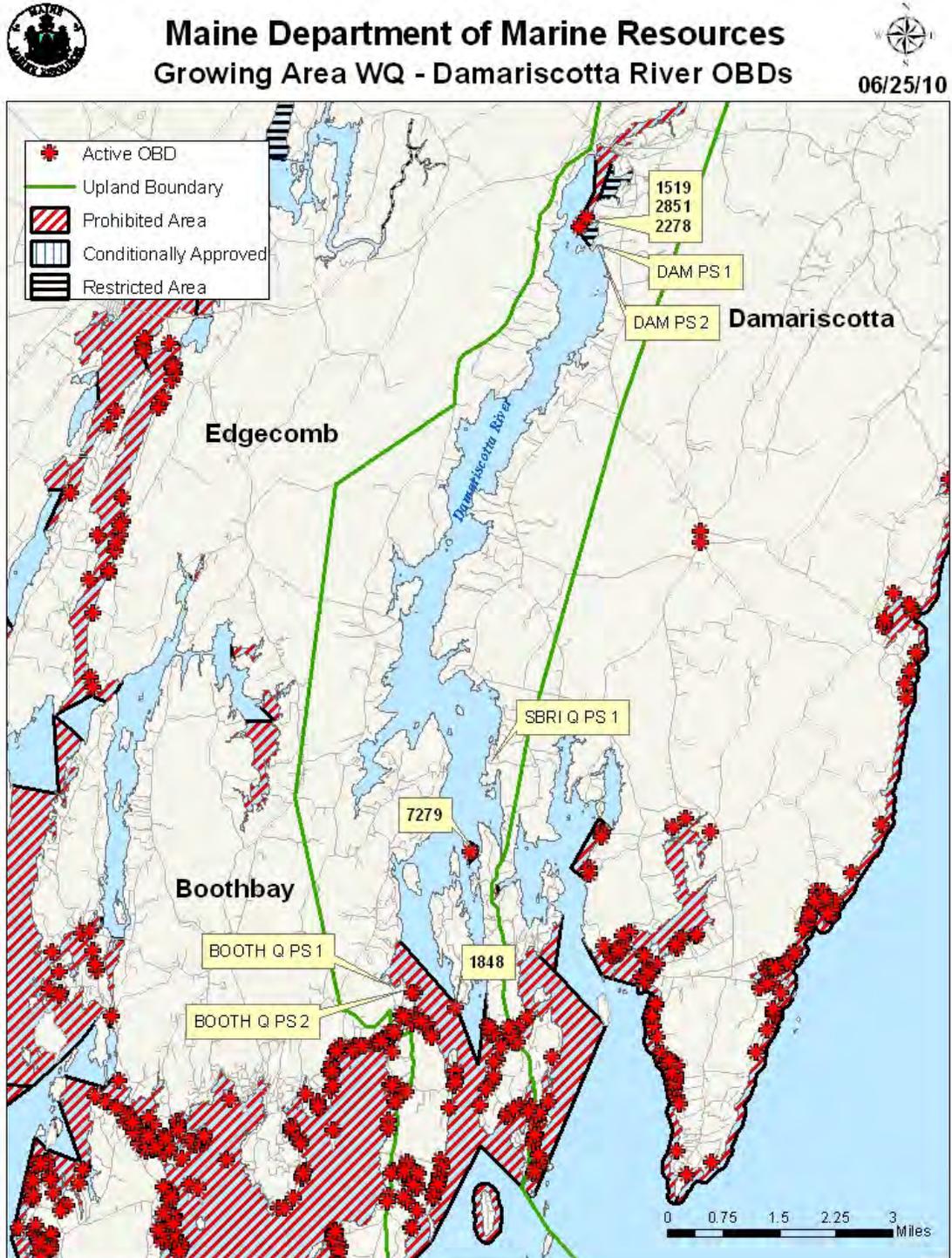




Table 2. Damariscotta River Over Board Discharge Inventory

DEP_ID	FLOW RATE (GPD)	OBD Type	Receiving Water	Deceiving Water Depth (ft)	Required Closure (acres)	Actual Closure (acres)
001519	500	M	DAMARISCOTTA RIVER	10	1.5	>6
002278	450	M	DAMARISCOTTA RIVER	10	1.2	
002851	300	M	DAMARISCOTTA RIVER	10	0.9	
Total Area – Upper River					3.6	
007279	500	P	DAMARISCOTTA RIVER	6	2.6	12
001848	500	S	DAMARISCOTTA RIVER	35	0.4	>20
001686	500	M	CHRISTMAS COVE	15	1	>100
001753	600	S	CHRISTMAS COVE	15	1.2	
001756	300	S	CHRISTMAS COVE	15	0.6	
001881	300	M	CHRISTMAS COVE	15	0.6	
001996	1100	S	CHRISTMAS COVE	15	2.3	
002272	450	S	CHRISTMAS COVE	15	0.9	
007789	300	M	CHRISTMAS COVE	15	0.6	
7988	450	M	CHRISTMAS COVE	15	0.9	
5092	360	S	CHRISTMAS COVE	15	0.7	
Total Area-Christmas Cove					8.8	
001317	900	M	DAMARISCOTTA RIVER	12	2.3	
001518	500	M	DAMARISCOTTA RIVER	12	1.3	
001748	300	S	DAMARISCOTTA RIVER	12	0.8	
001749	300	M	DAMARISCOTTA RIVER	12	0.8	
001879	300	M	DAMARISCOTTA RIVER	12	0.8	
001969	450	M	DAMARISCOTTA RIVER	12	1.2	
002057	660	S	DAMARISCOTTA RIVER	12	1.7	
002231	4600	M	DAMARISCOTTA RIVER	12	11.8	
002265	300	S	DAMARISCOTTA RIVER	12	0.8	
002319	300	M	DAMARISCOTTA RIVER	12	0.8	
002364	2250	M	DAMARISCOTTA RIVER	12	5.8	
002434	480	S	DAMARISCOTTA RIVER	12	1.2	
002509	540	M	DAMARISCOTTA RIVER	12	1.4	
002610	420	M	DAMARISCOTTA RIVER	12	1.1	
003016	360	S	DAMARISCOTTA RIVER	12	0.9	
003042	300	S	DAMARISCOTTA RIVER	12	0.8	
003363	300	S	DAMARISCOTTA RIVER	12	0.8	
003589	300	M	DAMARISCOTTA RIVER	12	0.8	
003724	400	M	DAMARISCOTTA RIVER	12	1	
003753	780	X	DAMARISCOTTA RIVER	12	2	
004000	300	S	DAMARISCOTTA RIVER	12	0.8	
004343	315	S	DAMARISCOTTA RIVER	12	0.8	



DEP_ID	FLOW RATE (GPD)	OBD Type	Receiving Water	Deceiving Water Depth (ft)	Required Closure (acres)	Actual Closure (acres)
004661	300	M	DAMARISCOTTA RIVER	12	0.8	
004892	300	S	DAMARISCOTTA RIVER	12	0.8	
005137	315	S	DAMARISCOTTA RIVER	12	0.8	
005138	300	S	DAMARISCOTTA RIVER	12	0.8	
006129	1250	M	DAMARISCOTTA RIVER	12	3.2	
006131	300	M	DAMARISCOTTA RIVER	12	0.8	
006157	300	M	DAMARISCOTTA RIVER	12	0.8	
006219	450	M	DAMARISCOTTA RIVER	12	1.2	
006598	300	S	DAMARISCOTTA RIVER	12	0.8	
006698	300	S	DAMARISCOTTA RIVER	12	0.8	
006700	450	M	DAMARISCOTTA RIVER	12	1.2	
006965	300	M	DAMARISCOTTA RIVER	12	0.8	
007208	300	S	DAMARISCOTTA RIVER	12	0.8	
007283	300	S	DAMARISCOTTA RIVER	12	0.8	
007898	360	M	DAMARISCOTTA RIVER	12	0.9	
004542	900	S	DAMARISCOTTA RIVER	12	2.3	
Total Area- Damariscotta River					57.3	>100
002795	300	M	GLEN COVE/LITTLE RIVER	6	1.5	
003439	300	S	GLEN COVE/LITTLE RIVER	6	1.5	
004579	300	M	GLEN COVE/LITTLE RIVER	6	1.5	
006951	300	M	GLEN COVE/LITTLE RIVER	6	1.5	
003062	300	S	GLEN COVE/LITTLE RIVER	6	1.5	
003125	300	S	GLEN COVE/LITTLE RIVER	6	1.5	
001418	630	M	GLEN COVE/LITTLE RIVER	6	3.2	
001316	360	M	GLEN COVE/LITTLE RIVER	6	1.8	
001664	480	S	GLEN COVE/LITTLE RIVER	6	2.5	
001737	400	S	GLEN COVE/LITTLE RIVER	6	2	
002427	300	S	GLEN COVE/LITTLE RIVER	6	1.5	
002484	300	S	GLEN COVE/LITTLE RIVER	6	1.5	
002733	300	S	GLEN COVE/LITTLE RIVER	6	1.5	
003648	300	S	GLEN COVE/LITTLE RIVER	6	1.5	
004819	300	S	GLEN COVE/LITTLE RIVER	6	1.5	
006783	300	S	GLEN COVE/LITTLE RIVER	6	1.5	
007263	300	S	GLEN COVE/LITTLE RIVER	6	1.5	
001942	630	S	OCEAN HARBOR	6	3.2	
Total Area- Glen Cove/Little River/Ocean Harbor					32.2	>100
002951	300	S	MILL POND	6	1.5	
003279	300	S	MILL POND	6	1.5	
004056	300	S	MILL POND	6	1.5	
005327	150	S	MILL POND	6	0.75	



DEP_ID	FLOW RATE (GPD)	OBD Type	Receiving Water	Deceiving Water Depth (ft)	Required Closure (acres)	Actual Closure (acres)
002134	300	S	MILL POND	6	1.5	22
001956	300	S	MILL POND	6	1.5	
Total Area- Mill Pond					8.25	
001880	300	S	SOUTH BRISTOL GUT	12	0.8	> 12
006215	300	S	SOUTH BRISTOL GUT	12	0.8	
007700	400	M	SOUTH BRISTOL GUT	12	1	
001684	300	M	THE GUT	12	0.8	
006216	100	P	THE GUT	12	0.3	
007656	300	M	THE GUT (JOHNS BAY)	12	0.8	
002315	300	M	ATLANTIC OCEAN THE GUT	15	0.6	
Total Area- the Gut					5.1	



Municipal WWTP

There are two municipal wastewater treatment plants in this growing area (Figure 3). The Great Salt Bay Damariscotta Mills facility has an outfall located in Great Salt Bay, in a large prohibited area. The Great Salt Bay Sanitary District (GSBSD) is a lagoon system with an outfall located within a prohibited area in downtown Damariscotta adjacent to the municipal parking lot boat launch.

The Great Salt Bay Damariscotta Mills (GSBDM) treatment facility is a secondary sand filter treatment system that serves a population of approximately 60 people. All customers have individual septic tanks and the plant only receives the gray water from its customers; the sewer district maintains all customers' septic tanks. The GSBDM facility has 3 pump stations which are alarmed; none have the ability to overflow or bypass. In 2009, the average daily flow of this plant is 7,707 gallons per day (GPD) (2009 average); the average wet weather flow is 19,176 GPD. There are no combined sewer outfalls (CSO) at this facility, and stormwater drains are separate from those of the treatment system. Prior to discharging to the Great Salt Bay, the plant chlorinates the effluent, with a contact time of 4 hours. The depth of receiving water at the location of the outfall pipe is 2.5 ft at mean low water, and 7 ft at high tide. The plant is staffed from 7 am to 3 pm, five days a week.

In 1999, an effluent dye study for the Mills facility was conducted by Bigelow labs, in order to determine the effluent dilution from the Mills. The study tracked the wastewater plume, as it moved through the Great Salt Bay. The study was conducted after a significant precipitation event, with effluent discharge flows of 12,000 GPD. The results of the study showed that the effluent is highly diluted in the Salt Bay, with most areas of the bay exhibiting dilution rates between 1:1000 and 1:10,000 or greater at both low and high tidal stages; no significant differences were established between the tidal stages (Phinney, 1999). Currently, the majority of Great Bay is classified as prohibited (450 acres), with an additional 42 acres in the southern most prior of the Bay (just North of Rt 1) classified as conditionally approved, based on the performance at the Mills Facility. Areas located south of Rt 1 are classified as prohibited. In 2009, an equal mix dilution calculation was completed by DMR to confirm that the closure size surrounding the Mills facility outfall is of adequate size to protect public health. For this calculation, the 2009 average wet weather flow of 19,176 GPD, average depth at mean tide of 4.7 ft and a fecal concentration of 1.4×10^5 FC/100 ml was used. Assuming equal dilution, the required closure size is 125.2 acres; the actual closure is approximately 450 acres. The current closure surrounding the Mills Facility is adequate to protect public health.

The Great Salt Bay Sanitary District (GSBSD) is a secondary treatment lagoon system, which serves a population of approximately 3000 residents from the towns of Newcastle and Damariscotta. The GSBSD has six collection system pumping stations; no bypasses or overflows are present on any of the pumping stations. There are three lagoons on site at the facility, one with a 4 million gallon capacity, and two with 2 million gallon capacity. The wastewater is retained in the lagoons for a total of six weeks. In 2009, the average daily flow of the plant was 0.157 million gallons per day (MGD); the average wet weather flow was 0.414 MGD. The plant has no bypass capability and due to its large holding capacity, the plant can shut down for more than two weeks with maximum inflow rate, if needed. The effluent is chlorinated, with a contact time of 50 minutes, prior to being pumped 1.5 miles to the outfall



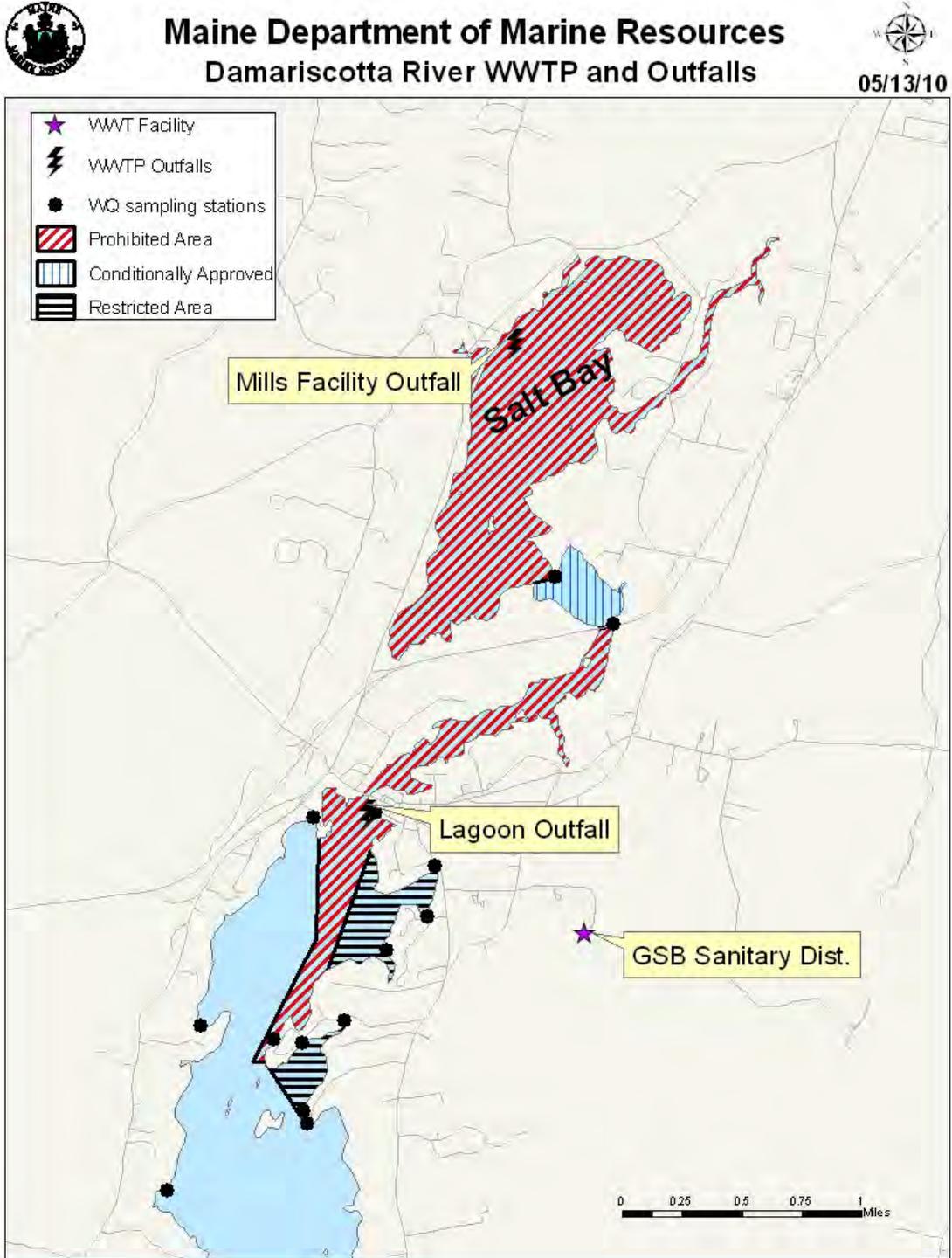
located at the Damariscotta town landing. The depth of the receiving waters at the outfall is 10 feet. The plant is staffed from 7 am to 3 pm, five days a week.

The size of the current prohibited area (1000:1 dilution) surrounding the outfall of the GSBSD was confirmed through a dilution study, conducted by the EPA in 1995. This study was conducted under normal flow conditions, of 124,000 GPD. Based on the results of this study the 1000:1 dilution line was achieved within 300 ft of the effluent pipe; the size of the current prohibited area's outer edge extends approximately 1,300 ft from the outfall. In 2009, an equal mix dilution calculation was completed by DMR to confirm that the closure size surrounding this wastewater treatment facility outfall is of adequate size to protect public health. For this calculation, the 2009 average wet weather flow of 414,000 GPD, average depth at mean tide of 10 ft and a fecal concentration of 1.4×10^4 FC/100 ml was used. Assuming equal mixing dilution, the required closure size is 127 acres; the actual closure surrounding this outfall is approximately 170 acres. The current closure surrounding this facility is adequate for the protection of public health.

Over the past three review years, there has been one WWTP related closure, as a result of a sewage overflow at an internal pump station of the main facility, occurring on April 6, 2007. The closure included approved, conditionally approved and restricted areas in the upper portion of the river. Water samples were collected from this area on April 29, 2007, fecal coliform scores from all stations met their current classification standard, and the closure was repealed on May 2, 2007.



Figure 3. Damariscotta River WWTPs





Industrial Pollution

There are no industrial discharges in this growing area.

Marinas

There are multiple marinas and mooring areas for both commercial fishing boats and pleasure boats located in growing area WQ (Figure 4). There are no seasonal conditional management plans in effect for any marina or mooring field in growing area WQ. With the exception of the moorings at Riverside Boatyard, the remaining marinas and mooring fields are located in areas that are classified as prohibited. As a result of the current review, no changes to area classifications are recommended.

Ocean Point Marina is located in the lower Damariscotta River, East Boothbay. This marina offers 71 slips and 15 moorings for seasonal rental, from May throughout September. According to the marina operator, 60 boats are large enough to have on-board toilets; however, no boats are lived on during the summer. The marina offers on-shore sanitary facilities, as well as a boat pump out facility; the pump-out facility is operational. The marina also provides fuel services, and has 16,000 gallons of fuel on site, stored in double walled tanks, enclosed in cement. This marina is located within a large prohibited area (>350 acres), and no additional closures are recommended at this time.

Spar Shed Marina, is located in Little River, East Boothbay, on the lower Damariscotta River. This marina operates from May to October, and offers 7 slips and 6 rental moorings for sailboats and powerboats. No pump-out facilities are available at this marina. On average, approximately 6 boats moored at this marina are large enough to have on-board toilets; the number of live aboard boats is undetermined, but is usually limited to weekend use. This marina is located within a large prohibited area (>100 acres), and no additional closures are recommended at this time.

Coveside Marina, located in Christmas Cove, South Bristol is a seasonal marina, providing 11 moorings to day sailors and working boats. The marina provides sanitary facilities on shore; the marina has a pump out facility, however it is not operational. While all the boats moored at this marina may be large enough to have on-board toilets, none of the boats are live aboards. This marina is located in a large prohibited area (> 100 acres); no additional closures are surrounding this marina are recommended at this time.

Riverside Boatyard, is a working boatyard on the upper Damariscotta River in Newcastle, that provides 15 moorings for pleasure power and sail boats, located in an area that is classified approved. This facility is not a marina, and does not provide any sanitary or pump out facilities. The boatyard does provide marine fuel; with a 300 gallon doubled walled gasoline tank located approximately 300 feet from the water. While all of the boats moored at the moorings may be large enough to have on-board toilets, none of the boats are live aboards. The moorings service boats that are being worked on at the boatyard. This facility is not considered a public health threat, and no closures are recommended at this time.

The Damariscotta town landing is located in Damariscotta village, inside the prohibited area surrounding the Great Salt Bay Sanitary District outfall. The town landing provides slip space



for dinghies, 12 feet or less in length, from April through November. No overnight tie up is allowed. There are no moorings available, and boats are permitted to anchor during daylight hours only. The town landing policies are enforced by the town Harbor Master. There are no sanitary or pump-out facilities available at the town landing. This municipal landing is not considered a threat to public health and no additional closures are recommended at this time.

Little River Lobster Company, located in the lower Damariscotta River, is a commercial fishing dock that provides gas and diesel. This facility is located inside a prohibited area, and does not require an additional closure.



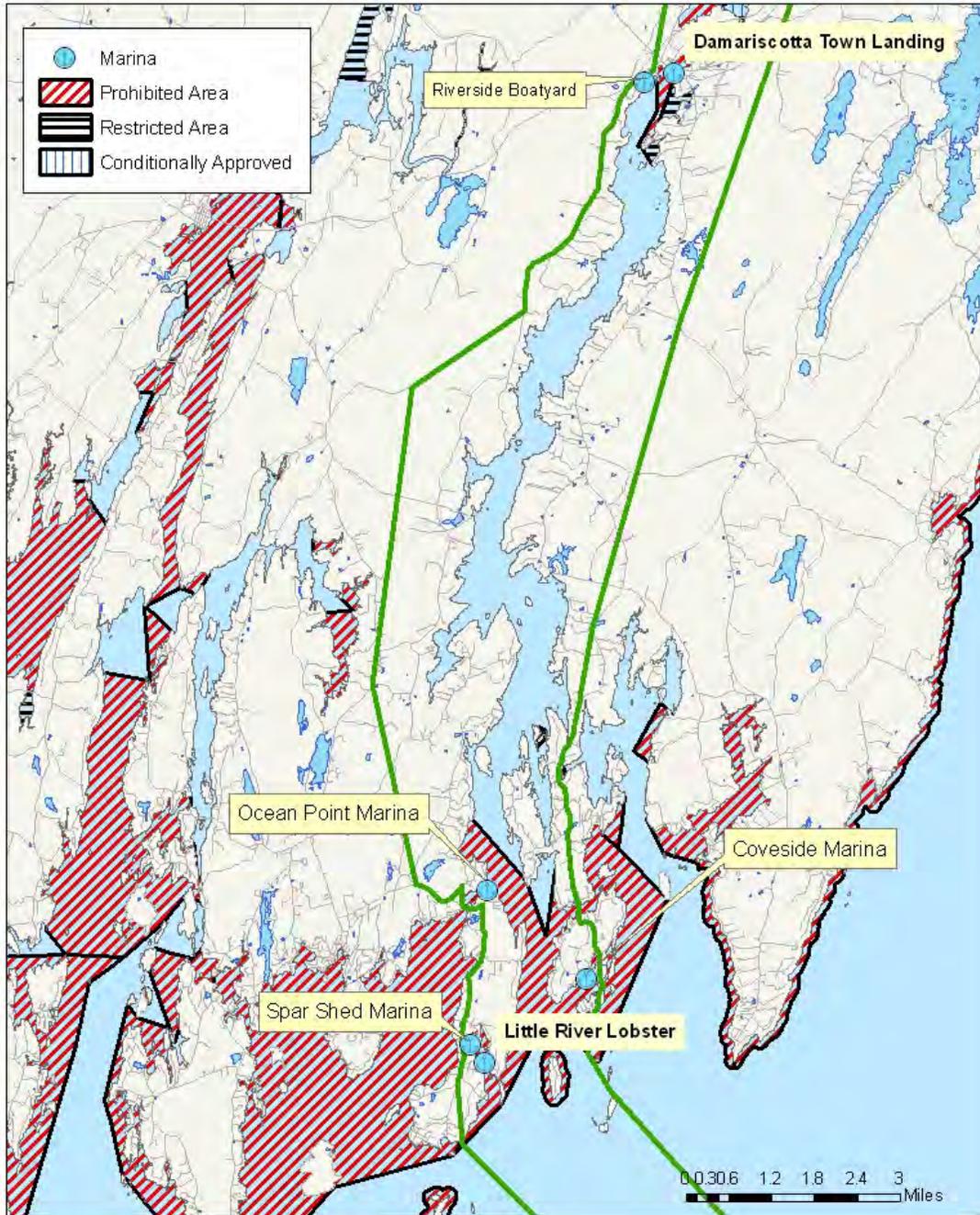
Figure 4. Area WQ Marina and Mooring Fields



Maine Department of Marine Resources Growign Area WQ Marinas adn Mooring Fields



9/27/10





Stormwater

Stormwater runoff is generated when precipitation from rain and snowmelt events flows over land or impervious surfaces and does not percolate into the ground. As the runoff flows over the land or impervious surfaces (paved streets, parking lots, and building rooftops), it accumulates debris, chemicals, sediment or other pollutants that could adversely affect water quality if the runoff is discharged untreated (US EPA 2009). Thus, stormwater pollution is caused by the daily activities of people within the watershed. Currently, polluted stormwater is the largest source of water quality problems in the United States.

The primary method to control stormwater discharges is the use of best management practices (BMPs). In addition, most major stormwater discharges are considered point sources and require coverage under an NPDES permit. In 1990, under authority of the Clean Water Act, the U.S. EPA promulgated Phase I of its stormwater management program, requiring permitting through the National Pollution Discharge Elimination System (NPDES). The Phase I program covered three categories of discharges: (1) "medium" and "large" Municipal Separate Storm Sewer Systems (MS4s) generally serving populations over 100,000, (2) construction activity disturbing 5 acres of land or greater, and (3) ten categories of industrial activity. In 1999, US EPA issued Phase II of the stormwater management program, expanding the Phase I program to include all urbanized areas and smaller construction sites.

Although it is a federal program, in the state of Maine, the Phase II Stormwater permit is issued and regulated by the Maine DEP (Chapter 500 and 502). Under the MS4 regulations, each municipality must implement the following six Minimum Control Measures: (1) Public education and outreach, (2) Public participation, (3) Illicit discharge detection and elimination, (4) Construction site storm water runoff control, (5) Post-construction stormwater management, and (6) Pollution prevention/good housekeeping. The permit required each city or town to develop a draft Stormwater Management Plan by September 3, 2003 that will establish measurable goals for each of the Minimum Control Measures. The Town must document the implementation of the Plan, and provide annual reports to the Maine DEP. Currently the discharge of stormwater from 28 Maine municipalities is regulated under the Phase II permit requirements, however, no municipalities located within the boundaries of growing area WQ fall under these regulations. Additionally, the Maine Stormwater Management Law provides stormwater standards for projects located in organized areas that include one acre of more of disturbed area (Maine DEP 2009).

The Damariscotta village has a stormwater management system that is separate from the municipal sewage system. The Damariscotta village stormwater system discharges untreated stormwater directly into the Damariscotta River. There, shellfish areas surrounding Damariscotta village are classified as prohibited and restricted. There are no shellfish areas that are approved for shellfish harvesting in the vicinity of municipal stormwater discharge points.

Non-Point Pollution Sources (streams, etc)

Streams are a source of fresh water to the Damariscotta River watershed, and carry stormwater, snowmelt and groundwater into the coastal estuaries. Waste, including that containing fecal matter, which is deposited on land, may be carried by streams to shellfish



growing areas, contributing to elevated fecal counts in waters that are filtered by shellfish. During the review period, five streams were selected for sampling, based on the water quality trends of the nearby water quality monitoring stations; water quality aspects that were considered in selecting the stream locations included the current P90 calculations and recent P90 trends of nearby sampling stations, the size and stream flow of the stream and the classification of surrounding shellfish flats. Location of sample stations and results of samples are presented in Table 3 and Figure 5. All stream samples collected in 2009 were conducted following rainfall, and under moderate stream flow conditions. An additional sample was attempted to be collected at a stream draining in the vicinity of station WQ 13. On the day of sample collection, this stream had no flow, and therefore no sample was collected.

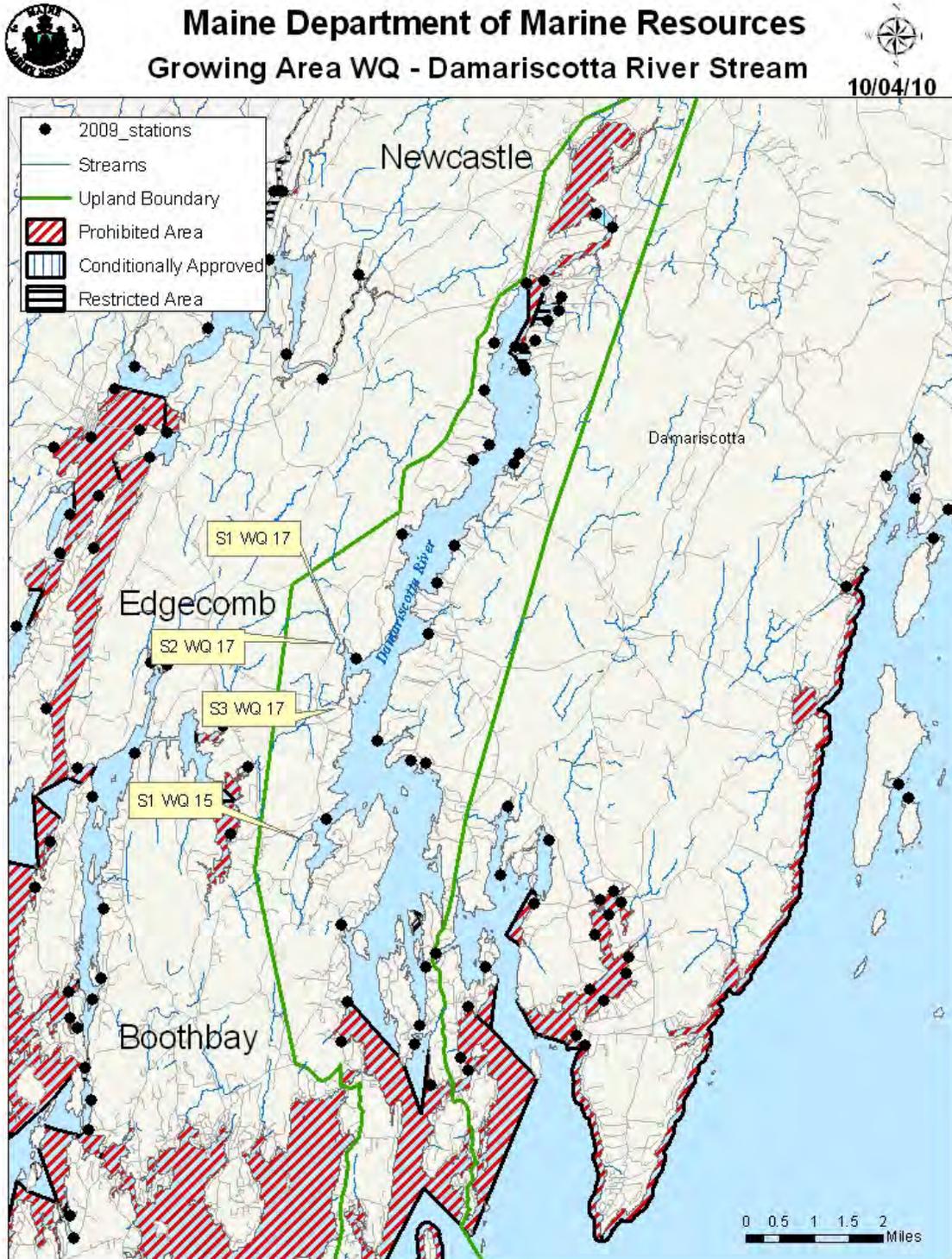
Since only one set of samples were collected for each streams during review year, no closures based on the current available stream results are recommended at this time. A more comprehensive assessment of these streams, along with additional streams draining into approved areas of growing area WQ will be completed in the coming review years, and presented in the next Sanitary Survey report, to be written at the completion of 2011.

Table 3, Growing Area WQ Streams

Stream Station ID	Area Class	Sample Date	Fecal Score (FC /100 ML)	Flow Conditions/Notes
S1 WQ 17	A	8/26/09	-	Moderate Flow; stream is dammed and does not flow under moderate flow conditions
S2 WQ 17	A	8/26/09	102	90 GPM
S3 WQ 17	A	8/26/09	<2	120 GPM
S1 WQ 15	A	8/26/09	56	125 GPM



Figure 5. Growing Area WQ Streams





Agricultural and Domestic Animal Activity

Farms and domestic animals can have an adverse impact on water quality if animal waste is not properly managed and disposed of. There are no large scale agricultural operations located in the vicinity of the shoreline of the Damariscotta River. However, there are three areas that have horses pastured in the vicinity of the shore (Figure 6). There is one horse grazed north of station WQ 46.5, approximately 400 feet from shore (AF1). Station WQ 46.5 is classified as approved and has a P90 calculation of 6.5 FC/100 ml, indicating no adverse impact from this pasture. There are several horses pastured approximately 50 feet from the shore, in the vicinity of station WQ 51 (AF 2); the horse barn is located across the road, greater than 500 feet from the shoreline. The P90 of station WQ 51 is 3.3 FC/100 ml, indicating no adverse impact from this pasture. There is a family farm on the shoreline by station WQ 57 (AF 3). There are two horses pastured at this property, within 25 feet of the water at the pastures edge; the horse barn is situated approximately 200 feet from shore and there is periodically a manure pile at the side of the barn. No run-off from the manure pile to the shore has been observed. Station WQ 57 is an approved station with a P90 calculation of 8.1 FC/100 ml, indicating no adverse impact from this pasture.

Conservation/Recreation Areas

There are ten distinct conservation areas within Growing Area WQ totaling approximately 833 acres of undeveloped land. All of the areas allow dog walking and other human activities but have limited or no sanitary pollution facilities available to the public. Many of the areas have specifications on camping; however these areas are not closely monitored. Most of the conservations parcels are located on the shores of areas that are classified as approved; there is no indication that water quality is adversely affected by the presence of the conservation parcels or by human or animal activities within these conservation/preserve areas.

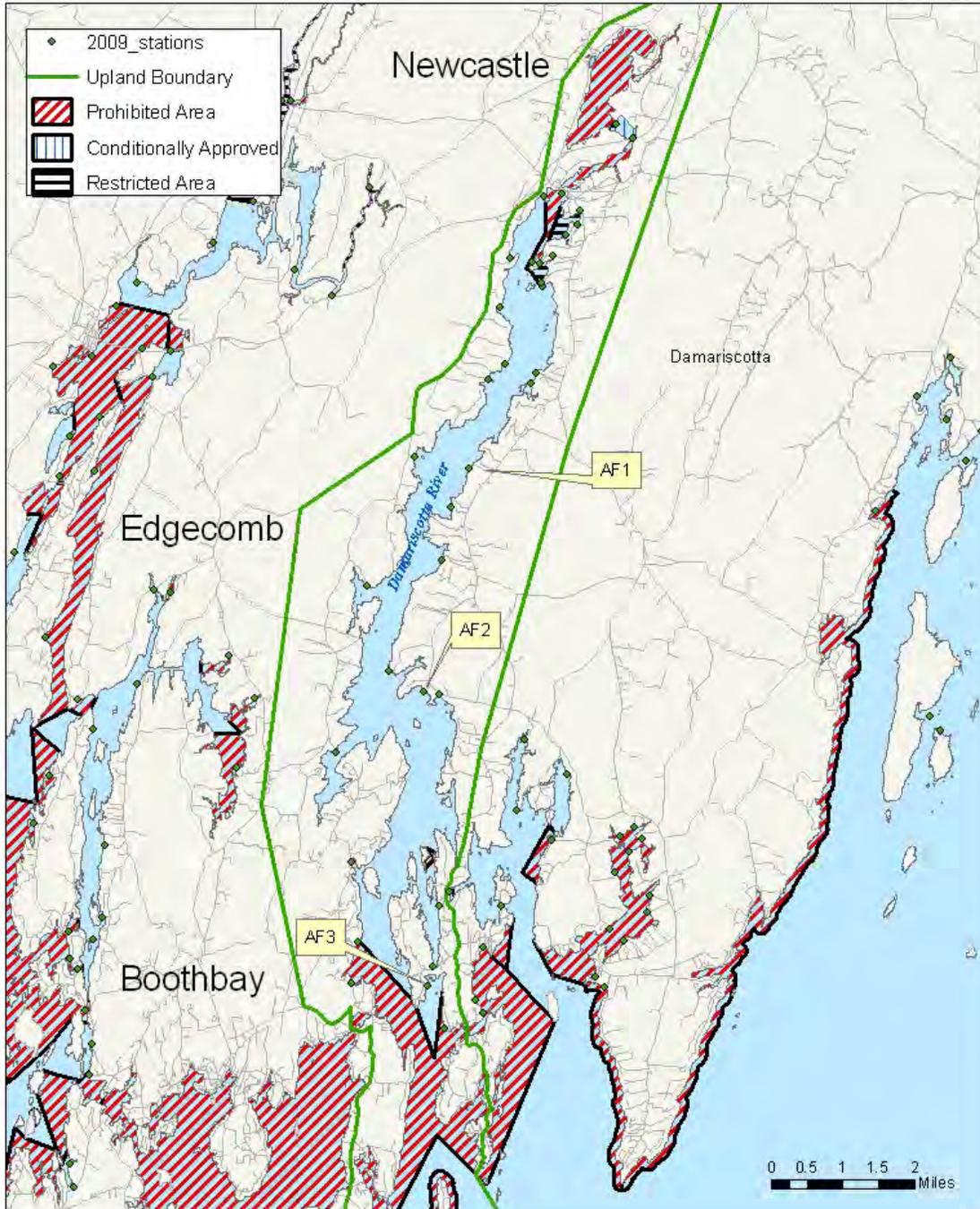
In addition to conservation parcels, there are seven state owned islands that are used for nesting by colonial water birds and are a portion of the Coast of Maine Wildlife Management Area. Trespass to these areas is prohibited during specific periods (typically early spring through July or August) unless written permission is obtained from the Regional Wildlife Biologist.



Figure 6. Area WQ Farms and Pasture Animal Locations



Maine Department of Marine Resources Growing Area WQ - Damariscotta River





Water Quality Review and Discussion

Table 4 lists all active approved, restricted and prohibited stations in Growing Area WQ, with their respective geometric mean and P90 calculations for 2009; table 5 lists the conditionally approved stations in area WQ, with their respective geometric mean and P90 calculations in the open status only. Please refer to Appendix B for a key to interpreting the headers on the columns of Table 4. The approved and restricted standards for each station are also displayed in Tables 4 and 5. These standards will fluctuate yearly as a result of the DMR transition from a most probable number (MPN) fecal coliform test method to a membrane filtration (MF) method and are dependent on the number of samples analyzed by MPN versus MF. The total number of data points used in the calculations is displayed in the Count column and includes both MPN and MF values. The number of data points analyzed by MF is displayed in the MFCNT column. This fluctuating standard will cease when all 30 data points have been analyzed by the MF method.

In 2009, all active stations continued to meet the NSSP classification criteria currently assigned to them. No classification changes are required at this time.

Table 4. Geomean and P90 Calculations , Growing Area WQ, 2004-2009

Station	Class	Count	MFCnt	GM	SDV	MAX	P90	Appd Std	Restr Std	Min Date
WQ012.00	P	30	22	5.3	0.76	1200	50.7	35	191	4/14/2005
WQ012.50	P	30	21	2.6	0.29	27	6.2	35	195	4/14/2005
WQ013.00	A	30	21	5.1	0.57	460	28.3	35	195	4/14/2005
WQ015.00	A	30	21	4.2	0.58	460	23.4	35	195	4/14/2005
WQ017.00	A	30	21	3.2	0.48	460	13.5	35	195	4/14/2005
WQ018.00	A	30	21	2.5	0.3	43	6.2	35	195	4/25/2005
WQ020.00	A	30	21	2.4	0.17	9.1	4	35	195	4/25/2005
WQ021.00	A	30	21	2.4	0.18	9.1	4.1	35	195	6/6/2005
WQ022.00	A	30	21	3.3	0.33	38	8.9	35	195	4/25/2005
WQ023.00	A	30	21	3.7	0.4	38	12.1	35	195	4/25/2005
WQ024.00	A	30	21	4.6	0.43	43	16.8	35	195	6/6/2005
WQ034.00	P	30	21	6	0.48	93	25.3	35	195	4/14/2005
WQ035.00	R	30	22	7.7	0.62	140	48.1	35	191	6/14/2005
WQ036.00	R	30	22	11.1	0.77	1200	109.8	35	191	6/14/2005
WQ037.00	R	30	22	6	0.61	460	36.9	35	191	6/14/2005
WQ039.00	P	30	21	3.4	0.33	23	9.2	35	195	6/14/2005
WQ040.00	R	30	23	4.5	0.68	1200	34.4	34	187	9/20/2005
WQ041.00	R	30	22	5.3	0.43	43	19.1	35	191	6/14/2005
WQ042.00	R- boundary	30	21	3.1	0.44	240	11.6	35	195	6/14/2005
WQ043.00	A	30	21	2.2	0.1	5.1	3	35	195	6/6/2005
WQ044.00	A	30	21	3.4	0.35	43	9.9	35	195	4/25/2005



Station	Class	Count	MFCCount	GM	SDV	MAX	P90	Appd_Std	Restr_Std	Min_Date
WQ045.00	A	30	21	2.8	0.32	24	7.3	35	195	4/25/2005
WQ046.50	A	30	21	2.6	0.3	68	6.5	35	195	4/25/2005
WQ047.00	A	30	21	3.2	0.39	56	10.4	35	195	4/25/2005
WQ048.00	A	30	21	2.5	0.18	12	4.3	35	195	4/25/2005
WQ049.00	A	30	21	2.3	0.17	9.1	3.9	35	195	4/25/2005
WQ051.00	A	30	21	2.3	0.12	4	3.3	35	195	4/25/2005
WQ052.00	A	30	21	4.5	0.52	150	21.6	35	195	4/25/2005
WQ054.00	A	30	21	2.6	0.28	55	6.2	35	195	4/25/2005
WQ055.00	A	30	21	2.5	0.23	25	5.1	35	195	4/25/2005
WQ057.00	A	30	20	2.8	0.35	160	8.1	36	199	11/16/2004
WQ058.00	P	30	21	2.3	0.16	9.1	3.8	35	195	4/25/2005

Table 5. Growing Area WQ Geomean and P90 Calculations, Conditional Area Open Status

Station	Class	Count	MFCCount	GM	SDV	MAX	P90	Appd_Std	Restr_Std	Min_Date
WQ031.50	CA	30	30	2.4	0.26	18	5.5	31	163	7/31/2007
WQ032.00	CA	30	30	2.8	0.3	22	7	31	163	7/31/2007

All active stations in approved, restricted and prohibited areas were sampled 6 times in 2009, following the systematic random sampling (SRS) schedule. Additional samples were collected for station WQ 23; this station serves as a flood closure re-opening station. Table 6 shows the number of samples taken during the 2009 sampling year; appendix C shows all SRS data collected in 2009 for all active stations. Conditionally approved stations were sampled monthly.

Table 6. WQ Sampling Effort for 2009

Station	Class	Adverse	Random		Total	Comments
		Closed	Closed	Open		
WQ012.00	P		6		6	
WQ012.50	P		6		6	
WQ013.00	A			6	6	
WQ015.00	A			6	6	
WQ017.00	A			6	6	
WQ018.00	A			6	6	
WQ020.00	A			6	6	
WQ021.00	A			6	6	
WQ022.00	A			6	6	
WQ023.00	A	19		6	25	Flood Station
WQ024.00	A			6	6	
WQ031.50	CA			12	12	
WQ032.00	CA			12	12	
WQ034.00	P		6		6	
WQ035.00	R			6	6	
WQ036.00	R			6	6	
WQ037.00	R			6	6	



Station	Class	Adverse	Random		Total	Comments
		Closed	Closed	Open		
WQ039.00	P		6		6	
WQ040.00	R			6	6	
WQ041.00	R			6	6	
WQ042.00	R			6	6	
WQ043.00	A			6	6	
WQ044.00	A			6	6	
WQ045.00	A			6	6	
WQ046.00	A			2	2	Deactivated Station
WQ046.50	A			6	6	
WQ047.00	A			6	6	
WQ048.00	A			6	6	
WQ049.00	A			6	6	
WQ051.00	A			6	6	
WQ052.00	A			6	6	
WQ054.00	A			6	6	
WQ055.00	A			6	6	
WQ057.00	A			6	6	
WQ058.00	P		6		6	

Figure 7 shows the P90 trends over the past three years, for all stations classified as approved. During the transition from MPN to MF analysis method, the approved standard will decrease every year, until all samples have been analyzed by the MF method. In order to show the trend of the P90 value over the years, the P90 calculations are expressed as a percentage of the approved standard; any station showing the 2009 column on or above the 100 percent line does not meet the standard for approved classification. Most approved stations showed little change in water quality over the past 3 years (less than 10% increase or decrease). Notable changes were observed at station WQ 13, which showed an increase in scores (by approx. 15 percent) over the past three review years, and station WQ 52, which has shown an increase in its scores between 2007 and 2008. Additional shoreline survey activity may be necessary to further investigate the cause of the declining water quality at these sites. Station WQ 15 showed a significant decrease in scores (improvement in water quality) over the past three years. Figure 8 shows the P90 trends (open status only) over the past three years for the two conditionally approved stations in area WQ. Water quality at station WQ 32 has improved over the past three years. There have been no notable trends in water quality at station WQ 31.5.



Figure 7. Water Quality as Percent of Approved Standard, Approved Stations

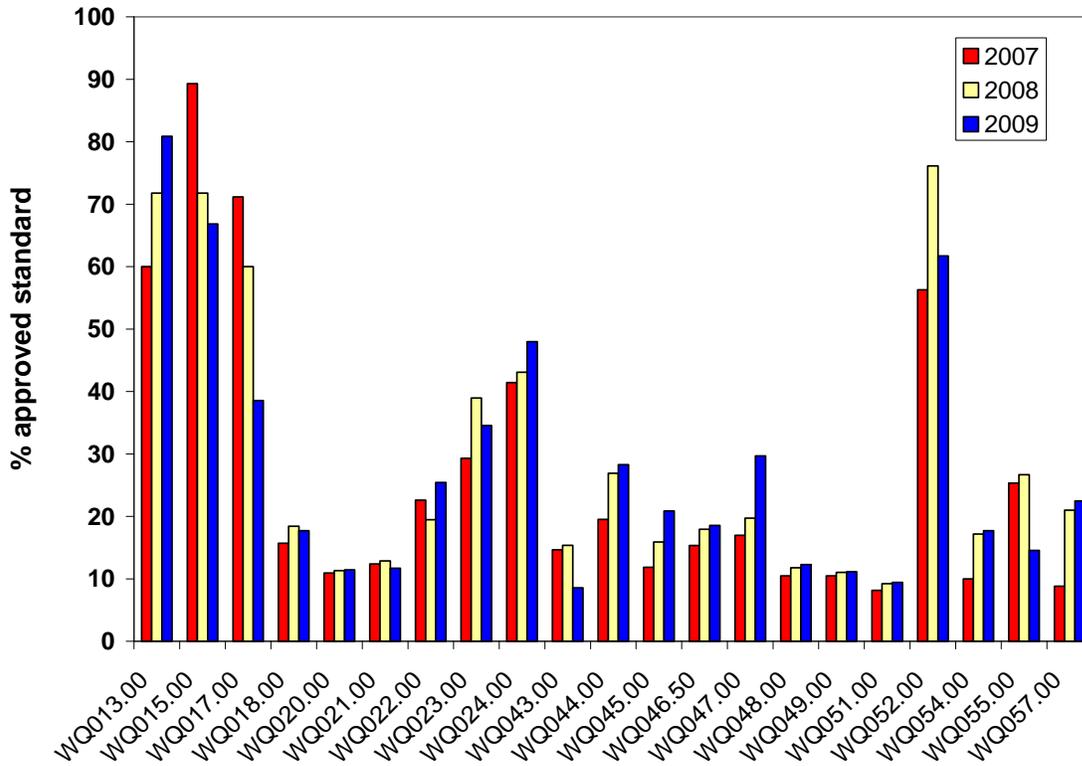
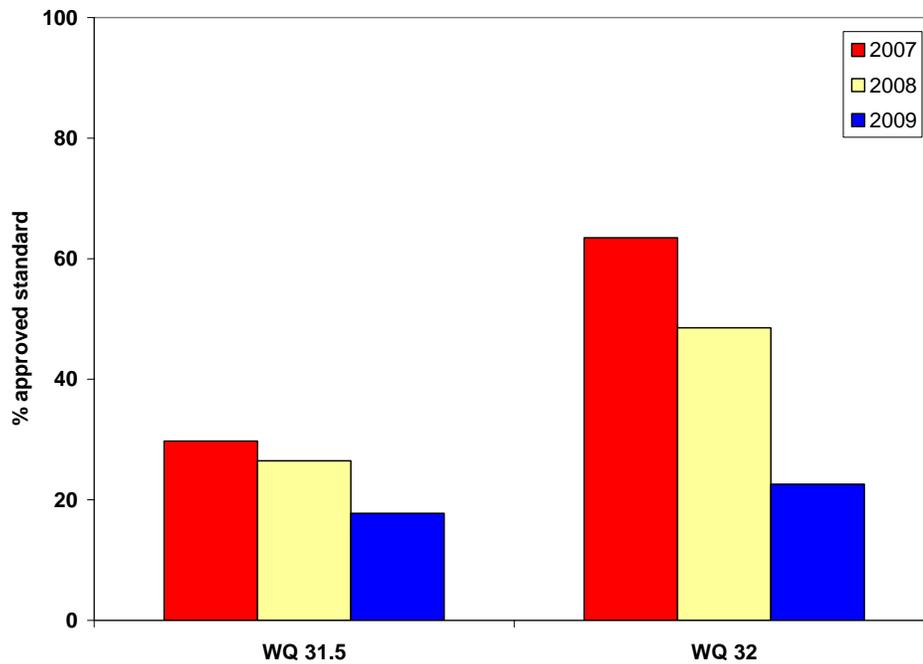


Figure 8. Water Quality as Percent of Approved Standard, Conditionally Approved Stations





Recommendations for Upward Classification

No upward classifications are being proposed at this time.

Shoreline Survey Activity during Review Period

No formal door-to-door surveys were completed during the review period. A survey of sewage treatment plant facilities and of pump stations was completed on August 19, 2008. In 2009, drive through surveys of the western shore of the growing area was completed on August 26th and a drive through survey of the eastern shore of the river was completed on August 11th. No changes in pollution sources were noted at the time of the drive through surveys.

Aquaculture/Wet Storage Activity

Currently, there are 31 active aquaculture lease sites on the Damariscotta River. There are 6 wet storage sites on the Damariscotta River. A list of current aquaculture leases and wet storage permit holders can be accessed on the DMR website:

<http://www.maine.gov/dmr/aquaculture/leaseinventory/index.htm>

http://www.maine.gov/dmr/rm/public_health/wetstorage_bulktagging_permits.htm.

Classification Changes

No classification changes are required at this time.

Summary

Growing area WQ continues to maintain good water quality, with the majority of the growing area maintaining the approved classification. With the exception of one station (WQ13), no stations showed significant upward trends in 2009; currently, no stations are within 10 percent of the approved standard and at risk of a downward classification. Since the last triennial review period, two malfunctioning septic systems have been replaced with new systems. There were no other changes in pollution noted throughout the current review period. The management plan for the Damariscotta Mills Wastewater treatment facility continues to be adequate to protect public health; there were no closures of the conditionally approved areas during the review period due to a malfunction at the Mills facility. Currently, all closures surrounding pollution sources, including wastewater treatment outfalls and OBDs are of adequate size to protect public health. No changes in classifications are proposed or required at this time.



Recommendation for Future Work

The following activity is recommended for future review years:

- 1) Re-survey all of growing area WQ with findings to be included in the 2011 Sanitary Survey report
- 2) Establish a stream sampling schedule and collect samples from streams draining into approved areas; sample results should be presented in the next sanitary survey report.

References

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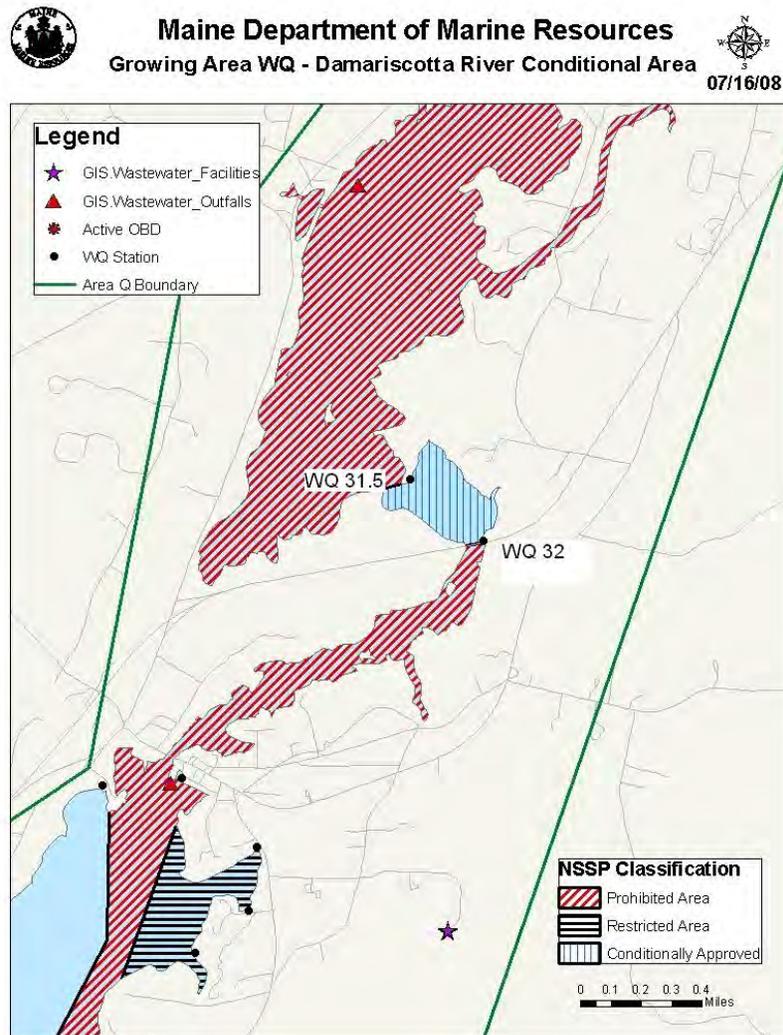
Appendix A. Annual Review of Conditional Area Management Plan

Damariscotta River Conditional Area C23-A Growing Area WQ

Scope

A portion of Growing Area WQ is conditionally approved, based on the proper functioning of the Great Salt Bay WWTP. The area shall be closed during any failure event at the Great Salt Bay STP (Mills Facility). Water quality at this conditional area is currently monitored by stations, WQ 31.5 and 32, and must be sampled monthly throughout their open status.

Figure 1. Detail of Conditional Area, with sampling stations





Compliance with management plan

There were no malfunctions at the Great Salt Bay WWTP in 2009.

Adequacy of reporting and cooperation of involved persons

In the event that a conditional area closure must be implemented, the management plan for this conditional area requires immediate reporting by the Great Salt Bay Sanitary District (treatment plant). To date, the cooperation between all involved parties was excellent. In 2009, no reports by the GSBSD were required.

Compliance with approved growing area criteria

The annual review of the water quality for all active stations in this conditional area met approved standards in the open status.

Table 1. Growing Area WQ Geomean and P90 Calculations, Conditional Area Open Status

Station	Class	Count	MFCCount	GM	SDV	MAX	P90	Appd_Std	Restr_Std	Min_Date
WQ031.50	CA	30	30	2.4	0.26	18	5.5	31	163	7/31/2007
WQ032.00	CA	30	30	2.8	0.3	22	7	31	163	7/31/2007

Water sampling compliance history

In 2009, stations WQ 31.5 and 32 were sampled 12 times (monthly) in the open status.

Analysis-Recommendations

No recommendations for changes to the current management plan or conditional area classification status are needed at this time.



Appendix B. Key to Water Quality Table Headers

Station = water quality monitoring station

Class = classification assigned to the station; prohibited (P), restricted (R), conditionally restricted (CR), conditionally approved (CA) and approved (A).

Count = the number of samples evaluated for classification, must be a minimum of 30.

MFCNT = the number of samples evaluated with the MTec method (included in the total Count column)

Geo_Mean = means the antilog (base 10) of the arithmetic mean of the sample result logarithm (base 10).

SDV = standard deviation

Max = maximum score of the 30 data points in the count column

P90 = 90th percentile

APPD_STD = the 90th percentile, at or below which the station would meet approved criteria in the absence of pollution sources or poisonous and deleterious substances.

RESTR_STD = the 90th percentile, at or below which the station would meet restricted criteria.



Appendix C. Growing Area WQ 2009 SRS Data

Station	Date	Collector	Tide	Wind	Temp	Salin	Strat	Adv	Status	Class	Col
WQ012.00	17-Feb-09	FP	E	CL	0	24	R	X	C	P	<2
	01-Apr-09	EXT	F	CL	3	29	R	X	C	P	<2
	20-May-09	RMO	E	S	8	29	R	X	C	P	<2
	11-Aug-09	EMA	HE	SW	16	30	R	X	C	P	16
	08-Sep-09	RMO	H	SW	16	30	R	X	C	P	2
	14-Oct-09	JBU	E	NW	10	31	R	X	C	P	<2
WQ012.50	17-Feb-09	FP	E	CL	3	31	R	W	C	P	<2
	01-Apr-09	EXT	F	SE	3	28	R	X	C	P	<2
	20-May-09	RMO	E	S	7	30	R	X	C	P	<2
	11-Aug-09	EMA	HE	SW	15	30	R	X	C	P	<2
	08-Sep-09	RMO	H	SW	15	30	R	X	C	P	<2
	14-Oct-09	JBU	E	NW	12	32	R	X	C	P	<2
WQ013.00	17-Feb-09	FP	E	CL	2	31	R	W	O	A	<2
	01-Apr-09	EXT	F	SE	3	8	R	X	O	A	4
	20-May-09	RMO	E	S	8	30	R	X	O	A	<2
	11-Aug-09	EMA	HE	SW	17	30	R	X	O	A	<2
	08-Sep-09	RMO	H	SW	16	30	R	X	O	A	<2
	14-Oct-09	JBU	E	NW	10	30	R	X	O	A	72
WQ015.00	17-Feb-09	FP	E	CL	2	30	R	X	O	A	<2
	01-Apr-09	EXT	HE	S	4	22	R	X	O	A	<2
	20-May-09	RMO	E	W	10	29	R	X	O	A	<2
	11-Aug-09	EMA	H	SW	20	30	R	X	O	A	<2
	08-Sep-09	RMO	H	SW	18	29	R	X	O	A	<2
	14-Oct-09	JBU	E	NW	11	30	R	X	O	A	<2
WQ017.00	17-Feb-09	FP	E	CL	2	30	R	W	O	A	<2
	01-Apr-09	EXT	HE	CL	4	24	R	X	O	A	<2
	20-May-09	RMO	E	CL	10	28	R	X	O	A	<2
	11-Aug-09	EMA	H	SW	20	28	R	X	O	A	<2
	08-Sep-09	RMO	H	SW	20	28	R	X	O	A	<2
	14-Oct-09	JBU	E	NW	12	30	R	X	O	A	<2
WQ018.00	17-Feb-09	FP	E	CL	2	28	R	X	O	A	<2
	01-Apr-09	EXT	F	CL	3	20	R	X	O	A	<2
	20-May-09	ECY	E	NE	11	26	R	N	O	A	<2
	11-Aug-09	FP	HF	SW	22	28	R	X	O	A	<2
	08-Sep-09	ECY	H	SE	19	28	R	X	O	A	<2
	14-Oct-09	ECY	HE	N	8	30	R	P	O	A	<2



Station	Date	Collector	Tide	Wind	Temp	Salin	Strat	Adv	Status	Class	Col
WQ020.00	17-Feb-09	FP	E	CL	0	27	R	X	O	A	<2
	01-Apr-09	EXT	F	SE	4	20	R	X	O	A	2
	20-May-09	ECY	HE	NE	11	26	R	N	O	A	<2
	11-Aug-09	FP	HF	SW	25	27	R	X	O	A	<2
	08-Sep-09	ECY	HF	SE	17	30	R	X	O	A	<2
	14-Oct-09	ECY	H	N	8	28	R	P	O	A	2
WQ021.00	17-Feb-09	FP	E	NE	0	28	R	X	O	A	<2
	01-Apr-09	EXT	F	SE	4	24	R	X	O	A	<2
	20-May-09	ECY	HE	CL	11	25	R	N	O	A	<2
	11-Aug-09	FP	H	SW	24	27	R	X	O	CA	<2
	08-Sep-09	ECY	HF	SE	17	28	R	X	O	A	<2
	14-Oct-09	ECY	H	N	9	30	R	P	O	A	<2
WQ022.00	17-Feb-09	FP	E	NE	0	25	R	X	O	A	<2
	01-Apr-09	EXT	F	CL	4	20	R	X	O	A	<2
	20-May-09	ECY	HE	CL	10	24	R	N	O	A	<2
	11-Aug-09	FP	H	SW	25	26	R	X	O	A	38
	08-Sep-09	ECY	HF	SE	19	28	R	X	O	A	<2
	14-Oct-09	ECY	H	CL	8	28	R	P	O	A	<2
WQ023.00	01-Apr-09	EXT	F	CL	5	18	R	X	O	A	<2
	28-Apr-09	FP	H	CL	12	16	R	X	O	A	<2
	20-May-09	ECY	HE	CL	10	20	R	X	O	A	<2
	11-Aug-09	FP	H	SW	25	26	R	X	O	A	3.6
	08-Sep-09	ECY	HF	SE	19	26	R	X	O	A	2
	14-Oct-09	ECY	HF	CL	7	26	R	P	O	A	4
WQ024.00	01-Apr-09	EXT	F	SE	5	15	R	X	O	A	<2
	28-Apr-09	FP	H	SW	17	16	R	X	O	A	<2
	20-May-09	ECY	HE	CL	10	22	R	X	O	A	<2
	11-Aug-09	FP	H	SW	25	25	R	W	O	A	22
	08-Sep-09	ECY	HF	CL	20	26	R	X	O	A	4
	14-Oct-09	ECY	HF	CL	7	26	R	P	O	A	4
WQ031.50	13-Jan-09	EXT	H	CL	-1	28	R	X	O	CA	<2
	18-Feb-09	MLP	HE	CL	0	26	R	X	O	CA	<2
	11-Mar-09	FP	HE		2	24	R	P	O	CA	2
	06-Apr-09	EXT	F	CL	5	18	R	X	O	CA	<2
	20-May-09	MLP	HE	CL	16	20	R	X	O	CA	<2
	09-Jun-09	MLP	F	CL	18	21	R	P	O	CA	<2
	22-Jul-09	FP	F	CL	20	22	R	P	O	CA	9.1
	10-Aug-09	MLP	L	CL	23	23	R	X	O	CA	<2
08-Sep-09	FP	HF			26	R	X	O	CA	5.5	



Station	Date	Collector	Tide	Wind	Temp	Salin	Strat	Adv	Status	Class	Col
	21-Oct-09	EXT	F	CL	11	26	R	X	O	CA	2
	23-Nov-09	AB	F	NE	6	18	R		O	CA	<2
	07-Dec-09	FP	HF	CL	8	19	R	X	O	CA	2
WQ032.00	13-Jan-09	EXT	H	CL	-1	27	R	X	O	CA	<2
	18-Feb-09	MLP	H	CL	0	28	R	X	O	CA	<2
	11-Mar-09	FP	E			24	R	X	O	CA	<2
	06-Apr-09	EXT	F	CL	5	18	R	X	O	CA	<2
	20-May-09	MLP	HE	CL	15	21	R	X	O	CA	<2
	09-Jun-09	MLP	F	CL	17	22	R	P	O	CA	<2
	22-Jul-09	FP	F	CL	20	22	R	P	O	CA	<2
	10-Aug-09	MLP	LE	CL	23	24	R	X	O	CA	<2
	08-Sep-09	FP	HF	S	17	26	R	X	O	CA	12
	21-Oct-09	EXT	F	CL	10	26	R	X	O	CA	<2
WQ034.00	18-Feb-09	MLP	E	CL	0	26	R	X	C	P	<2
	06-Apr-09	EXT	HF	CL	5	15	R	X	C	P	<2
	20-May-09	MLP	HE	CL	14	23	R	X	C	P	<2
	22-Jul-09	FP	H	CL	20	22	R	P	C	P	6
	08-Sep-09	FP	HF	S	20	25	R	X	C	P	2
	21-Oct-09	EXT	F	CL	10	26	R	X	C	P	<2
WQ035.00	18-Feb-09	MLP	HE	CL	0	18	R	X	O	R	<2
	06-Apr-09	EXT	HF	CL	6	14	R	X	O	R	<2
	20-May-09	MLP	E	CL	13	24	R	X	O	R	<2
	22-Jul-09	FP	H	CL	20	22	R	P	O	R	26
	08-Sep-09	FP	H	S	21	25	R	X	O	R	2
	21-Oct-09	EXT	F	CL	10	28	R	X	O	R	<2
WQ036.00	06-Apr-09	EXT	HF	CL	4	12	R	X	O	R	<2
	28-Apr-09	FP	H	CL	12	15	R	X	O	R	2
	20-May-09	MLP	E	CL	13	23	R	X	O	R	2
	22-Jul-09	FP	H	CL	20	14	R	P	O	R	112
	08-Sep-09	FP	H	CL	21	26	R	X	O	R	<2
	21-Oct-09	EXT	F	CL	10	22	R	X	O	R	20
WQ037.00	18-Feb-09	MLP	HE	CL	-1	24	R	X	O	R	<2
	06-Apr-09	EXT	HF	CL	5	12	R	X	O	R	<2
	20-May-09	MLP	E	N	14	24	R	X	O	R	<2
	22-Jul-09	FP	H	CL	20	22	R	P	O	R	6
	08-Sep-09	FP	H	CL	20	26	R	X	O	R	6
	21-Oct-09	EXT	F	N	10	28	R	X	O	R	<2



Station	Date	Collector	Tide	Wind	Temp	Salin	Strat	Adv	Status	Class	Col
WQ039.00	18-Feb-09	MLP	HE	CL	-1	26	R	X	C	P	<2
	06-Apr-09	EXT	HF	CL	6	18	R	X	C	P	2
	20-May-09	MLP	E	N	14	24	R	X	C	P	2
	22-Jul-09	FP	HE	CL	20	23	R	P	C	P	4
	08-Sep-09	FP	H	CL	17	28	R	X	C	P	<2
	21-Oct-09	EXT	F	N	9	29	R	X	C	P	<2
WQ040.00	18-Feb-09	MLP	HE	CL	-1	26	R	X	O	R	<2
	06-Apr-09	EXT	HF	CL	5	20	R	X	O	R	<2
	20-May-09	MLP	E	CL	14	25	R	X	O	R	<2
	22-Jul-09	FP	HE	CL	20	25	R	P	O	R	500
	08-Sep-09	FP	H	S	25	28	R	X	O	R	4
	21-Oct-09	EXT	F	CL	10	30	R	X	O	R	<2
WQ041.00	06-Apr-09	EXT	HF	CL	4	18	R	X	O	R	<2
	28-Apr-09	FP	H	CL	20	20	R	X	O	R	<2
	20-May-09	MLP	E	CL	13	25	R	X	O	R	<2
	22-Jul-09	FP	HE	CL	20	22	R	P	O	R	18
	08-Sep-09	FP	H	CL	20	28	R	X	O	R	2
	21-Oct-09	EXT	F	CL	10	28	R	X	O	R	<2
WQ042.00	18-Feb-09	MLP	E	CL	-2	28	R	X	O	R	<2
	06-Apr-09	EXT	HF	CL	4	20	R	X	O	R	<2
	20-May-09	MLP	E	N	13	26	R	X	O	R	<2
	22-Jul-09	FP	HE	CL	20	26	R	P	O	R	2
	08-Sep-09	FP	H	CL	21	28	R	X	O	R	<2
	21-Oct-09	EXT	F	N	10	30	R	X	O	R	<2
WQ043.00	17-Feb-09	FP	E	CL	0	25	R	X	O	A	<2
	01-Apr-09	EXT	F	S	4	22	R	X	O	A	<2
	20-May-09	ECY	E	CL	11	26	R	X	O	A	<2
	11-Aug-09	FP	H	SW	23	26	R	X	O	A	<2
	08-Sep-09	ECY	H	SE	19	30	R	X	O	A	<2
	14-Oct-09	ECY	HE	N	7	28	R	P	O	A	<2
WQ044.00	17-Feb-09	FP	F	N	0	4	R	X	O	A	4
	01-Apr-09	EXT	F	CL	3	22	R	X	O	A	<2
	20-May-09	ECY	E	CL	11	27	R	N	O	A	<2
	11-Aug-09	FP	H	CL	20	28	R	X	O	A	2
	08-Sep-09	ECY	H	SE	18	25	R	X	O	A	3.6
	14-Oct-09	ECY	HE	N	6	16	R	P	O	A	<2
WQ045.00	17-Feb-09	FP	F	N	0	24	R	X	O	A	<2



Station	Date	Collector	Tide	Wind	Temp	Salin	Strat	Adv	Status	Class	Col
	01-Apr-09	EXT	F	CL	3	25	R	X	O	A	2
	20-May-09	ECY	E	N	11	26	R	X	O	A	<2
	11-Aug-09	FP	HE	CL	20	29	R	X	O	A	24
	08-Sep-09	ECY	H	SE	18	28	R	X	O	A	<2
	14-Oct-09	ECY	HE	N	7	28	R	P	O	A	<2
WQ046.50	17-Feb-09	FP	F	N	0	28	R	X	O	A	<2
	01-Apr-09	EXT	F	CL	3	26	R	X	O	A	2
	20-May-09	ECY	E	N	11	28	R	X	O	A	<2
	11-Aug-09	FP	HE	CL	20	30	R	X	O	A	<2
	08-Sep-09	ECY	H	SE	16	30	R	X	O	A	<2
	14-Oct-09	ECY	HE	N	8	30	R	P	O	A	<2
WQ047.00	17-Feb-09	FP	F	N	0	4	R	X	O	A	5.5
	01-Apr-09	EXT	HF	CL	3	17	R	X	O	A	<2
	20-May-09	ECY	E	NW	10	28	R	X	O	A	<2
	11-Aug-09	FP	HE	CL	19	29	R	X	O	A	56
	08-Sep-09	ECY	H	SE	16	30	R	X	O	A	<2
	14-Oct-09	ECY	HE	N	7	30	R	P	O	A	<2
WQ048.00	28-Apr-09	FP	HE	CL	9	26	R	X	O	A	<2
	20-May-09	RMO	E	CL	10	28	R	X	O	A	<2
	08-Jun-09	MLP	E	CL	15	30	R	X	O	A	<2
	01-Aug-09	EMA	L	SW	18	30	R	X	O	A	<2
	08-Sep-09	RMO	H	SW	17	29	R	X	O	A	<2
	14-Oct-09	JBU	E	NW	12	30	R	X	O	A	<2
WQ049.00	17-Feb-09	FP	F	N	2	31	R	X	O	A	<2
	01-Apr-09	EXT	HF	S	3	30	R	X	O	A	<2
	20-May-09	RMO	E	CL	10	30	R	X	O	A	<2
	11-Aug-09	EMA	HF	SW	18	30	R	X	O	A	<2
	08-Sep-09	RMO	HF	CL	16	30	R	X	O	A	<2
	14-Oct-09	JBU	E	NW	11	30	R	X	O	A	<2
WQ051.00	17-Feb-09	FP	F	CL	2	31	R	X	O	A	<2
	01-Apr-09	EXT	H	SW	3	28	R	X	O	A	<2
	20-May-09	RMO	E	NW	11	30	R	X	O	A	<2
	11-Aug-09	EMA	HF	SW	18	30	R	X	O	A	<2
	08-Sep-09	RMO	HF	CL	19	29	R	X	O	A	<2
	14-Oct-09	JBU	E	NW	11	31	R	X	O	A	2
WQ052.00	17-Feb-09	FP	F	CL	2	30	R	X	O	A	<2
	01-Apr-09	EXT	H	S	3	16	R	X	O	A	<2
	20-May-09	RMO	E	NW	10	28	R	X	O	A	2



Station	Date	Collector	Tide	Wind	Temp	Salin	Strat	Adv	Status	Class	Col
	11-Aug-09	EMA	HF	SW	20	25	R	X	O	A	2
	08-Sep-09	RMO	HF	CL	19	24	R	X	O	A	8
	14-Oct-09	JBU	E	NW	12	30	R	X	O	A	<2
WQ054.00	17-Feb-09	FP	F	CL	2	31	R	X	O	A	<2
	01-Apr-09	EXT	H	CL	3	30	R	X	O	A	<2
	20-May-09	RMO	E	NW	10	30	R	X	O	A	<2
	11-Aug-09	EMA	F	SW	19	30	R	X	O	A	<2
	08-Sep-09	RMO	HF	CL	17	30	R	X	O	A	<2
	14-Oct-09	JBU	E	NW	11	31	R	X	O	A	<2
WQ055.00	01-Apr-09	EXT	H	CL	4	30	R	X	O	A	<2
	28-Apr-09	FP	HE	CL	10	28	R	X	O	A	<2
	20-May-09	RMO	E	NW	11	30	R	X	O	A	<2
	11-Aug-09	EMA	HF	SW	19	30	R	X	O	A	<2
	08-Sep-09	RMO	HF	CL	18	30	R	X	O	A	2
	14-Oct-09	JBU	E	NW	11	30	R	X	O	A	8
WQ057.00	20-May-09	RMO	HE	NE	9	30	R	X	O	A	4
	11-Aug-09	EMA	F	SW	16	30	R	X	O	A	<2
	08-Sep-09	RMO	F	SW	16	30	R	W	O	A	<2
	14-Oct-09	JBU	HE	NW	11	30	R	X	O	A	<2
	24-Nov-09	FP	L	CL		31	R	X	O	A	<2
	08-Dec-09	FP	L	CL	8	31	R	X	O	A	<2
WQ058.00	17-Feb-09	FP	F	CL	3	32	R	X	C	P	<2
	01-Apr-09	EXT	H	S	4	30	R	X	C	P	1.6
	20-May-09	RMO	HE	NW	8	30	R	X	C	P	<2
	11-Aug-09	EMA	F	SW	15	30	R	P	C	P	<2
	08-Sep-09	RMO	F	SW	15	30	R	X	C	P	<2
	14-Oct-09	JBU	E	NW	10	31	R	X	C	P	<2