REPORT OF SANITARY SURVEY

AREA G-6

OCRACOKE AREA

SEPTEMBER 2008 THROUGH JANUARY 2013

Prepared 3/13

Approved By:_____

Date: _____

CONTENTS

FIGURES

TABLES

Growing Area G-6, which includes the Ocracoke Island area in Hyde County, lies between the Pamlico Sound and the Atlantic Ocean in the central portion of the state. The systematic random sampling strategy is employed for water quality analysis in this growing area**,** and a review of the data for the current period indicates some widespread decline in bacteriological water quality. Although all classifications within the area are currently adequate, several areas will be monitored closely in the coming months for continued declines, and closures will be made if necessary.

1.0 SANITARY SURVEY

1.1 INTRODUCTION

The G-6 Growing Area is composed of all waters adjacent to Ocracoke Island between Shell Island and Hatteras Inlet. Most of the island is owned by the National Park Service and is uninhabited. Ocracoke Village, the only permanently inhabited portion of the island, has a permanent population of around 948 according to US Census data from 2010. The population increases significantly in the summer months as tourists and seasonal residents come to the area.

Area G-6 includes 13,486 water acres (Figure 1). See Figure 2 for an area map and sampling station locations. Table 1 contains sampling station descriptions.

1.2 SHORELINE SURVEY OF SOURCES OF POLLUTION

Survey Methods

A comprehensive shoreline survey of Area G-6 was completed on May 12th, 2011. Additionally, an annual update was completed on June 5th, 2012. Evaluations of properties in the area were conducted by NC Shellfish Sanitation staff to determine potential sources of pollution entering shellfish growing waters (Figure 3). The Hyde County Health Department was notified prior to the survey, and they agreed to provide corrective action and follow-up for any malfunctioning septic systems or illegal onsite wastewater discharges discovered.

Actual and potential pollution sources for this survey were mapped using GPS, and pollution source data were collected using Trimble's sub-meter GeoXT GPS receiver with EVEREST multipath rejection technology. Data were collected in the SSF format using real-time corrections from the integrated Wide Area Augmentation System receiver. The data were post-processed using GPS Pathfinder Tools applications in order to get the most precise data. Additionally, a Geographic Information System (GIS) was developed, including pertinent information and digital pictures for each source.

Point Source Pollution

Marinas - Marina facilities are evaluated during the shoreline survey because of their potential to affect the suitability of shellfish in adjacent waters for harvest through inputs of both biological and chemical contaminants. A marina is defined as "any water area with a structure (dock, basin, floating dock, etc.) which is utilized for docking or otherwise mooring vessels and constructed to provide temporary or permanent docking space for more than 10 boats" (15A NCAC 18A .0901). The waters enclosed by a marina are classified as *Prohibited* for the harvest of shellfish, and an additional area beyond the marina can also be classified as Prohibited depending on the number of boat slips present.

Overall, there are six marinas and two ten-slip docking facilities within this growing area (Figure 4, Table 2). In addition to the formalized marinas, there is also significant general dockage throughout the Silver Lake portion of the area, and 19 live-aboards were noted during the 2012 annual update.

The Berkley Club is a new subdivision along Silver Lake that includes a small community dock for use by residents. Although permitted for 10 slips, this facility had space for up to 12 boats during the survey. This marina is located well within a *Prohibited* area, so these extra slips should not have any impact on *Approved* waters.

The Captains Landing Hotel also includes a 10-slip docking facility within Silver Lake for use by hotel patrons.

The Jolly Roger Docks have moved from their original location to another portion of Silver Lake. The new facility includes twelve slips and a restaurant. The old location (formerly the site of the Miss Ocracoke docks) is now a private residence, although the docks remain in place.

There are two state-maintained ferry docks on Ocracoke. At the northern end of the island, the Hatteras-Ocracoke ferry has capacity for up to 30 cars. In Silver Lake, the Cedar Island-Ocracoke ferry has capacity for up to 50 cars. Both ferries make use of onboard Fox wastewater treatment systems that dissolve and aerate wastes before discharging them into the surrounding waters.

There have not been any changes of note at the Oyster Creek, Park Service, Anchorage Inn, Down Creek Condos, or Community Store marinas since the last Sanitary Survey Report in 2010.

Non-Point Source Pollution

Stormwater – Stormwater can adversely impact shellfish growing areas by rapidly transporting fecal coliform bacteria and other contaminants from the land to the water. Runoff from impervious surfaces, subdivisions, and other cleared

land is the primary contributor to fecal coliform levels throughout the survey area (Figure 5).

Almost every road along the shore of this growing area discharges its stormwater via pipes, ditches, and swales into shellfishing waters. The runoff travels untreated into the surrounding marshes, creeks and sound.

Subdivisions - Subdivisions are noted in the survey as an indicator of population growth, as well as for their tendency to concentrate potential sources of pollution such as septic systems, pet wastes, and stormwater.

There are only two subdivisions within the G-6 growing area, Oyster Creek and the Berkley Club (Figure 6, Table 3). Although the community docking facility has been built, no homes have been built in the Berkley Club development at this time.

Oyster Creek includes 110 homes lining a series of canals that eventually drain into Pamlico Sound.

Wastewater - There is only one package wastewater treatment plant located in the G-6 area, at the Ocracoke Horizon Condominiums (Figure 7, Table 4). This plant makes use of tertiary filtration before discharging to a large subsurface LPP drainfield.

Otherwise, all homes and businesses on the island are served by onsite wastewater systems. Many of these systems are old and are installed in fill or coarse sand, so seepage to adjacent waters is possible. No failures were noted during this survey, however.

Wildlife and Domestic Animals – The National Park Service has fenced off about 160 acres to serve as habitat for a herd of wild horses that live on Ocracoke (Figure 8, Table 5). The population of this herd is managed to prevent overcrowding, and there are currently less than 10 horses on the island.

Wildlife, including raccoons, opossums, and waterfowl are present throughout the growing area. Waterfowl are particularly common in the winter months, when they congregate in large flocks in Silver Lake and Pamlico Sound.

Poisonous or Deleterious Substances **-** There are no known problems with poisonous or deleterious substances within the G-6 growing area.

1.3 HYDROGRAPHIC FACTORS RESPONSIBLE FOR THE SPREAD OF POLLUTION

Water movement in the G-6 area is influenced by two nearby inlets, Ocracoke Inlet to the south and Hatteras Inlet to the north. There is significant tidal

movement throughout the area, and salinities are generally high, ranging from 15 to 38 parts per thousand during the time frame covered in this report (Table 6).

Although rainfall typically has little impact on the bacteriological water quality of the area, emergency closures can occur following excessive rainfall associated with extreme events such as hurricanes or tropical storms. Since the last Sanitary Survey Report in 2010, the *Approved* waters of the G-6 were closed temporarily for a total of 42 days due to Hurricanes Irene and Sandy (Table 7), as well as 13 days due to two significant rain storms in September 2010 and October 2011. Following each closure, the area was sampled regularly until testing indicated a return to bacteria levels meeting *Approved* standards (Table 8).

1.4 BACTERIOLOGICAL SURVEY OF SHELLFISH GROWING WATERS

The monitoring of the G-6 Area adheres to the systematic random sampling strategy outlined by the National Shellfish Sanitation Program (NSSP), and consists of thirty sample sets from each of the eleven sampling stations used in this report (Figure 2).

The bacteriological survey covered in this report includes water samples taken between 9/22/2008 and 1/29/2013. During that time period, 330 water samples were collected as part of the routine sampling regime, and all were analyzed for fecal coliform bacteria in compliance with the systematic random sampling regime. Table 9 lists, for each individual sampling station, the date the sample was obtained, the tidal cycle upon which the sample was taken, and ambient salinity. Fecal Coliform Most Probable Number (MPN) and summary statistics are listed as well.

Although all stations currently meet the standards for *Approved* status, several have shown a significant decline in water quality since 2010. Stations 18B, 18F, and 18G are all located in and around Oyster Creek and Horsepen Point. These stations have declined from estimated 90^{th} percentiles of 10, 10, and 12 respectively in 2010, to estimated 90^{th} percentiles of 29, 40, and 40 in 2013. Nearby stations 18A and 18E have also shown some decline, although it has not been as dramatic. This area should be monitored closely in the coming months to assure that this decline does not continue, and should these stations begin to exceed *Approved* standards, an expanded closure may be necessary.

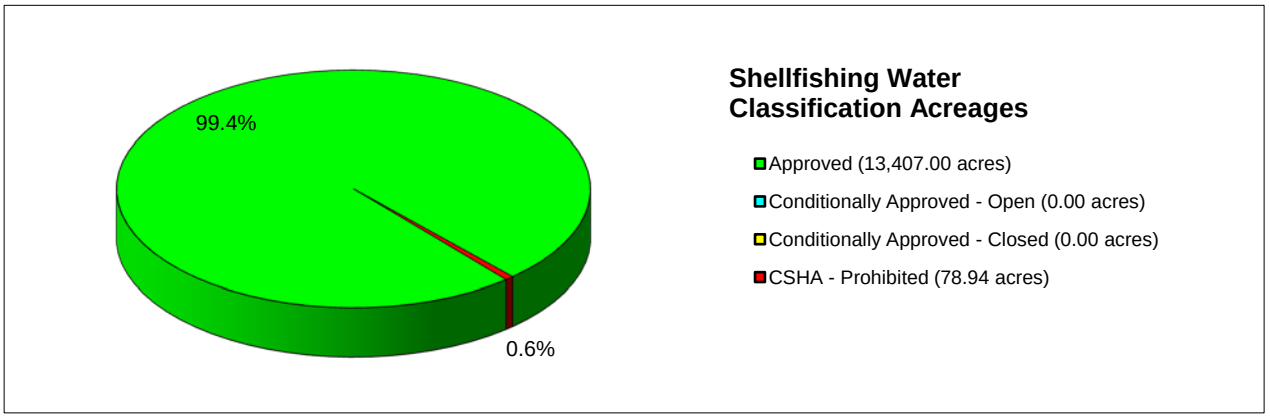
1.5 SUMMARY OF BACTERIOLOGICAL DATA ANALYSIS

A review of the bacteriological data for Area G-6 indicates a general decline in water quality throughout the area, with the most significant declines concentrated around the Oyster Creek and Horsepen Point region. Despite this decline, all 11 stations still meet the standards for *Approved* classification. See Table 10 for summary and descriptive bacteriological statistics.

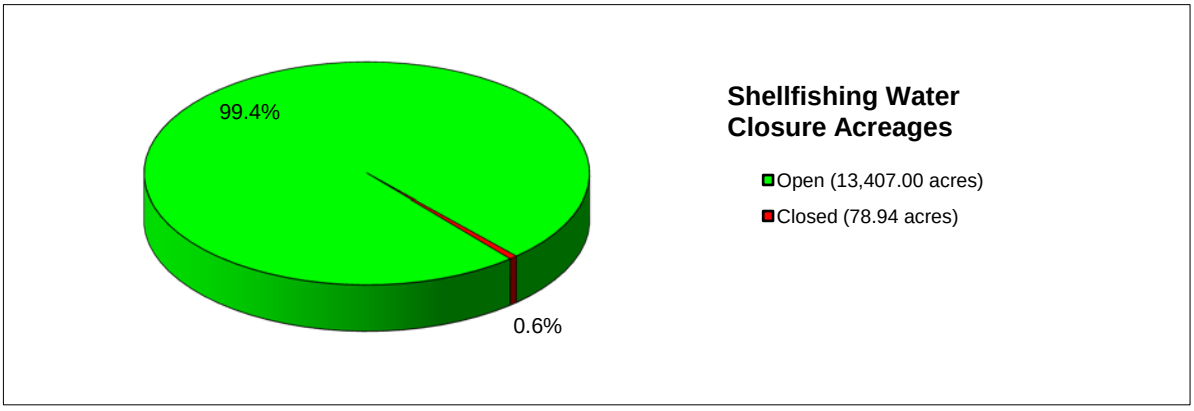
1.6 OVERALL EVALUATION AND RECOMMENDATIONS

A review of the last five years of data gathered from sampling stations throughout the G-6 Growing Area indicates some widespread decline in bacteriological water quality since the last triennial review in 2010. Despite this decline, however, classification of the area appears adequate at this time, and no changes are recommended.

Figure 1: Acreage



Classification	Acres	Percent of Total
Approved	13,407.00	99.4%
Conditionally Approved - Open	0.00	
Conditionally Approved - Closed	0.00	
CSHA - Prohibited	78.94	0.6%
Total	13,485.95	100.0%



Status	Acres	Percent of Total
Open	13,407.00	99.4%
Closed	78.94	0.6%
Total	13,485.95	100.0%

G-6 Growing Area:

Shellfishing Water Sampling Stations

Legend

- # Sampling Stations
- Shellfish Growing Area Boundaries
- 14-digit Hydrologic Units

Shellfish Growing Area Classifications

- Approved
- Conditionally Approved-Open
- Conditionally Approved-Closed
- Prohibited

N
W E
S

0 1 2 Miles

North Carolina Department of
Environment and Natural Resources
Division of Environmental Health
Shellfish Sanitation and
Recreational Water Quality Section
March 5, 2013

Inset Map #1

8
19
20
7
10
18B
18E
18A
18G
18F
0 500 1,000 Yards

15

NATIONAL SEASHORE
CAPE HATTERAS
OCRACOKE

8
19
20
7
10
18BE
18G
18F

Inset Map #1

Sampling Stations

Table 1: Sampling Station Descriptions

STATION#	DESCRIPTION OF SITE	COUNTY
7	Park Service Docks	HYDE
8	O'Neals Clam Bed Off Coast Guard Housing	HYDE
10	Windmill Point	HYDE
15	Ferry Dock, North End	HYDE
18A	Area Horsepen Point	HYDE
18B	100 Yards Off Oyster Creek Subdivision Canals	HYDE
18E	100 Yards Off From 18A	HYDE
18F	Mouth of Canal	HYDE
18G	Off East Point at Horsepen Point	HYDE
19	50 Yards Off New Boat Ramp	HYDE
20	75 Yards Due West of Silver Lake	HYDE

* Shaded cells indicate stations closed to shellfish harvest

G-6 Growing Area: Acutal and Potential Pollution Sources

Legend

- Animals
- Area of Concern
- Dockage
- Golf Courses
- Stormwater
- Subdivisions
- Wastewater
- Sampling Stations
- Shellfish Growing Area Boundaries
- 14-digit Hydrologic Units

Shellfish Growing Area Classifications

- Approved
- Conditionally Approved-Open
- Conditionally Approved-Closed
- Prohibited

N W E S

0 1 2 Miles

North Carolina Department of Environment and Natural Resources
Division of Environmental Health
Shellfish Sanitation and Recreational Water Quality Section
March 5, 2013

Inset Map #1

8 19 20 7 10 18B 18E 18A 18G 18F

0 500 1,000 Yards

15

OCRACOKE CAPE HATTERAS NATIONAL SEASHORE

Inset Map #1

Pollution: All Sources

G-6
Growing Area:

Dockage

Legend

- Dockage
- Shellfish Growing Area Boundaries
- 14-digit Hydrologic Units

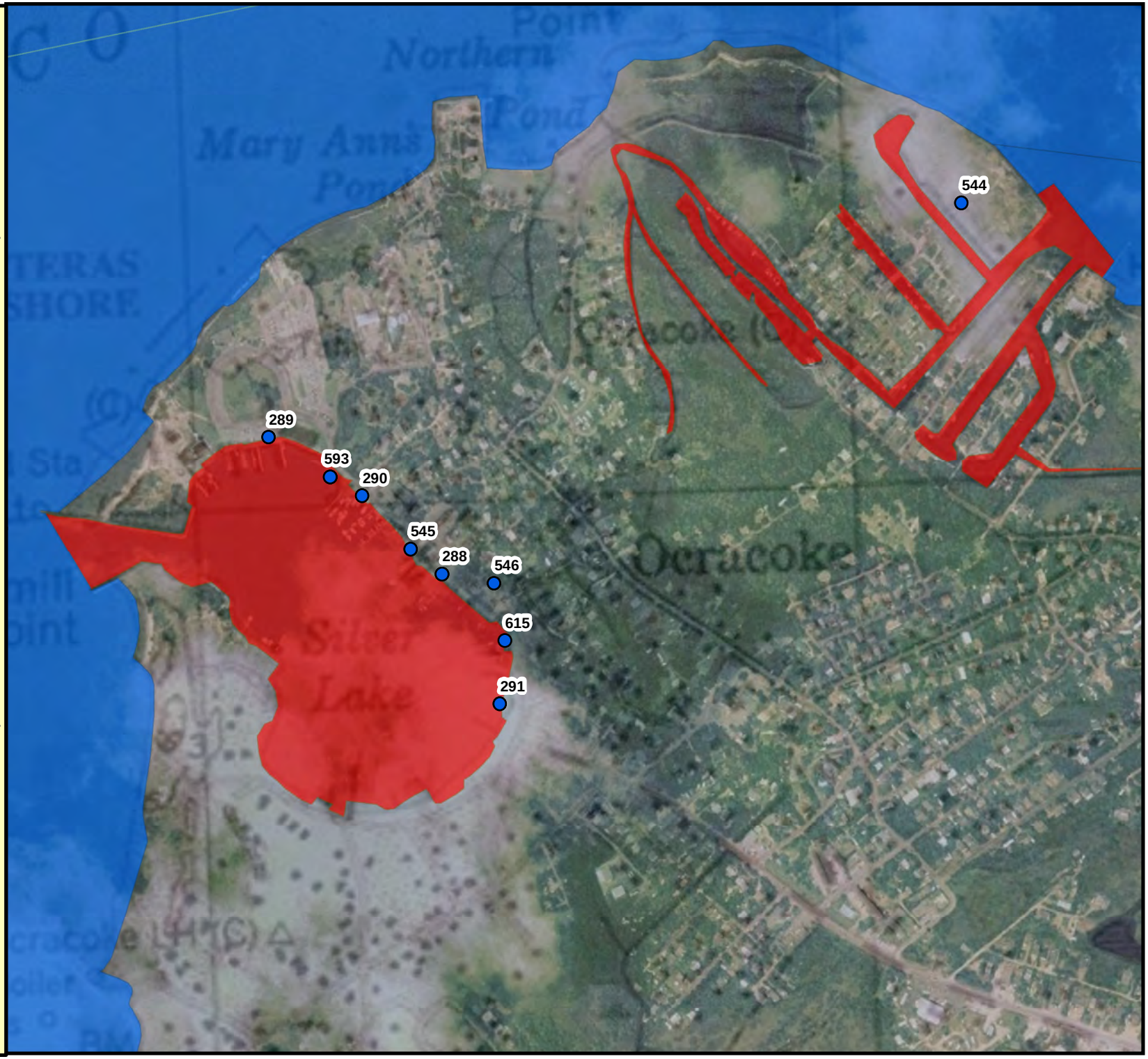
Shellfish Growing Area Classifications

- Approved
- Conditionally Approved-Open
- Conditionally Approved-Closed
- Prohibited

N
W E
S

0 100 200
Yards

North Carolina Department of
Environment and Natural Resources
Division of Environmental Health
Shellfish Sanitation and
Recreational Water Quality Section
March 5, 2013



Pollution: Dockage

Table 2: Dockages

SGA Index	Marina Name	Total Slips	Pumpout?	Comments
615	Jolly Roger Pub and Marina	12	No	Moved to New Location
593	Berkley Club	12	No	-
546	Captains Landing	10	No	-
545	Down Creek Condos	11	No	-
544	Oyster Creek	160	No	-
291	Miss Ocracoke Marina	12	No	Closed - Private Residence
290	Anchorage Marina	52	Yes	-
289	Park Service Community Docks	32	No	-
288	Community Store Marina	14	No	-

G-6
Growing Area:

Stormwater

Legend

- Stormwater
- Shellfish Growing Area Boundaries
- 14-digit Hydrologic Units

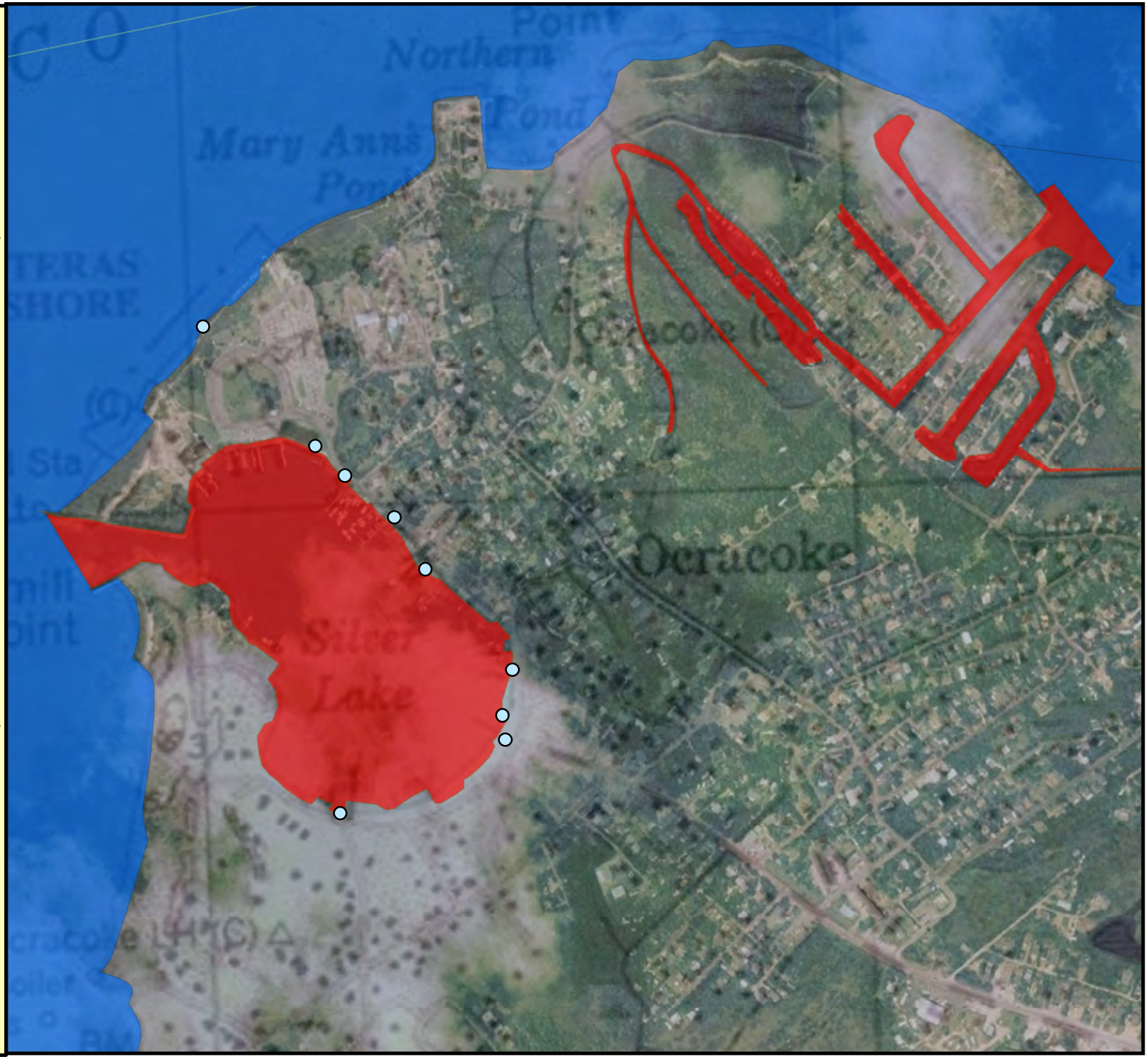
Shellfish Growing Area Classifications

- Approved
- Conditionally Approved-Open
- Conditionally Approved-Closed
- Prohibited

N
W E
S

0 100 200
Yards

North Carolina Department of
Environment and Natural Resources
Division of Environmental Health
Shellfish Sanitation and
Recreational Water Quality Section
March 5, 2013



G-6
Growing Area:

Subdivisions

Legend

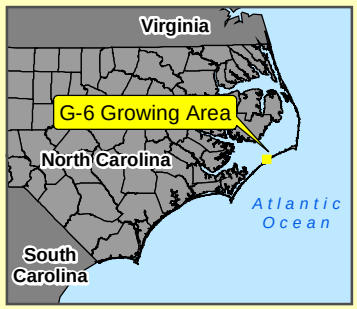
- Subdivisions
- Shellfish Growing Area Boundaries
- 14-digit Hydrologic Units

Shellfish Growing Area Classifications

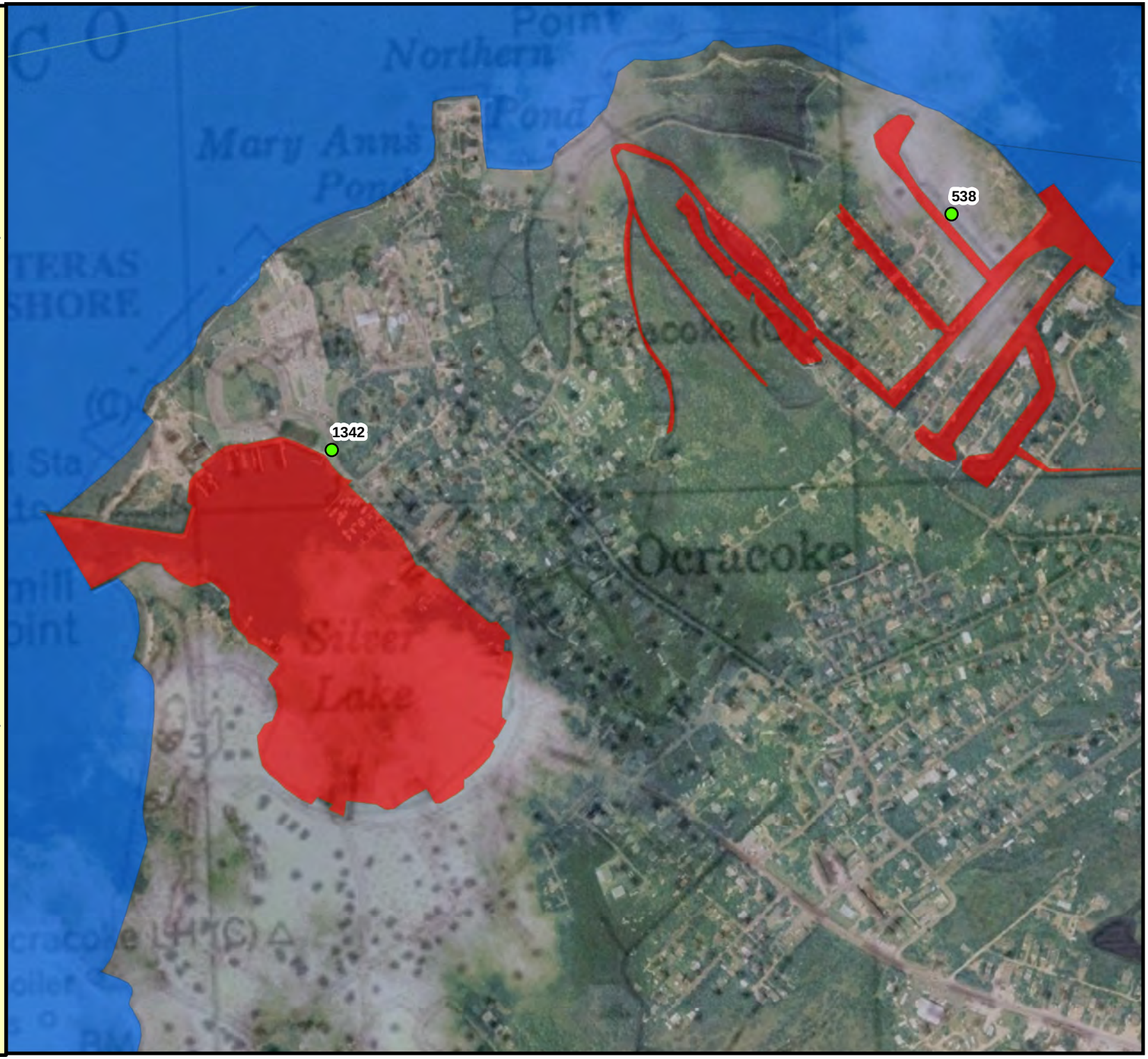
- Approved
- Conditionally Approved-Open
- Conditionally Approved-Closed
- Prohibited

N
W E
S

0 100 200
Yards



North Carolina Department of
Environment and Natural Resources
Division of Environmental Health
Shellfish Sanitation and
Recreational Water Quality Section
March 5, 2013



Pollution: Subdivisions

Table 3: Subdivisions

SGA_Index	*Subdivision Name*	*# Lots*	*# Homes 2009*	*# Homes 2012*
538	Oyster Creek	145	107	110
1342	Berkley Club	NA	0	0

G-6
Growing Area:

Wastewater

Legend

Wastewater

- PACKAGE PLANT
- Shellfish Growing Area Boundaries
- 14-digit Hydrologic Units

Shellfish Growing Area Classifications

- Approved
- Conditionally Approved-Open
- Conditionally Approved-Closed
- Prohibited

N
W E
S

0 100 200
Yards

North Carolina Department of
Environment and Natural Resources
Division of Environmental Health
Shellfish Sanitation and
Recreational Water Quality Section
March 5, 2013

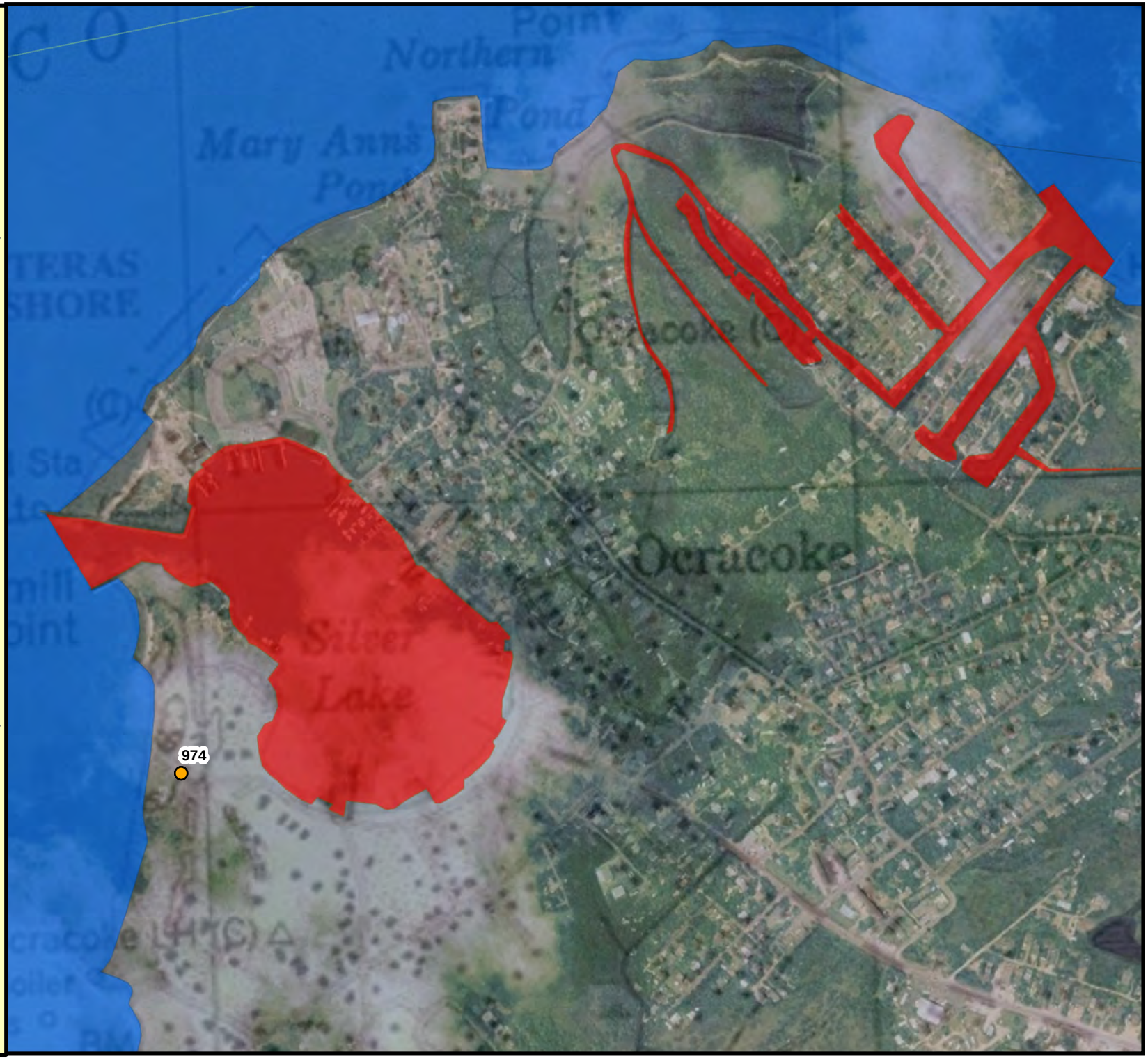


Table 4: Wastewater

SGA Index	*Comments*
974	Ocracoke Horizons Condominiums Package Wastewater Treatment Plant

G-6
Growing Area:

Animals

Legend

Animals

- HORSES
- WATERFOWL
- Shellfish Growing Area Boundaries
- 14-digit Hydrologic Units

Shellfish Growing Area Classifications

- Approved
- Conditionally Approved-Open
- Conditionally Approved-Closed
- Prohibited

N
W E
S

0 0.5 1 Miles

North Carolina Department of
Environment and Natural Resources
Division of Environmental Health
Shellfish Sanitation and
Recreational Water Quality Section
March 5, 2013

Table 5: Animals

SGA_Index	*Comments*
245	National Park Service Wild Horse Area
519	Around 100 Waterfowl Located In Silver Lake

G-6
Growing Area:

Areas of Concern

Legend

Area of Concern

- POISON/DELETERIOUS
- SED/EROSION
- OTHER-SEE COMMENTS
- Shellfish Growing Area Boundaries
- 14-digit Hydrologic Units

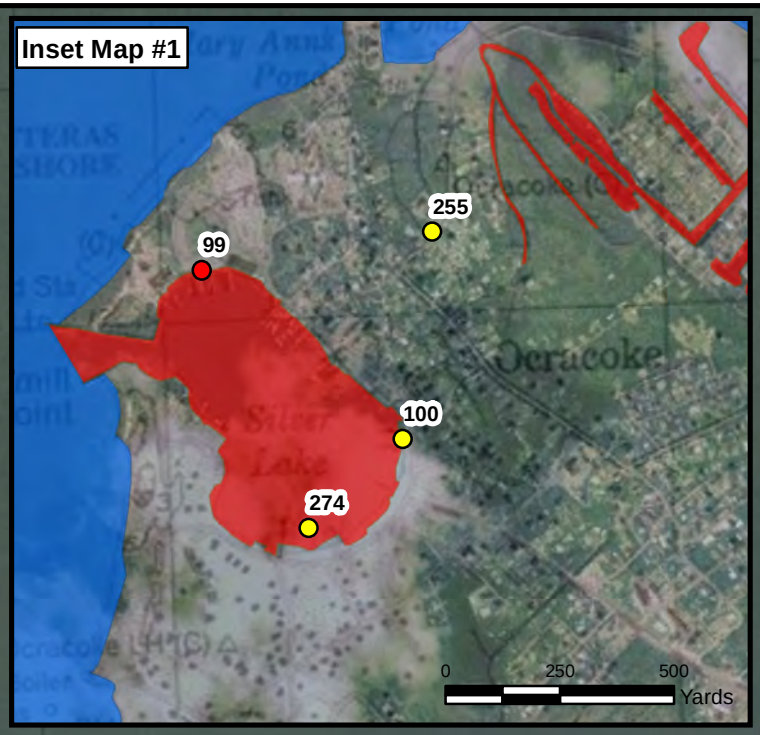
Shellfish Growing Area Classifications

- Approved
- Conditionally Approved-Open
- Conditionally Approved-Closed
- Prohibited

N W E S

0 1 2 Miles

North Carolina Department of
Environment and Natural Resources
Division of Environmental Health
Shellfish Sanitation and
Recreational Water Quality Section
March 5, 2013



Pollution: Areas of Concern

Table 6: Areas of Concern

SGA_Index	*Comments*
254	Dredging
115	Ferry Landing
255	Teeters Campground
113	Ocracoke Campground
100	Ocracoke Seafood Company
256	Dredge Spoils
99	Ocracoke Ferry Landing
274	Silver Lake

G-6 Tides and Salinities

		Station ID										
Date	**Tidal Stage**	***7***	***8***	***10***	***15***	***18A***	***18B***	***18E***	***18F***	***18G***	***19***	***20***
9/22/2008	**HIGH**	34	34	34	34	34	35	35	35	35	35	35
10/7/2008	**LOW**	30	30	30	30	30	32	32	32	32	32	32
10/30/2008	**LOW**	30	30	30	29	29	30	30	30	30	30	30
12/8/2008	**LOW**	25	35	35	35	35	36	36	36	36	36	36
3/25/2009	**HIGH**	27	27	27	31	30	30	30	30	30	30	30
6/1/2009	**HIGH**	30	33	35	35	35	35	35	35	35	35	35
8/11/2009	**HIGH**	32	34	34	35	35	35	35	35	35	36	38
9/28/2009	**HIGH**	35	32	35	35	35	32	33	32	30	35	35
10/22/2009	**HIGH**	26	26	26	26	26	27	27	27	26	26	26
12/8/2009	**LOW**	30	30	29	31	31	30	31	28	28	31	31
3/1/2010	**HIGH**	15	15	16	20	16	15	15	16	15	15	17
4/28/2010	**HIGH**	31	32	32	32	31	31	33	31	33	33	33
5/20/2010	**HIGH**	28	29	28	30	29	29	29	29	28	28	28
9/20/2010	**HIGH**	28	30	33	33	30	30	30	30	30	30	30
10/25/2010	**HIGH**	25	25	25	25	25	25	25	25	25	25	25
11/18/2010	**HIGH**	25	25	25	24	26	26	25	25	25	26	26
2/21/2011	**LOW**	20	20	20	20	20	20	22	22	23	20	23
4/19/2011	**LOW**	25	27	27	27	29	29	29	29	30	30	28
7/6/2011	**HIGH**	30	30	30	28	28	28	28	28	28	28	30
8/3/2011	**HIGH**	30	30	30	30	30	30	30	30	30	10	30
10/12/2011	**HIGH**	24	24	27	20	24	24	23	21	21	23	24
10/17/2011	**HIGH**	31	30	30	29	28	28	28	28	28	30	31
10/25/2011	**HIGH**	29	29	29	26	26	26	26	26	26	30	30
2/21/2012	**HIGH**	30	30	31	35	34	30	30	30	30	33	33
4/17/2012	**LOW**	25	25	25	25						28	28
6/18/2012		30	30	30	30	30	30	30	30	30	30	30
7/31/2012	**LOW**	35	36	36	34	34	35	35	35	35	35	35
10/22/2012	**HIGH**	33	33	33	30						33	33
11/26/2012	**HIGH**	29	28	27	27						27	27
1/29/2013	**HIGH**	26	27	28	30						30	30

Table 8: Temporary Closures

DATE	DESCRIPTION	CLOSE	OPEN	REASON
09/03/10	All those waters 200 yards offshore between the north side of Ocracoke Inlet and the south side of Oregon Inlet.	3-Sep		Rainfall
09/08/10	All those waters 200 yards offshore between the north side of Ocracoke Inlet and the south side of Oregon Inlet.		9-Sep	Sampling
08/29/11	All Coastal waters close.	29-Aug		Hurricane Irene
09/07/11	A portion of Pamlico Sound returns to status prior to 8/27/11 Hurricane Irene		8-Sep	Sampling
10/20/11	All those waters 200 yards offshore between the north side of Ocracoke Inlet and the south side of Oregon Inlet.	20-Oct		Rainfall
10/26/2011	All those waters 200 yards offshore between the north side of Ocracoke Inlet and the south side of Oregon Inlet.		27-Oct	Sampling
10/28/2012	All those waters 200 yards offshore between the north side of Ocracoke Inlet and the south side of Oregon Inlet.	28-Oct		Hurricane Sandy
11/28/2012	All those waters between Ocracoke Inlet and Oregon Inlet returns to normal boundaries..		29-Nov	Sampling

Table 9: Conditional Sampling Results

STATION	*09/07/10*	*10/25/11*	*11/26/12*
20		1.7	1.7
8		1.7	1.7
10		2.0	1.7
19	2.0	1.7	1.7
7		6.8	1.7
15		4.5	2.0
18A		9.3	1.7
18B		6.8	2.0
18E		11.0	1.7
18F		130.0	1.7
18G		49.0	33.0

G-6 Bacteriological Results

Station ID: 7

# Samples:	30	**Log Avg:**	0.7061
# > 43 MPN:	3	**Log Std Dev:**	0.6182
# > 260 MPN:	0	**Geomean:**	5.0830
Median:	2	**Estimated 90th:**	31

Date	Tidal Stage	Salinity	FC	Log FC
9/22/2008	HIGH	34	4.5	0.6532
10/7/2008	LOW	30	7.8	0.8921
10/30/2008	LOW	30	**49.0**	1.6902
12/8/2008	LOW	25	1.7	0.2304
3/25/2009	HIGH	27	7.8	0.8921
6/1/2009	HIGH	30	4.5	0.6532
8/11/2009	HIGH	32	1.7	0.2304
9/28/2009	HIGH	35	**17.0**	1.2304
10/22/2009	HIGH	26	1.7	0.2304
12/8/2009	LOW	30	2.0	0.301
3/1/2010	HIGH	15	1.7	0.2304
4/28/2010	HIGH	31	1.7	0.2304
5/20/2010	HIGH	28	**33.0**	1.5185
9/20/2010	HIGH	28	13.0	1.1139
10/25/2010	HIGH	25	1.7	0.2304
11/18/2010	HIGH	25	**79.0**	1.8976
2/21/2011	LOW	20	1.7	0.2304
4/19/2011	LOW	25	1.7	0.2304
7/6/2011	HIGH	30	1.7	0.2304
8/3/2011	HIGH	30	1.7	0.2304
10/12/2011	HIGH	24	**220.0**	2.3424
10/17/2011	HIGH	31	**33.0**	1.5185
10/25/2011	HIGH	29	6.8	0.8325
2/21/2012	HIGH	30	1.7	0.2304
4/17/2012	LOW	25	4.0	0.6021
6/18/2012		30	2.0	0.301
7/31/2012	LOW	35	**33.0**	1.5185
10/22/2012	HIGH	33	1.7	0.2304
11/26/2012	HIGH	29	1.7	0.2304
1/29/2013	HIGH	26	1.7	0.2304

Station ID: 8

# Samples:	30	**Log Avg:**	0.4923
# > 43 MPN:	2	**Log Std Dev:**	0.5150
# > 260 MPN:	0	**Geomean:**	3.1065
Median:	1.7	**Estimated 90th:**	14

Date	Tidal Stage	Salinity	FC	Log FC
9/22/2008	HIGH	34	1.7	0.2304
10/7/2008	LOW	30	2.0	0.301
10/30/2008	LOW	30	4.5	0.6532
12/8/2008	LOW	35	1.7	0.2304
3/25/2009	HIGH	27	1.7	0.2304
6/1/2009	HIGH	33	1.7	0.2304
8/11/2009	HIGH	34	1.7	0.2304
9/28/2009	HIGH	32	2.0	0.301
10/22/2009	HIGH	26	1.7	0.2304
12/8/2009	LOW	30	13.0	1.1139
3/1/2010	HIGH	15	1.7	0.2304
4/28/2010	HIGH	32	1.7	0.2304
5/20/2010	HIGH	29	2.0	0.301
9/20/2010	HIGH	30	4.5	0.6532
10/25/2010	HIGH	25	2.0	0.301
11/18/2010	HIGH	25	1.7	0.2304
2/21/2011	LOW	20	1.7	0.2304
4/19/2011	LOW	27	1.7	0.2304
7/6/2011	HIGH	30	**17.0**	1.2304
8/3/2011	HIGH	30	1.7	0.2304
10/12/2011	HIGH	24	**240.0**	2.3802
10/17/2011	HIGH	30	11.0	1.0414
10/25/2011	HIGH	29	1.7	0.2304
2/21/2012	HIGH	30	4.5	0.6532
4/17/2012	LOW	25	1.7	0.2304
6/18/2012		30	1.7	0.2304
7/31/2012	LOW	36	**49.0**	1.6902
10/22/2012	HIGH	33	1.7	0.2304
11/26/2012	HIGH	28	1.7	0.2304
1/29/2013	HIGH	27	1.7	0.2304

G-6 Bacteriological Results

Station ID: 10

# Samples:	30	**Log Avg:**	0.4515
# > 43 MPN:	2	**Log Std Dev:**	0.4759
# > 260 MPN:	0	**Geomean:**	2.8283
Median:	1.7	**Estimated 90th:**	11

Date	Tidal Stage	Salinity	FC	Log FC
9/22/2008	HIGH	34	1.7	0.2304
10/7/2008	LOW	30	1.8	0.2553
10/30/2008	LOW	30	**17.0**	1.2304
12/8/2008	LOW	35	2.0	0.301
3/25/2009	HIGH	27	1.7	0.2304
6/1/2009	HIGH	35	1.7	0.2304
8/11/2009	HIGH	34	1.7	0.2304
9/28/2009	HIGH	35	7.8	0.8921
10/22/2009	HIGH	26	1.7	0.2304
12/8/2009	LOW	29	2.0	0.301
3/1/2010	HIGH	16	1.7	0.2304
4/28/2010	HIGH	32	1.7	0.2304
5/20/2010	HIGH	28	1.7	0.2304
9/20/2010	HIGH	33	2.0	0.301
10/25/2010	HIGH	25	1.7	0.2304
11/18/2010	HIGH	25	2.0	0.301
2/21/2011	LOW	20	2.0	0.301
4/19/2011	LOW	27	1.7	0.2304
7/6/2011	HIGH	30	1.7	0.2304
8/3/2011	HIGH	30	2.0	0.301
10/12/2011	HIGH	27	**79.0**	1.8976
10/17/2011	HIGH	30	6.8	0.8325
10/25/2011	HIGH	29	2.0	0.301
2/21/2012	HIGH	31	4.0	0.6021
4/17/2012	LOW	25	1.7	0.2304
6/18/2012		30	1.7	0.2304
7/31/2012	LOW	36	**110.0**	2.0414
10/22/2012	HIGH	33	1.7	0.2304
11/26/2012	HIGH	27	1.7	0.2304
1/29/2013	HIGH	28	1.7	0.2304

Station ID: 15

# Samples:	30	**Log Avg:**	0.4490
# > 43 MPN:	2	**Log Std Dev:**	0.4074
# > 260 MPN:	0	**Geomean:**	2.8121
Median:	1.7	**Estimated 90th:**	9

Date	Tidal Stage	Salinity	FC	Log FC
9/22/2008	HIGH	34	1.7	0.2304
10/7/2008	LOW	30	1.7	0.2304
10/30/2008	LOW	29	9.3	0.9685
12/8/2008	LOW	35	1.7	0.2304
3/25/2009	HIGH	31	1.7	0.2304
6/1/2009	HIGH	35	1.7	0.2304
8/11/2009	HIGH	35	1.7	0.2304
9/28/2009	HIGH	35	1.7	0.2304
10/22/2009	HIGH	26	1.7	0.2304
12/8/2009	LOW	31	4.5	0.6532
3/1/2010	HIGH	20	1.7	0.2304
4/28/2010	HIGH	32	1.7	0.2304
5/20/2010	HIGH	30	1.7	0.2304
9/20/2010	HIGH	33	2.0	0.301
10/25/2010	HIGH	25	2.0	0.301
11/18/2010	HIGH	24	1.7	0.2304
2/21/2011	LOW	20	1.7	0.2304
4/19/2011	LOW	27	4.5	0.6532
7/6/2011	HIGH	28	1.7	0.2304
8/3/2011	HIGH	30	2.0	0.301
10/12/2011	HIGH	20	13.0	1.1139
10/17/2011	HIGH	29	**46.0**	1.6628
10/25/2011	HIGH	26	4.5	0.6532
2/21/2012	HIGH	35	1.7	0.2304
4/17/2012	LOW	25	1.7	0.2304
6/18/2012		30	4.5	0.6532
7/31/2012	LOW	34	**49.0**	1.6902
10/22/2012	HIGH	30	2.0	0.301
11/26/2012	HIGH	27	2.0	0.301
1/29/2013	HIGH	30	1.7	0.2304

G-6 Bacteriological Results

Station ID: 18A

# Samples:	30	**Log Avg:**	0.5975
# > 43 MPN:	2	**Log Std Dev:**	0.5539
# > 260 MPN:	0	**Geomean:**	3.9586
Median:	1.75	**Estimated 90th:**	20

Date	Tidal Stage	Salinity	FC	Log FC
11/5/2007	HIGH	32	1.8	0.2553
12/4/2007	LOW	29	2.0	0.301
3/31/2008	LOW	30	1.7	0.2304
6/16/2008	HIGH	33	**33.0**	1.5185
9/22/2008	HIGH	34	1.7	0.2304
10/7/2008	LOW	30	1.7	0.2304
10/30/2008	LOW	29	11.0	1.0414
12/8/2008	LOW	35	1.7	0.2304
3/25/2009	HIGH	30	1.7	0.2304
6/1/2009	HIGH	35	1.7	0.2304
8/11/2009	HIGH	35	1.7	0.2304
9/28/2009	HIGH	35	**17.0**	1.2304
10/22/2009	HIGH	26	1.7	0.2304
12/8/2009	LOW	31	**33.0**	1.5185
3/1/2010	HIGH	16	1.7	0.2304
4/28/2010	HIGH	31	**49.0**	1.6902
5/20/2010	HIGH	29	1.8	0.2553
9/20/2010	HIGH	30	2.0	0.301
10/25/2010	HIGH	25	1.7	0.2304
11/18/2010	HIGH	26	6.8	0.8325
2/21/2011	LOW	20	1.7	0.2304
4/19/2011	LOW	29	1.7	0.2304
7/6/2011	HIGH	28	1.7	0.2304
8/3/2011	HIGH	30	2.0	0.301
10/12/2011	HIGH	24	1.7	0.2304
10/17/2011	HIGH	28	**21.0**	1.3222
10/25/2011	HIGH	26	9.3	0.9685
2/21/2012	HIGH	34	7.8	0.8921
6/18/2012		30	1.7	0.2304
7/31/2012	LOW	34	**110.0**	2.0414

Station ID: 18B

# Samples:	30	**Log Avg:**	0.6949
# > 43 MPN:	3	**Log Std Dev:**	0.6069
# > 260 MPN:	0	**Geomean:**	4.9530
Median:	2	**Estimated 90th:**	29

Date	Tidal Stage	Salinity	FC	Log FC
11/5/2007	HIGH	32	1.7	0.2304
12/4/2007	LOW	29	6.8	0.8325
3/31/2008	LOW	30	6.8	0.8325
6/16/2008	HIGH	32	1.8	0.2553
9/22/2008	HIGH	35	4.5	0.6532
10/7/2008	LOW	32	2.0	0.301
10/30/2008	LOW	30	6.1	0.7853
12/8/2008	LOW	36	1.7	0.2304
3/25/2009	HIGH	30	1.7	0.2304
6/1/2009	HIGH	35	1.7	0.2304
8/11/2009	HIGH	35	1.7	0.2304
9/28/2009	HIGH	32	**79.0**	1.8976
10/22/2009	HIGH	27	2.0	0.301
12/8/2009	LOW	30	**33.0**	1.5185
3/1/2010	HIGH	15	1.7	0.2304
4/28/2010	HIGH	31	4.5	0.6532
5/20/2010	HIGH	29	1.7	0.2304
9/20/2010	HIGH	30	6.8	0.8325
10/25/2010	HIGH	25	1.7	0.2304
11/18/2010	HIGH	26	**33.0**	1.5185
2/21/2011	LOW	20	2.0	0.301
4/19/2011	LOW	29	1.7	0.2304
7/6/2011	HIGH	28	7.8	0.8921
8/3/2011	HIGH	30	1.7	0.2304
10/12/2011	HIGH	24	1.7	0.2304
10/17/2011	HIGH	28	**33.0**	1.5185
10/25/2011	HIGH	26	6.8	0.8325
2/21/2012	HIGH	30	**130.0**	2.1139
6/18/2012		30	1.7	0.2304
7/31/2012	LOW	35	**110.0**	2.0414

G-6 Bacteriological Results

Station ID: 18E

# Samples:	30	**Log Avg:**	0.5476
# > 43 MPN:	1	**Log Std Dev:**	0.5126
# > 260 MPN:	1	**Geomean:**	3.5286
Median:	2	**Estimated 90th:**	15

Date	Tidal Stage	Salinity	FC	Log FC
11/5/2007	HIGH	32	2.0	0.301
12/4/2007	LOW	29	4.5	0.6532
3/31/2008	LOW	30	2.0	0.301
6/16/2008	HIGH	32	2.0	0.301
9/22/2008	HIGH	35	1.7	0.2304
10/7/2008	LOW	32	1.7	0.2304
10/30/2008	LOW	30	4.5	0.6532
12/8/2008	LOW	36	2.0	0.301
3/25/2009	HIGH	30	1.7	0.2304
6/1/2009	HIGH	35	1.7	0.2304
8/11/2009	HIGH	35	2.0	0.301
9/28/2009	HIGH	33	1.7	0.2304
10/22/2009	HIGH	27	2.0	0.301
12/8/2009	LOW	31	**14.0**	1.1461
3/1/2010	HIGH	15	2.0	0.301
4/28/2010	HIGH	33	4.5	0.6532
5/20/2010	HIGH	29	1.7	0.2304
9/20/2010	HIGH	30	13.0	1.1139
10/25/2010	HIGH	25	2.0	0.301
11/18/2010	HIGH	25	2.0	0.301
2/21/2011	LOW	22	1.7	0.2304
4/19/2011	LOW	29	1.7	0.2304
7/6/2011	HIGH	28	1.7	0.2304
8/3/2011	HIGH	30	2.0	0.301
10/12/2011	HIGH	23	**350.0**	2.5441
10/17/2011	HIGH	28	6.8	0.8325
10/25/2011	HIGH	26	11.0	1.0414
2/21/2012	HIGH	30	13.0	1.1139
6/18/2012		30	1.7	0.2304
7/31/2012	LOW	35	**23.0**	1.3617

Station ID: 18F

# Samples:	30	**Log Avg:**	0.7719
# > 43 MPN:	4	**Log Std Dev:**	0.6523
# > 260 MPN:	0	**Geomean:**	5.9139
Median:	3.25	**Estimated 90th:**	40

Date	Tidal Stage	Salinity	FC	Log FC
11/5/2007	HIGH	32	1.7	0.2304
12/4/2007	LOW	29	9.3	0.9685
3/31/2008	LOW	30	1.7	0.2304
6/16/2008	HIGH	31	1.7	0.2304
9/22/2008	HIGH	35	2.0	0.301
10/7/2008	LOW	32	7.8	0.8921
10/30/2008	LOW	30	**23.0**	1.3617
12/8/2008	LOW	36	2.0	0.301
3/25/2009	HIGH	30	1.7	0.2304
6/1/2009	HIGH	35	1.7	0.2304
8/11/2009	HIGH	35	1.7	0.2304
9/28/2009	HIGH	32	4.5	0.6532
10/22/2009	HIGH	27	4.5	0.6532
12/8/2009	LOW	28	**31.0**	1.4914
3/1/2010	HIGH	16	1.7	0.2304
4/28/2010	HIGH	31	7.8	0.8921
5/20/2010	HIGH	29	**110.0**	2.0414
9/20/2010	HIGH	30	2.0	0.301
10/25/2010	HIGH	25	1.7	0.2304
11/18/2010	HIGH	25	**22.0**	1.3424
2/21/2011	LOW	22	1.7	0.2304
4/19/2011	LOW	29	2.0	0.301
7/6/2011	HIGH	28	4.5	0.6532
8/3/2011	HIGH	30	1.7	0.2304
10/12/2011	HIGH	21	**79.0**	1.8976
10/17/2011	HIGH	28	11.0	1.0414
10/25/2011	HIGH	26	**130.0**	2.1139
2/21/2012	HIGH	30	13.0	1.1139
6/18/2012		30	2.0	0.301
7/31/2012	LOW	35	**170.0**	2.2304

G-6 Bacteriological Results

Station ID: 18G

# Samples:	30	**Log Avg:**	0.7419
# > 43 MPN:	5	**Log Std Dev:**	0.6746
# > 260 MPN:	0	**Geomean:**	5.5201
Median:	2	**Estimated 90th:**	40

Date	Tidal Stage	Salinity	FC	Log FC
11/5/2007	HIGH	32	1.7	0.2304
12/4/2007	LOW	29	**22.0**	1.3424
3/31/2008	LOW	30	1.7	0.2304
6/16/2008	HIGH	31	1.7	0.2304
9/22/2008	HIGH	35	2.0	0.301
10/7/2008	LOW	32	4.5	0.6532
10/30/2008	LOW	30	**23.0**	1.3617
12/8/2008	LOW	36	1.7	0.2304
3/25/2009	HIGH	30	1.7	0.2304
6/1/2009	HIGH	35	1.7	0.2304
8/11/2009	HIGH	35	2.0	0.301
9/28/2009	HIGH	30	1.7	0.2304
10/22/2009	HIGH	26	7.8	0.8921
12/8/2009	LOW	28	**79.0**	1.8976
3/1/2010	HIGH	15	1.7	0.2304
4/28/2010	HIGH	33	1.7	0.2304
5/20/2010	HIGH	28	**170.0**	2.2304
9/20/2010	HIGH	30	1.7	0.2304
10/25/2010	HIGH	25	1.7	0.2304
11/18/2010	HIGH	25	**23.0**	1.3617
2/21/2011	LOW	23	4.5	0.6532
4/19/2011	LOW	30	1.8	0.2553
7/6/2011	HIGH	28	1.7	0.2304
8/3/2011	HIGH	30	1.7	0.2304
10/12/2011	HIGH	21	**130.0**	2.1139
10/17/2011	HIGH	28	11.0	1.0414
10/25/2011	HIGH	26	**49.0**	1.6902
2/21/2012	HIGH	30	9.3	0.9685
6/18/2012		30	2.0	0.301
7/31/2012	LOW	35	**79.0**	1.8976

Station ID: 19

# Samples:	30	**Log Avg:**	0.3600
# > 43 MPN:	1	**Log Std Dev:**	0.3766
# > 260 MPN:	0	**Geomean:**	2.2911
Median:	1.7	**Estimated 90th:**	6

Date	Tidal Stage	Salinity	FC	Log FC
9/22/2008	HIGH	35	1.7	0.2304
10/7/2008	LOW	32	1.7	0.2304
10/30/2008	LOW	30	4.0	0.6021
12/8/2008	LOW	36	2.0	0.301
3/25/2009	HIGH	30	1.7	0.2304
6/1/2009	HIGH	35	1.7	0.2304
8/11/2009	HIGH	36	1.7	0.2304
9/28/2009	HIGH	35	2.0	0.301
10/22/2009	HIGH	26	1.7	0.2304
12/8/2009	LOW	31	**17.0**	1.2304
3/1/2010	HIGH	15	1.7	0.2304
4/28/2010	HIGH	33	1.7	0.2304
5/20/2010	HIGH	28	1.7	0.2304
9/20/2010	HIGH	30	4.5	0.6532
10/25/2010	HIGH	25	2.0	0.301
11/18/2010	HIGH	26	1.7	0.2304
2/21/2011	LOW	20	1.7	0.2304
4/19/2011	LOW	30	1.7	0.2304
7/6/2011	HIGH	28	1.7	0.2304
8/3/2011	HIGH	10	1.7	0.2304
10/12/2011	HIGH	23	1.7	0.2304
10/17/2011	HIGH	30	1.7	0.2304
10/25/2011	HIGH	30	1.7	0.2304
2/21/2012	HIGH	33	2.0	0.301
4/17/2012	LOW	28	1.7	0.2304
6/18/2012		30	1.7	0.2304
7/31/2012	LOW	35	**110.0**	2.0414
10/22/2012	HIGH	33	1.7	0.2304
11/26/2012	HIGH	27	1.7	0.2304
1/29/2013	HIGH	30	1.7	0.2304

G-6 Bacteriological Results

Station ID: 20

# Samples:	30	**Log Avg:**	0.3361
# > 43 MPN:	1	**Log Std Dev:**	0.3166
# > 260 MPN:	0	**Geomean:**	2.1681
Median:	1.7	**Estimated 90th:**	5

Date	Tidal Stage	Salinity	FC	Log FC
9/22/2008	HIGH	35	1.7	0.2304
10/7/2008	LOW	32	1.7	0.2304
10/30/2008	LOW	30	11.0	1.0414
12/8/2008	LOW	36	1.7	0.2304
3/25/2009	HIGH	30	1.7	0.2304
6/1/2009	HIGH	35	2.0	0.301
8/11/2009	HIGH	38	1.7	0.2304
9/28/2009	HIGH	35	1.7	0.2304
10/22/2009	HIGH	26	1.7	0.2304
12/8/2009	LOW	31	1.7	0.2304
3/1/2010	HIGH	17	1.7	0.2304
4/28/2010	HIGH	33	2.0	0.301
5/20/2010	HIGH	28	1.7	0.2304
9/20/2010	HIGH	30	1.7	0.2304
10/25/2010	HIGH	25	2.0	0.301
11/18/2010	HIGH	26	1.7	0.2304
2/21/2011	LOW	23	1.7	0.2304
4/19/2011	LOW	28	1.7	0.2304
7/6/2011	HIGH	30	7.8	0.8921
8/3/2011	HIGH	30	1.7	0.2304
10/12/2011	HIGH	24	1.7	0.2304
10/17/2011	HIGH	31	1.7	0.2304
10/25/2011	HIGH	30	1.7	0.2304
2/21/2012	HIGH	33	1.8	0.2553
4/17/2012	LOW	28	1.7	0.2304
6/18/2012		30	1.7	0.2304
7/31/2012	LOW	35	**49.0**	1.6902
10/22/2012	HIGH	33	1.7	0.2304
11/26/2012	HIGH	27	1.7	0.2304
1/29/2013	HIGH	30	1.7	0.2304

G-6 Data Summary

Summary of sampling data through 1/29/2013. Shaded cells indicate stations in waters closed to shellfish harvest.

Station ID:	# Samples:	Median:	Geomean:	Estimated 90th:
7	30	2	5.0830	31
8	30	1.7	3.1065	14
10	30	1.7	2.8283	11
15	30	1.7	2.8121	9
18A	30	1.75	3.9586	20
18B	30	2	4.9530	29
18E	30	2	3.5286	15
18F	30	3.25	5.9139	40
18G	30	2	5.5201	40
19	30	1.7	2.2911	6
20	30	1.7	2.1681	5