



GROWING AREA WH

Location – Scarborough and Cape Elizabeth

ANNUAL REVIEW for 2008

Report Date: June 15, 2009

Amy M. Fitzpatrick

APPROVAL

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TABLE OF CONTENTS

Executive Summary	5
Growing Area Description	5
Current Classification(s).....	6
Activity during Review Period	6
Current Management Plan for Conditional Area	6
Current Annual Review of Management Plan.....	6
Water Quality Review and Discussion	6
Shoreline Survey Activity	9
Aquaculture/Wet Storage Activity	9
Classification Changes Required.....	9
Summary.....	9
References.....	10
Appendix A. Annual Review of Conditional Area Management Plan.....	11
Appendix B. Key to water quality table headers.	13
Appendix C. Growing Area WH 2008 Data.....	14

LIST OF TABLES

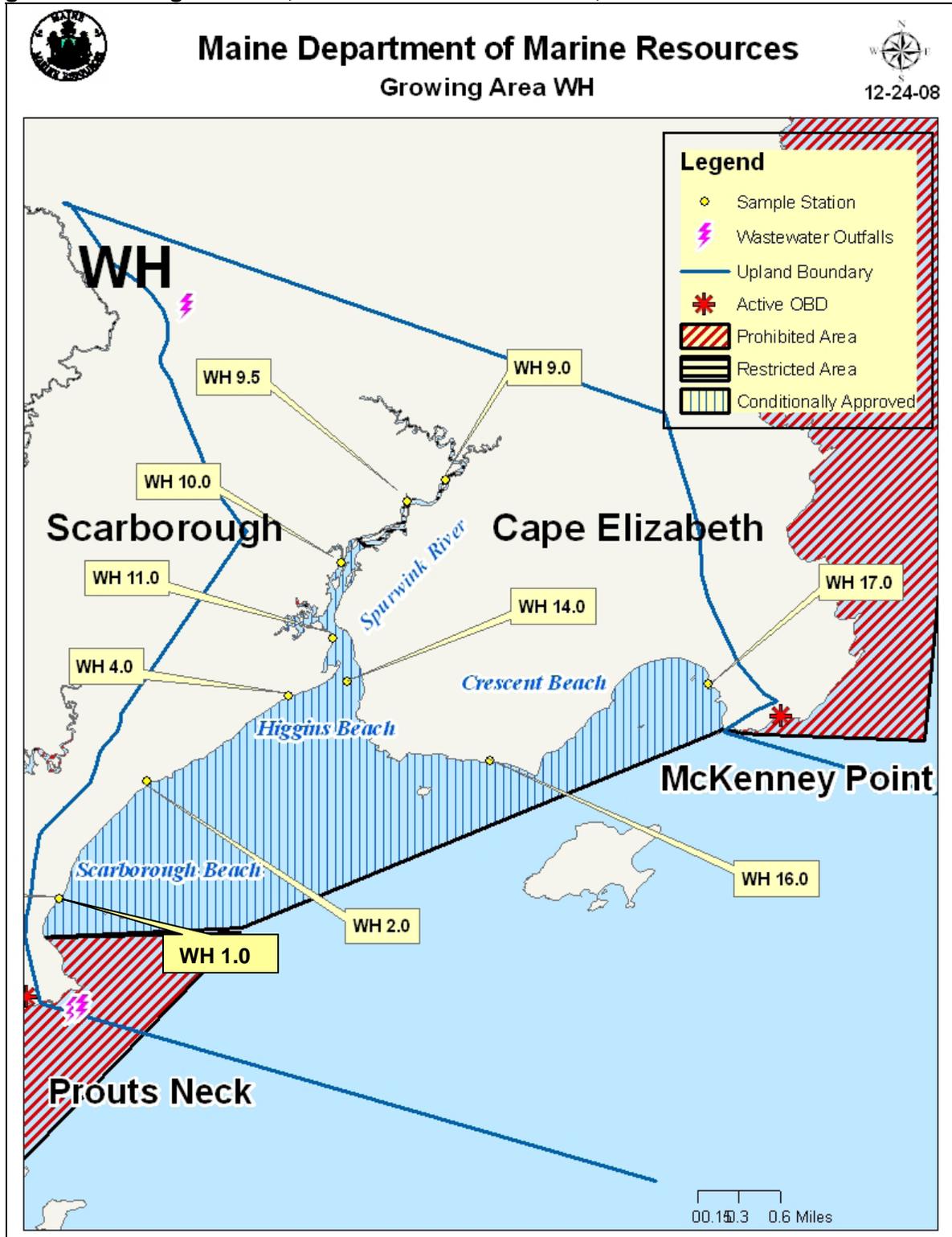
Table 1. Geomean and P90 Scores, Growing Area WH Restricted Stations, 2004-2008	7
Table 2. Geomean and P90 Scores, Growing Area WH Seasonal Conditional Area, Open Status, 2004-2008.....	7
Table 3. WH SRS Samples Collected in 2008.....	7

LIST OF FIGURES

Figure 1. Growing Area WH, with Active Water Stations, 2008 Classifications	4
Figure 2. Area WH P90 Scores for Conditionally Approved Stations (expressed as the percent of the approved standard), 2006-2008 for the Open Status	8
Figure 3. Area WH P90 Scores for Restricted Stations (expressed as the percent of the restricted standard), 2006-2008.....	9



Figure 1. Growing Area WH, with Active Water Stations, 2008 Classifications





Executive Summary

This is an annual report for growing area WH written in compliance with the requirements of the 2007 Model Ordinance and the National Shellfish Sanitation Program. Growing Area WH includes the shores, flats and waters of the towns of Scarborough and Cape Elizabeth and is located between Prouts Neck, Scarborough and McKenney Point, Cape Elizabeth. Sources of pollution in the area include the Scarborough Sanitary District outfall which is located 800 feet from the southeast end of Prouts Neck, two mooring fields located in Cape Elizabeth between Crescent Beach and Kettle Cove, five malfunctioning septic systems, a horse and manure pile in Scarborough and horse trails and horses on the beach on the Cape Elizabeth shore of the Spurwink River and along the beach shore before Crescent Beach.

As a result of the findings of the 2007 WH Triennial Report, completed in December 2008, which completed a review of the dilution calculation for the Scarborough Sanitary Districts outfall, the prohibited area surrounding the outfall was required to be increased in size in order to adequately protect public health. On January 6, 2009, Area No. 12, Spurwink River, Prouts Neck, Cape Elizabeth (Old Orchard Beach, Scarborough, Cape Elizabeth) was amended to increase the size of the prohibited area around the Scarborough Sanitary Districts outfall.

No additional classification changes are required at this time. The next triennial report is due in 2010, the next sanitary survey report is due in 2013.

Growing Area Description

Growing Area WH includes the shores, flats and waters of the towns of Scarborough and Cape Elizabeth and is located between Prouts Neck, Scarborough and McKenney Point, Cape Elizabeth (Figure 1). A complete description can be found in the central files. The growing area has long stretches of public sandy beaches, an island preserve (Richmond Island) that is accessible on foot at low tide, and a stretch of tidal river (Spurwink River) which is less than 5 miles long and a border between Scarborough and Cape Elizabeth. The beaches include Scarborough Beach and Higgins Beach in the town of Scarborough, and Crescent Beach in Cape Elizabeth.

The Scarborough Sanitary District outfall is located 800 feet from the southeast end of Prouts Neck. Non-point pollution comes from the increase in shore usage during the summer months and from wildlife in the tidal marshland at the head of the Spurwink River. The Spurwink River has no significant fresh water source and is sandy and shallow. The Scarborough Sanitary District outfall which is located 800 feet from the southeast end of Prouts Neck. There are two mooring fields located in Cape Elizabeth between Crescent Beach and Kettle Cove. The east side of the Spurwink River and its associated uplands lie within Cape Elizabeth's Town Farm District, which is intended to recognize and protect the special nature of the area representing historic, cultural, scenic, natural, and open space qualities (Audubon Society, 2008). The Rachel Carson National Wildlife Refuge includes 393 acres of scenic wildlife refuge near the



Spurwink River (Ziepniewski, 1996). There is no aquaculture or wet storage activities in the area.

Current Classification(s)

At the end of the 2008 review year, area WH had the following classifications:

Conditionally Approved

- Area no. 12, Spurwink River, Prouts Neck, Cape Elizabeth (Old Orchard Beach, Scarborough, Cape Elizabeth), seasonal conditional area, sample stations: WH 1, 2, 4, 10, 11, 14, 16 and 17.

Restricted:

- Area no. 12, Spurwink River, Prouts Neck, Cape Elizabeth (Old Orchard Beach, Scarborough, Cape Elizabeth), Higgins Beach and Richmond Island, sample stations: WH 9 and 9.5.

Please visit the DMR website to view legal notices:

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

Activity during Review Period

There were no classification changes during the review period.

Current Management Plan for Conditional Area

There is one management plan for the conditional area in WH. The conditional area is closed to harvesting between June 1st and December 1st per the management plan. Prior to each year's reopening, a review of data must be completed to ensure that water quality meets the approved standard in the open status. A copy of the management plan can be found in the central files.

Current Annual Review of Management Plan

Per the management plan, a review of the seasonal data was completed in November 2008 to confirm that all conditional stations (WH 1, 2, 4, 10, 11, 14, 16 and 17) continued to meet the approved standards for the open status. A complete management plan review can be found in Appendix A.

Water Quality Review and Discussion

Table 1 lists all active restricted stations in Growing Area WH, with their respective Geomean and P90 calculations for 2008. Please refer to Appendix B for a key to interpreting the headers on the columns of Table 1. The approved and restricted standards for each station are also



displayed in Table 1. 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 sample 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. A more detailed explanation of this transition can be found in the central files. All restricted stations met their NSSP classification standard in 2008.

Table 1. Geomean and P90 Scores, Growing Area WH Restricted Stations, 2004-2008

STATION	CLASS	CNT	MFCNT	GM	SDV	MAX	P90	APPD_STD	RESTR_STD
WH009.00	R	30	15	12.9	0.65	240	88	39	221
WH009.50	R	30	15	13.2	0.68	460	96.6	39	221

Table 2 lists all conditionally approved stations in the growing area WH seasonal conditional area with their respective Geomean and P90 calculations for 2008. Data for conditionally approved stations reflects only the open status. All stations met the approved standard during open status.

Table 2. Geomean and P90 Scores, Growing Area WH Seasonal Conditional Area, Open Status, 2004-2008

STATION	CLASS	CNT	MFCNT	GM	SDV	MAX	P90	APPD_STD	RESTR_STD
WH001.00	CA	30	13	2.5	0.1	3.6	3.4	40	230
WH002.00	CA	30	13	3.1	0.23	23	6	40	230
WH004.00	CA	30	13	3.7	0.26	12	7.9	40	230
WH010.00	CA	30	13	5.4	0.63	240	34.5	40	230
WH011.00	CA	30	13	3.7	0.39	93	11.8	40	230
WH014.00	CA	30	13	3.1	0.32	43	7.9	40	230
WH016.00	CA	30	12	2.9	0.23	23	5.7	41	235
WH017.00	CA	30	13	3.6	0.38	93	11.2	40	230

All restricted and conditionally approved stations that were active at the beginning of 2008 were sampled at least 6 times following the systematic random sampling (SRS) schedule (Table 3 and Appendix C). The conditionally approved stations were sampled 6 times in the open status.

Table 3. WH SRS Samples Collected in 2008

Station	Class	Closed	Open	Total
WH001.00	CA	4	6	10
WH002.00	CA	4	6	10
WH004.00	CA	4	6	10
WH009.00	R		6	6
WH009.50	R		6	6
WH010.00	CA	4	6	10
WH011.00	CA	4	6	10
WH014.00	CA	4	6	10



Station	Class	Closed	Open	Total
WH016.00	CA	3	6	9
WH017.00	CA	4	6	10

Figures 2 and 3 show the P90 trends over the past four years for conditionally approved stations and three years for restricted stations. 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 calculated P90 scores are expressed as a percentage of the approved standard; any station showing the 2008 column on or above the 100 percent line does not meet the standard for approved classification. Conditionally approved station WH 10.0 has shown a slight increase in P90 scores over the past year (decreasing water quality). Conditionally approved stations 1, 11 and 14 have shown a decrease in P90 in the past review year (improving water quality). Conditionally approved stations 2, 4, 10 and 16 have shown an increase in P90 scores over the past year (decreasing water quality) and station 17 remained steady. Restricted station WE 9 shows a decrease in water quality with a rising P90 over the past three years review period. Restricted station 9.5 has a steady P90 score and steady water quality.

Figure 2. Area WH P90 Scores for Conditionally Approved Stations (expressed as the percent of the approved standard), 2006-2008 for the Open Status

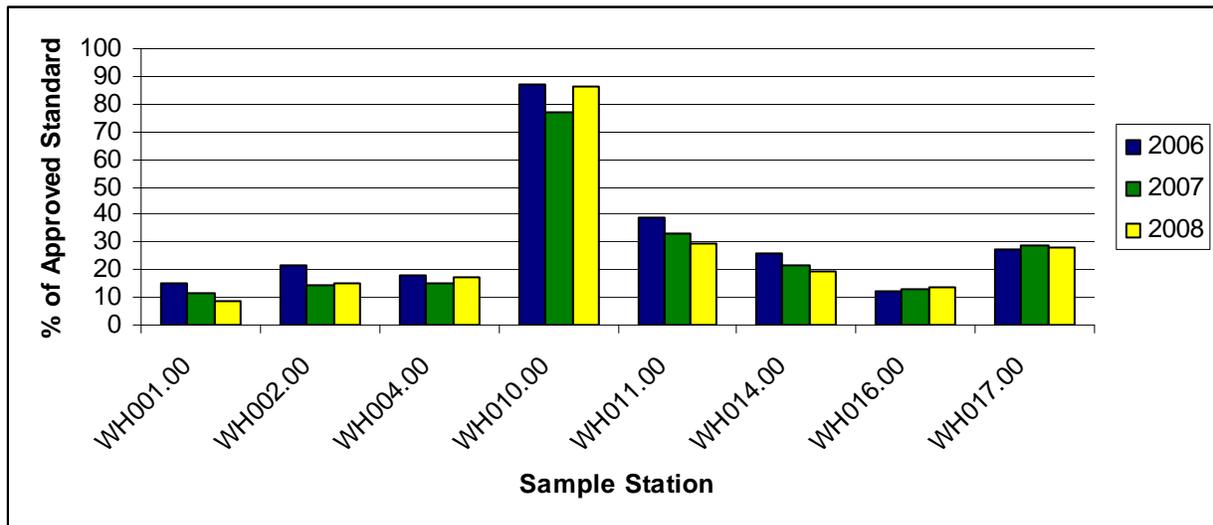
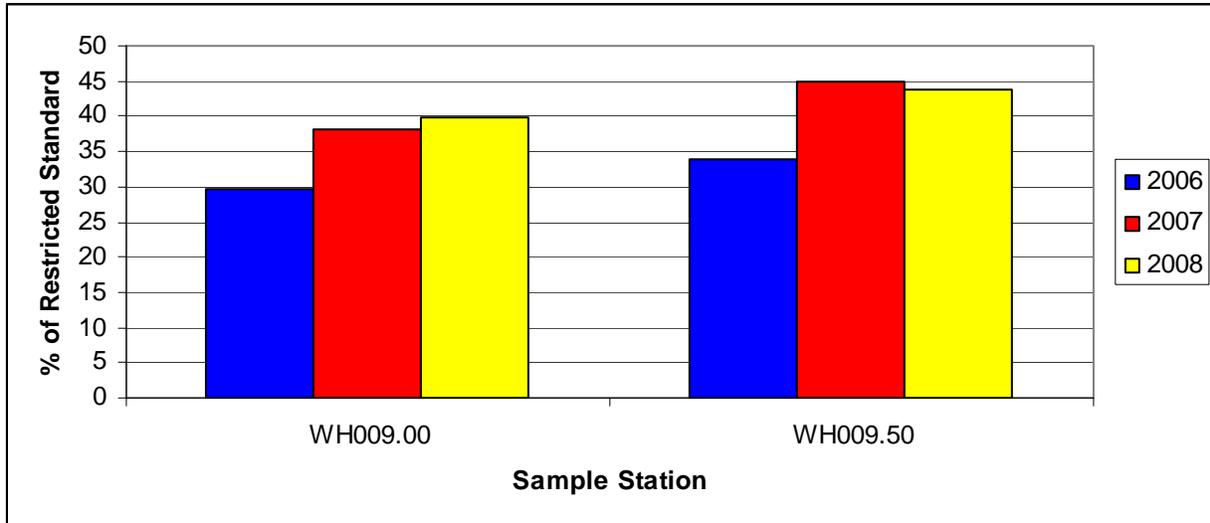




Figure 3. Area WH P90 Scores for Restricted Stations (expressed as the percent of the restricted standard), 2006-2008



Shoreline Survey Activity

There were no shoreline survey or drive through activities conducted in 2008.

Aquaculture/Wet Storage Activity

There are no wet storage or aquaculture activities in growing area WH.

Classification Changes Required

One change in classification was required as a result of the findings of the 2007 WH Triennial Report, completed in December 2008. Based on a review of the dilution calculation for the Scarborough Sanitary Districts outfall, the prohibited area surrounding the outfall was required to be increased in size in order to adequately protect public health. This classification change was implemented on January 6, 2009.

Summary

With the exception of 1 station, growing area WH continues to maintain good water quality. At the end of the year all stations had met their NSSP classification standards, however, station WH 10 was within 10 percent of the approved standard limit. In 2009 additional shoreline survey work will be conducted in order to try to determine what is causing the scores to continue on an upward trend.



References

Ziepniewski, J. (20 October 1996), *Update of the Scarborough Comprehensive Plan*, Retrieved 29 May 2009 from <http://www.scarborough.me.us/planning/documents/planrpt/rp05035.htm>



Appendix A. Annual Review of Conditional Area Management Plan

2008 Annual Review Spurwink River Conditional Area No. 12 Growing Area WH

A portion of Growing Area WH is conditionally approved due to seasonal variability of water quality, possibly due to an increase in shore usage during the summer months. The Spurwink River, monitored by stations WH 10.0, 11.0, and 14.0, was classified conditionally approved based on seasonal variation in water quality in 1998. DMR evaluated the Spurwink River data in December 1998, and made the assessment that there is greater variation in water quality during the summer months. Many of the homes along this shore are occupied year round, as well as nearby seasonal rental cottages. There are designated parking areas for summer residents, and there is an increase in shore usage during June, July and August. The area has met approved standards during open status from December 1st to May 31st.

The size of the conditionally approved area increased substantially in August 2006. The area monitored by stations WH 1.0, 2.0, 4.0, 16.0 and 17.0, located along the beaches in Scarborough and Cape Elizabeth was classified approved prior to August 10, 2006. The area was reclassified to conditionally approved due to lack of fecal coliform data from June 1st to November 30th. The lack of summer and fall seasonal data was the result of scheduling sample collection based on the open period of the conditionally approved area, which lead to insufficient year round data at the approved stations within growing area WH. The entire area was conditionally approved based on an open season of December 1 to May 31, and is being sampled year-round, during both the open and closed status.

Compliance with management plan

In 2008, the conditional area closed on June 1 and reopened on December 1. The conditional area data was reviewed in November 2008, prior to the reopening date and all of the conditional stations continued to meet approved standards during the open season.

Adequacy of reporting and cooperation of involved persons

This management plan does not require reporting. The seasonal closure is enforced the DMR Marine Patrol and the local Shellfish Warden. Cooperation between the involved parties has been excellent.

Compliance with approved growing area criteria

The annual review of the water quality for all active stations met approved standards during the open status.



Table 1. Geomean and P90 Scores, Growing Area WH Seasonal Conditional Area, Open Status, 2004-2008

STATION	CLASS	CNT	MFCNT	GM	SDV	MAX	P90	APPD_STD	RESTR_STD
WH001.00	CA	30	13	2.5	0.1	3.6	3.4	40	230
WH002.00	CA	30	13	3.1	0.23	23	6	40	230
WH004.00	CA	30	13	3.7	0.26	12	7.9	40	230
WH010.00	CA	30	13	5.4	0.63	240	34.5	40	230
WH011.00	CA	30	13	3.7	0.39	93	11.8	40	230
WH014.00	CA	30	13	3.1	0.32	43	7.9	40	230
WH016.00	CA	30	12	2.9	0.23	23	5.7	41	235
WH017.00	CA	30	13	3.6	0.38	93	11.2	40	230

Field inspection of critical pollution sources

The potential for pollution in growing area WH comes from increased shore usage (swimming, walking pets, etc.) and the influx of summer residents to their seasonal homes. Visual observations are made throughout the year during the course of random sampling and shoreline surveying.

Water sampling compliance history

All stations were collected 6 times when in the open status in 2008.

Analysis-Recommendations

While the water quality at all conditionally approved stations met the approved standards during open status, shoreline survey work, completed after the 2008 review year identified actual pollution sources in within the boundaries of this conditional area, and a portion of the area was downgraded to prohibited classification.



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).

CNT = 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)

GM = 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 WH 2008 Data

Station	Date	Collect	Tide	Temp	Sal	Strat	ADV	Stat	CL	MFCOL	WIND
WH001.00	01/07/08	DAH	H		30	R	T	O	CA	<2.0	-
	02/05/08	DAH	HE	3	30	R	-	O	CA	<2.0	W
	03/03/08	DAH	E	3	32	R	-	O	CA	2	E
	04/07/08	MDC	H	6	30	R	-	O	CA	<2.0	NE
	05/05/08	DAH	F	13	26	R	P	O	CA	<2.0	CL
	06/03/08	MYC	H	15	30	R	-	C	CA	2	SE
	08/04/08	MLP	HF	19	28	R	P	C	CA	32	SE
	09/16/08	MLP	HF	12	32	R	-	C	CA	4	CL
	11/12/08	EXT	H	7	32	R	-	C	CA	10	CL
	12/02/08	DAH	F	11	32	R	-	O	CA	2	E
WH002.00	01/07/08	DAH	H		30	R	T	O	CA	2	-
	02/05/08	DAH	HE	3	30	R	-	O	CA	2	W
	03/03/08	DAH	E	3	32	R	-	O	CA	<2.0	E
	04/07/08	MDC	H	7	30	R	-	O	CA	<2.0	NE
	05/05/08	DAH	F	13	26	R	P	O	CA	<2.0	CL
	06/03/08	MYC	H	15	31	R	-	C	CA	<2.0	SE
	07/28/08	MDC	E	21	30	R	N	C	CA	<2.0	SW
	09/16/08	MLP	HF	12	31	R	-	C	CA	<2.0	CL
	11/12/08	EXT	H	8	32	R	-	C	CA	<2.0	CL
	12/02/08	DAH	F	12	32	R	-	O	CA	2	E
WH004.00	01/07/08	DAH	HE		30	R	T	O	CA	6	-
	02/05/08	DAH	HE	3	30	R	-	O	CA	12	W
	03/03/08	DAH	E	2	31	R	-	O	CA	2	E
	04/07/08	MDC	H	9	30	R	-	O	CA	<2.0	NE
	05/05/08	DAH	HF	13	26	R	P	O	CA	6	CL
	06/03/08	MYC	H	13	31	R	-	C	CA	<2.0	SE
	07/28/08	MDC	E	22	30	R	N	C	CA	14	SW
	09/16/08	MLP	HF	12	31	R	-	C	CA	5.5	CL
	11/12/08	EXT	H	7	32	R	-	C	CA	<2.0	CL
	12/02/08	DAH	F	12	31	R	-	O	CA	12	E
WH009.00	02/05/08	DAH	E	2	28	R	-	O	R	10	S
	04/07/08	MDC	HE	8	30	R	-	O	R	<2.0	NE
	06/03/08	MYC	HE	14	30	R	-	O	R	2	SE
	07/28/08	MDC	LE	20	29	R	N	O	R	24	SW
	09/16/08	MLP	H	12	31	R	-	O	R	4	CL
	11/12/08	EXT	HE	8	32	R	-	O	R	2	CL
WH009.50	02/05/08	DAH	E	2	28	R	-	O	R	4	W
	04/07/08	MDC	HE	10	28	R	-	O	R	<2.0	NE
	06/03/08	MYC	HE	14	31	R	-	O	R	<2.0	SE
	07/28/08	MDC	E	20	17	R	N	O	R	52	SW
	09/16/08	MLP	H	12	30	R	-	O	R	6	CL
	11/12/08	EXT	HE	8	30	R	-	O	R	<2.0	CL



Station	Date	Collect	Tide	Temp	Sal	Strat	ADV	Stat	CL	MFCOL	WIND
WH010.00	01/07/08	DAH	HE		30	R	T	O	CA	<2.0	-
	02/05/08	DAH	E	3	30	R	-	O	CA	2	W
	03/03/08	DAH	E	0	28	R	W	O	CA	<2.0	CL
	04/07/08	MDC	HE	9	30	R	-	O	CA	<2.0	NE
	05/05/08	DAH	H	13	26	R	P	O	CA	<2.0	W
	06/03/08	MYC	HE	14	31	R	-	C	CA	<2.0	SE
	07/28/08	MDC	E	23	24	R	N	C	CA	70	SW
	09/16/08	MLP	H	12	32	R	-	C	CA	8	CL
	11/12/08	EXT	HE	9	32	R	-	C	CA	<2.0	CL
	12/02/08	DAH	F	10	29	R	-	O	CA	27	E
WH011.00	01/07/08	DAH	HE		30	R	T	O	CA	2	-
	02/05/08	DAH	HE	3	30	R	-	O	CA	<2.0	W
	03/03/08	DAH	E	2	30	R	-	O	CA	<2.0	CL
	05/05/08	DAH	HF	13	26	R	P	O	CA	2	W
	06/03/08	MYC	HE	13	30	R	-	C	CA	<2.0	SE
	07/28/08	MDC	E	22	24	R	N	C	CA	80	SW
	09/16/08	MLP	HF	11	31	R	-	C	CA	4	CL
	11/12/08	EXT	HE	9	32	R	-	C	CA	<2.0	CL
	12/02/08	DAH	F	12	30	R	-	O	CA	6	E
	12/17/08	MLP	HF	3	31	R	P	O	CA	<2.0	NW
WH014.00	01/07/08	DAH	HE		30	R	T	O	CA	<2.0	-
	02/05/08	DAH	HE	3	30	R	-	O	CA	<2.0	W
	03/03/08	DAH	E	2	30	R	-	O	CA	<2.0	CL
	04/07/08	MDC	H	10	30	R	-	O	CA	<2.0	NE
	05/05/08	DAH	HF	13	26	R	P	O	CA	2	W
	06/03/08	MYC	HE	12	30	R	-	C	CA	<2.0	SE
	07/28/08	MDC	E	23	9	R	N	C	CA	80	SW
	09/16/08	MLP	HF	13	32	R	-	C	CA	6	CL
	11/12/08	EXT	H	7	32	R	-	C	CA	4	CL
	12/02/08	DAH	F	12	31	R	-	O	CA	7.3	E
WH016.00	01/07/08	DAH	HE		30	R	T	O	CA	<2.0	-
	02/05/08	DAH	E	3	30	R	-	O	CA	2	S
	03/03/08	DAH	E	2	31	R	-	O	CA	<2.0	E
	04/07/08	MDC	HE	9	30	R	-	O	CA	<2.0	NE
	05/05/08	DAH	HF	13	26	R	P	O	CA	2	W
	06/03/08	MYC	HE	13	30	R	-	C	CA	2	SE
	07/28/08	MDC	LE	20	30	R	N	C	CA	20	SW
	11/12/08	EXT	E	8	32	R	-	C	CA	<2.0	CL
	12/02/08	DAH	F	10	30	R	-	O	CA	4	E
WH017.00	01/07/08	DAH	HE		30	R	T	O	CA	<2.0	-
	02/05/08	DAH	E	3	30	R	-	O	CA	<2.0	S
	03/03/08	DAH	E	2	30	R	-	O	CA	<2.0	E
	04/07/08	MDC	E	9	31	R	-	O	CA	<2.0	NE
	05/05/08	DAH	HF	13	26	R	P	O	CA	4	W



Station	Date	Collect	Tide	Temp	Sal	Strat	ADV	Stat	CL	MFCOL	WIND
	06/03/08	MYC	HE	13	31	R	-	C	CA	2	SE
	07/28/08	MDC	LE	18	10	R	N	C	CA	58	SW
	09/16/08	MLP	HE	12	32	R	W	C	CA	<2.0	CL
	11/12/08	EXT	E	7	31	R	-	C	CA	<2.0	NW
	12/02/08	DAH	F	10	30	R	-	O	CA	<2.0	E