



**GROWING AREA WZ
Towns of North Haven and Vinalhaven**

ANNUAL REVIEW for 2007

Report Date: 10-06-2008

Fran Pierce

APPROVAL

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Figure 1. Growing Area WZ with Active Water Quality Stations

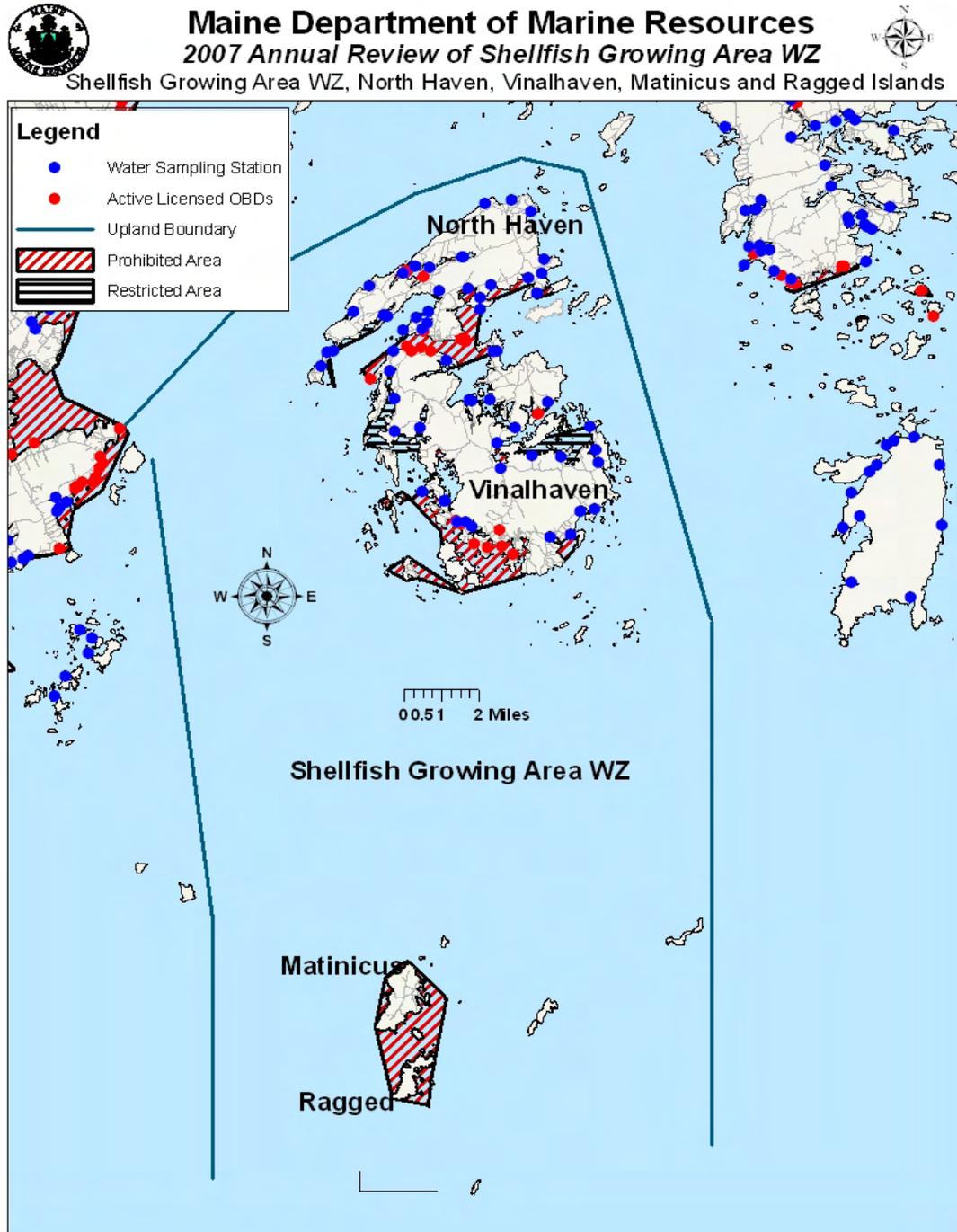




Figure 2. Growing Area WZ Detail- Vinalhaven

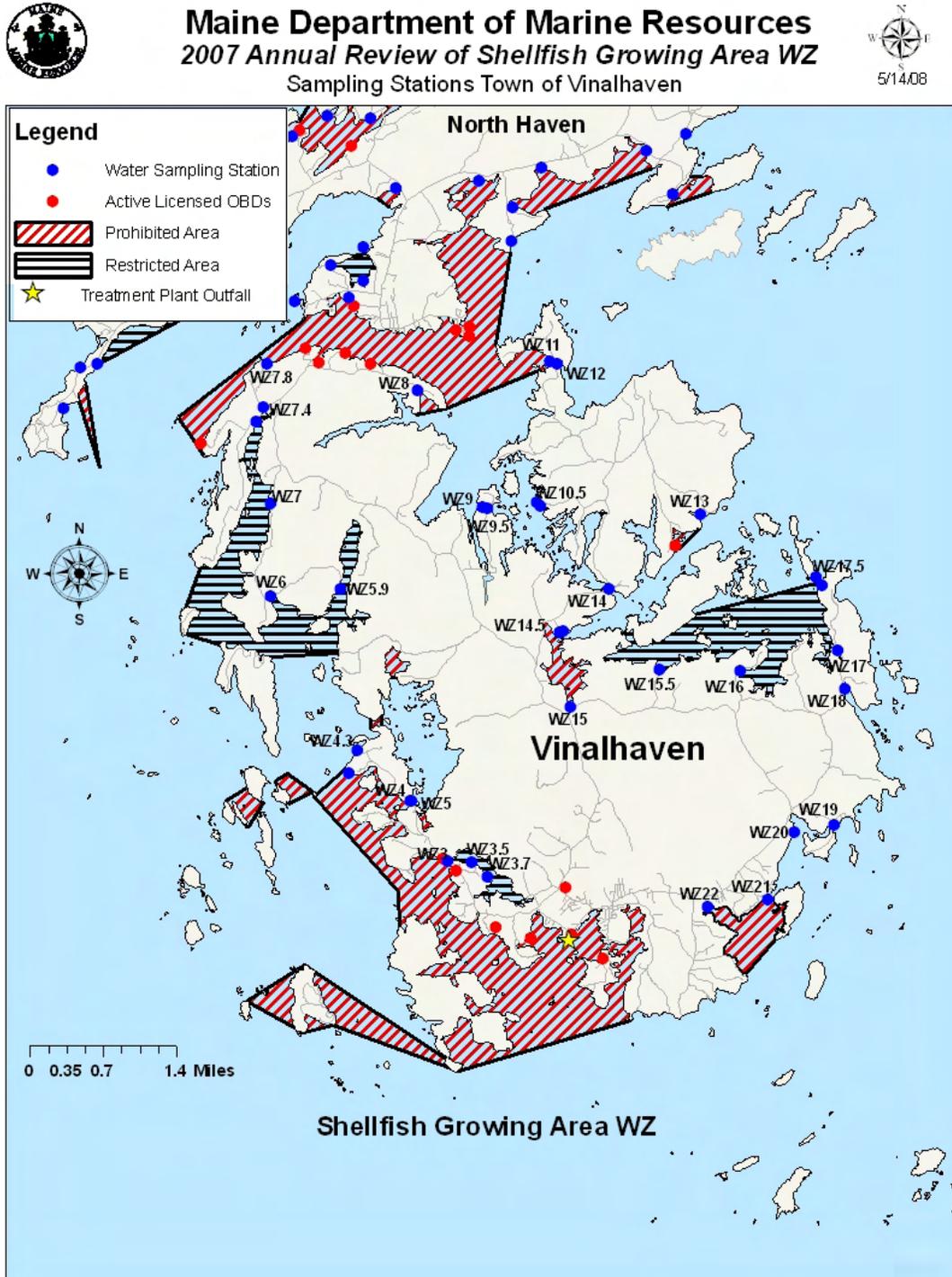




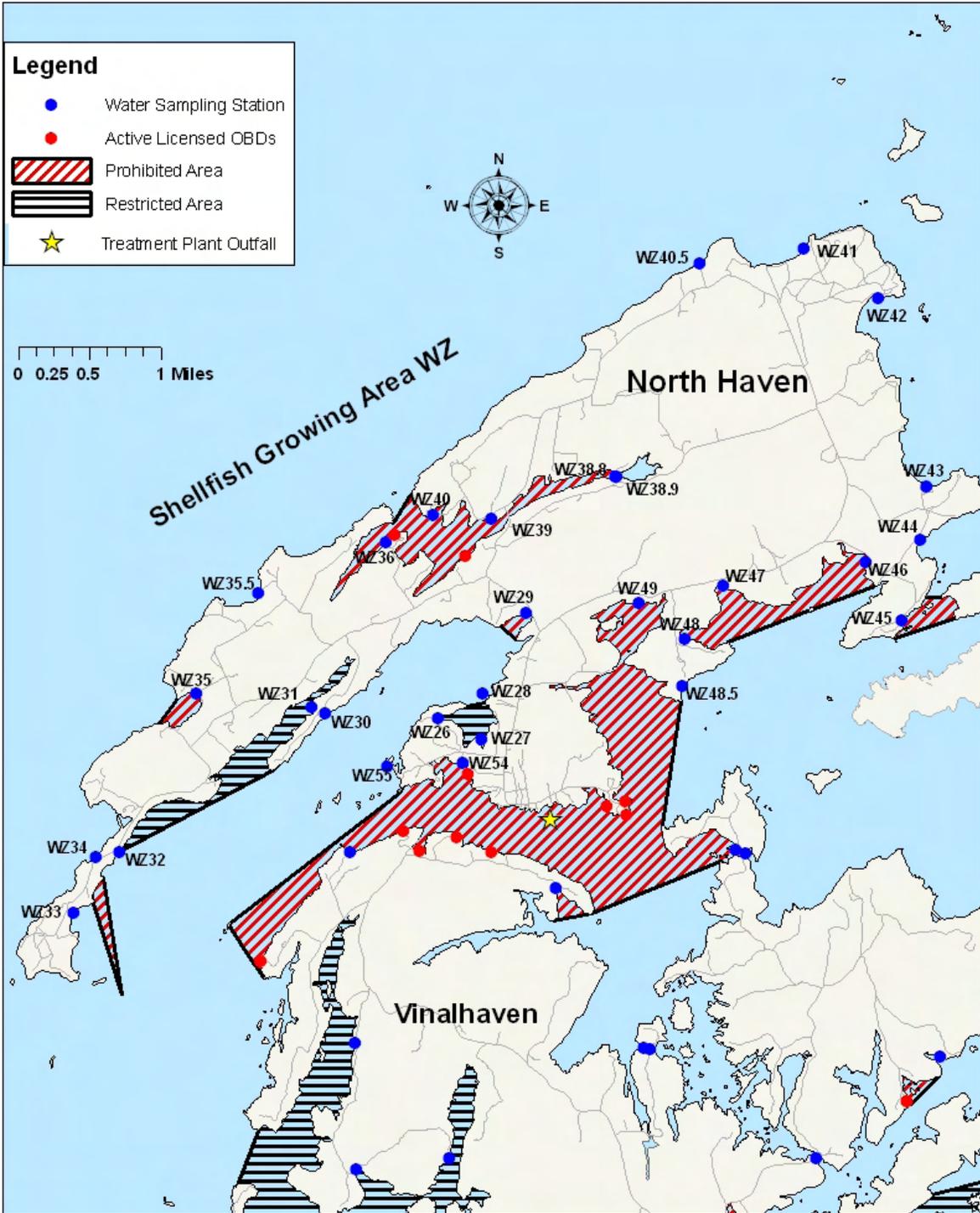
Figure 3. Growing Area WZ Detail- North Haven



Maine Department of Marine Resources 2007 Annual Review of Shellfish Growing Area WZ Sampling Stations Town of North Haven



5/14/08





Executive Summary

This is an annual report for shellfish growing area WZ, written in compliance with the requirements of the 2005 Model Ordinance and the National Shellfish Sanitation Program.

Shellfish growing area WZ covers the shoreline in the towns of North Haven and Vinalhaven. This growing area also includes Matinicus Island and Ragged Island. Matinicus and Ragged Islands are permanently classified as prohibited for all shellfish harvesting. This is an administrative closure due to the island's remote locations and the inability of water quality staff to easily access and sample these areas.

In an effort to simplify the discussion of the water quality and pollution sources in shellfish growing area WZ, each island will be discussed separately. The water quality on the island of North Haven is monitored by sampling stations WZ 26 – WZ55. The water quality on the island of Vinalhaven is monitored by sampling stations WZ3 – WZ22. In 2007, three stations on North Haven were reclassified from approved to restricted (WZ 26, 31 and 38.9); station WZ 38.9 was later upgraded to approved status and approved for accelerated sampling. Additionally, one prohibited station (WZ 27) was reclassified as restricted. Also in 2007, three stations on Vinalhaven were reclassified from approved to restricted (WZ 5.9, 6 and 7). Three new stations (WZ 4.3, 14.5 and 17.5) were created to better monitor coves around the Vinalhaven island and two stations (WZ 7.4 and 10.5) were created to monitor the boundaries of closure lines. Based on the results of the current annual water quality review, no classification changes are required.

The next triennial report for North Haven Island is due in 2009; the next sanitary survey for North Haven is due in 2015. The next triennial report for Vinalhaven Island is due in 2012; the next sanitary survey for Vinalhaven is due in 2010.

Growing Area Description

The islands of North Haven and Vinalhaven are located in the mouth of Penobscot Bay (Figure 1). Both islands contain year round populations that more than double during the summer months. Vinalhaven is the larger of the two islands (Figure 2). Based on Vinalhaven's 2004 Comprehensive Plan, the year round population is 1275 individuals. North Haven has a year round population of 380 and a summer population of 2000. Both islands have municipal treatment facilities that serve the town centers. There are no large industries on either island. Most residents earn their living lobstering or caretaking the many seasonal dwellings on both islands. There are no marinas on either of the islands, but there are areas that contain moorings which are utilized by both cruising boats and work boats. Vinalhaven also has several coves that are suitable for anchoring.

North Haven has a small municipal, primary treatment facility that serves a total of 200 hook-ups in the center of town. This plant is designed for a flow of 40,000 gallons per day. The average daily flow is approximately 39,486 gpd and the average wet weather flow of 78,900 gpd. The outfall is located in the Thorofare in approximately 12 feet of water. This treatment facility chlorinates only during the months from May through September. A dilution calculation based on plant design flow and a fecal load of 1.4×10^5 indicates a closure zone of 128 acres is required around the outfall in order for the fecal coliform bacteria to be diluted down to <14 FC/100ml of water when the plant is not chlorinating. There is currently a closure area of approximately 1000 acres around the outfall. Due to boating activities, licensed overboard



discharges and the presence of the treatment plant outfall, there are no plans for this immediate area to ever be classified to allow shellfish harvest.

Vinalhaven has a new UV treatment Facility that serves 350 dwellings in and around the center of town in Carvers Harbor. The facility became operational in 2003. The facility has a Maine Pollutant Discharge Elimination System (MEPDES) permit and waste discharge license for the discharge of up to 129,000 gallons per day of secondary treated waste waters to the Atlantic Ocean, off Vinalhaven Maine. The outfall for this facility enters the harbor just south of the Maine State Ferry Terminal in Grimes Park. The outfall extends 250 feet out into the harbor, with three diffusers located along its length. The depth of the outfall at low tide is 25 feet. There is currently a closure zone of over 1000 acres around this outfall. The closest approved area to the outfall is located west of Greens Island in an area of open ocean.

There is no upland boundary for Shellfish Growing Area WZ because this growing area includes only islands. The growing area boundary lines were drawn to include all of the islands within the study area of Growing Area WZ. Therefore, the boundary lines follow a series of navigational aides around all of the islands that are included in shellfish growing area WZ.

Current Classification(s)

The island of North Haven in shellfish growing area WZ currently has areas classified as:

Approved – 13 stations

Restricted - three stations

- Area 30-I, Sample stations: WZ26, WZ27 and WZ31; classified as restricted due to non-point pollution

Prohibited – 12 stations

- Area 30-I, Sample stations WZ29, WZ35, WZ 36, WZ38.8, WZ39, WZ40, WZ45, WZ46, WZ47, WZ48, WZ49, and WZ54 are classified as prohibited due to point and non-point pollution, including the presence of OBDs.

At station WZ54 and WZ 45 there are malfunctioning septic systems. Stations WZ46- WZ49 and WZ26, WZ27, WZ31, WZ29, WZ38.8, are classified as prohibited due to elevated water quality scores of unknown origin. Station WZ35 has two potential pollution sources which are directly above the shore. Station WZ36 has a licensed OBD nearby and also has poor water quality scores. Stations WZ39 and WZ40 have passing water quality scores but are located in a busy harbor that is popular with cruising boats. Both of these stations were created to be used as possible stations to monitor the boundaries of closure lines if water quality in surrounding areas improved. Septic upgrades have taken place in the vicinity of station WZ 38.8. If the water quality improved station WZ39 would become the site of the new closure line in this area. Station 11 has less than 30 data points and therefore does not have a classification.

The island of Vinalhaven in shellfish growing area WZ currently has areas classified as:

Approved - nine stations

Restricted – five stations



- Area 30D, Sample stations: WZ6, WZ7.4, WZ16, WZ17, and WZ17.5; classified as restricted due to non-point pollution

Prohibited – nine stations

- Area 30D, Sample stations: WZ3, WZ3.5, WZ4, WZ7.8, WZ8, WZ11, WZ15.5, WZ21, and WZ22; classified as prohibited due to non-point pollution

There are 6 “new” stations on Vinalhaven; these stations have not been sampled 30 times and do not have a classification assigned to them.

Please visit the DMR website to view legal notices for growing area WZ:

Area No. 29B- Matinicus Island and Ragged Island
Area No. 30-D – Vinalhaven Island
Area No. 30-I North Haven Island

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

Activity during Review Period

Town of North Haven

On May 10, 2007, legal notice 30-I was re-written to combine all previous North Haven closures in one legal notice. Legal notices that were combined into the new 30-I legal notice include: 30-L Ames Creek Area, 30-K Northeastern end of Southern Harbor, North Haven, 30-H, Kent Cove, North Haven, 30-N, Indian Point to Burnt Island, North Haven, a portion of legal notice 30-D was also moved to the 30-I legal notice. The May 10, 2007, 30-I legal notice also reclassified sampling station WZ 31 (Ames Creek) from approved to restricted, following the annual review of shellfish growing area WZ. This change was due to WZ 31 not meeting approved standard.

On August 21, 2007 sampling station WZ 38.9 was reclassified from approved to restricted, due to the station not meeting the approved standard. At the time of this reclassification, the station had only been sampled three of the six required times for the sampling season. In December, water quality scores once again met the approved standard and the site was reclassified to approved on December 14, 2007. At the end of 2007, DMR decided that station WZ 38.9 should be sampled biweekly in order to obtain more water quality data over the year and to determine if there was a seasonal pattern to any elevated fecal coliform scores.

On December 19, 2007 sampling station WZ 26 was reclassified from approved to restricted due to poor water quality scores. Sampling station WZ27 was reclassified from prohibited to restricted, as the station's P90 score was meeting restricted standard. There are no dwellings nearby these stations, but there are two streams that flow into the cove nearby the sample sites which may contribute to elevated fecal scores.

All 2007 classification changes on North Haven are summarized in Table 1.



Table 1. Water Quality Station Changes in 2007 on North Haven

Station	Classification Change P=prohibited A=approved R=restricted	Reason
WZ 26	A to R 12/19/07	Poor water quality, no point sources
WZ 27	P to R 12/19/07	Poor water quality, no point sources
WZ 31	A to R 5/10/07	Poor water quality, no point sources
WZ 38.9	A to R 8/21/07	Poor water quality half way through sampling season
WZ 38.9	R to A 12/14/07	Improved water quality, extra samples will be collected

Town of Vinalhaven

On May 10, 2007, legal notice 30-D was re-written to combine all previous Vinalhaven closures in one legal notice. Legal notices that were combined into the new 30-D legal notice include: 30-A, Southwestern Vinalhaven, 30-B The Basin, Vinalhaven, 30-J, Vinal Cove to Starboard Rock, a portion of 30-D was also moved to closed area 30-I. The May 10, 2007, 30-D legal notice also reclassified sampling stations WZ5.9, WZ6, and WZ7 (Long Cove and Crockett Cove) from approved to restricted due to poor water quality scores and made a portion of the west side of Greens Island approved for shellfish harvest due to up-dated survey information.

All 2007 classification and water sample station changes on Vinalhaven are summarized in Table 2.

Table 2. Water Quality Station Changes in 2007 on Vinalhaven

Station	Classification Change P=prohibited A=approved R=restricted	Reason
WZ 3.7	Restricted	New Station to monitor aquaculture site (not sampled in 2007)
WZ 4.3	Prohibited	New station to monitor closure line
WZ 5.9	A to R 5/10/07	Poor water quality, no point sources
WZ 6	A to R 5/10/07	Poor water quality, no point sources
WZ 7	A to R 5/10/07	Poor water quality, no point sources
WV 7.4	Restricted	New station to monitor head of cove
WZ 10.5	Approved	New station to monitor east side of cove
WZ 14.5	Prohibited	New station to monitor closure line
WZ 17.5	Restricted	New station to monitor closure line

Current Management Plan

There are no conditionally managed areas in Shellfish Growing Area WZ.



Water Quality Review and Discussion

Table 3 shows all active stations in Growing Area WZ, with their respective Geomean and P90 calculations for 2007. The approved and restricted standards for each station are also displayed in Table 3. These standards will fluctuate yearly as a result of the DMR transition from an 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 are 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 appendix A. An explanation of the headers of each column in the data table is also located at the end of this report in appendix B.

At the end of the 2007 review period, all stations met the standard for their current classification and no changes in classification are required at this time; stations with less than 30 data points are considered new stations and do not have a classification assigned to them. Station WZ 26 was downgraded to restricted classification on December 19, 2007, due to water quality not meeting approved standards. On the same day, station WZ 27 was upgraded from prohibited to restricted classification, due to water quality meeting restricted standards. All stations active at the beginning of 2007 field season, were sampled 6 times, following a systematic random sampling (SRS) schedule, except for the following exception: WZ 3.5, 5.9, 11, and 12 were unable to be sampled in the last (sixth) random sampling run of the season on Vinalhaven Island (Table 4 and Appendix C). Station WZ 3.5 and new station WZ 3.7 were unable to be sampled due to the sampling site being frozen solid; stations WZ 11 and 12 were unable to be sampled because the road to these stations had not been plowed.

Table 3. Geomean and P90 Calculations for Growing Area WZ

STATION	CLASS	COUNT	MFCNT	GEO_MEAN	SDV	MAX	P90	APPD_STD	RESTR_STD
WZ003.00	P	30	8	16.6	0.65	240	112.8	43	255
WZ003.50	P	30	7	10.4	0.65	240	70.8	44	260
WZ004.00	P	30	7	4.6	0.38	43	14.1	44	260
WZ004.30	New	6	6	2.9	0.45	24	11.3		
WZ005.00	A	30	7	4.9	0.62	1200	30.7	44	260
WZ005.90	R	30	6	11.7	0.77	1500	112.9	45	266
WZ006.00	R	30	7	11.1	0.55	93	56.4	44	260
WZ007.00	R	30	7	7.4	0.73	1100	63.5	44	260
WZ007.40	New	6	6	6.1	0.66	86	44.1		
WZ007.80	P	30	7	6	0.56	460	31.4	44	260
WZ008.00	P	30	7	8.8	0.66	460	60.8	44	260
WZ009.00	A	30	7	5.5	0.55	1100	27.9	44	260
WZ009.50	A	30	7	5	0.51	93	22.7	44	260
WZ010.50	New	6	6	1.9	0.01	2	2		
WZ011.00	P	30	7	5.5	0.5	93	24.3	44	260
WZ012.00	A	30	7	6.1	0.56	240	31.9	44	260
WZ013.00	A	30	8	3.6	0.31	38	8.8	43	255
WZ014.00	A	30	8	3.3	0.27	43	7.2	43	255
WZ014.50	New	6	6	2.9	0.29	10	7		
WZ015.00	New	24	7	6.8	0.47	43	27.3		



STATION	CLASS	COUNT	MFCNT	GEO_MEAN	SDV	MAX	P90	APPD_STD	RESTR_STD
WZ015.50	P	30	7	14.1	0.59	220	80.9	44	260
WZ016.00	R	30	8	6.5	0.54	240	31.9	43	255
WZ017.00	R	30	8	6.7	0.64	1100	43.9	43	255
WZ017.50	New	6	6	3.5	0.4	16	11.5		
WZ018.00	A	30	8	7.7	0.53	460	37	43	255
WZ019.00	A	30	8	3.7	0.38	93	11.4	43	255
WZ020.00	A	30	8	5.7	0.4	43	18.4	43	255
WZ021.00	P	30	8	5.4	0.43	93	19.5	43	255
WZ022.00	P	30	9	22.7	0.6	332	134	43	250
WZ026.00	R	30	8	7.7	0.63	160	49	43	255
WZ027.00	R	30	8	13.2	0.65	600	89	43	255
WZ028.00	A	30	8	4	0.32	43	10.1	43	255
WZ029.00	P	30	8	13	0.76	500	121.1	43	255
WZ030.00	A	30	8	4.7	0.51	240	21.5	43	255
WZ031.00	R	30	8	7.1	0.67	480	51.4	43	255
WZ032.00	A	30	8	3.6	0.39	240	11.3	43	255
WZ033.00	A	30	8	4.6	0.53	240	21.9	43	255
WZ034.00	A	30	8	3.2	0.36	142	9.4	43	255
WZ035.00	P	30	8	3.5	0.47	460	14.3	43	255
WZ035.50	A	30	8	3.2	0.25	23	6.7	43	255
WZ036.00	P	30	8	9.1	0.7	1100	72.1	43	255
WZ038.80	P	30	12	9.6	0.56	102	49.9	41	235
WZ038.90	A	30	13	6.2	0.5	93	27.1	40	230
WZ039.00	P	30	8	4.5	0.31	23	11.3	43	255
WZ040.00	P	30	8	4.5	0.38	36	13.6	43	255
WZ040.50	A	30	8	3.7	0.43	240	13.1	43	255
WZ041.00	A	30	8	4	0.41	210	13.4	43	255
WZ042.00	A	30	8	3.8	0.47	134	14.8	43	255
WZ043.00	A	30	8	4.9	0.6	740	28.6	43	255
WZ044.00	A	30	8	5.6	0.59	240	32.1	43	255
WZ045.00	P	30	8	8	0.66	1200	55.7	43	255
WZ046.00	P	30	9	17.3	0.79	1100	176	43	248
WZ047.00	P	30	9	8.8	0.61	240	53.1	43	250
WZ048.00	P	30	9	9.9	0.67	240	72.5	43	250
WZ048.50	New	11	9	4.9	0.56	68	26.1		
WZ049.00	P	30	9	12.6	0.78	1200	124.9	43	250
WZ054.00	P	30	9	12.5	0.84	1100	147.1	43	250
WZ055.00	A	30	8	4.2	0.42	210	14.5	43	255

Table 4. 2007 Random Sample Count, Growing Area WZ

Station	Class	Closed Status	Open Status	Run #
WZ003.00	P	6		36F
WZ003.50	P	5		36F
WZ004.00	P	6		36F
WZ004.30	New	6		36F



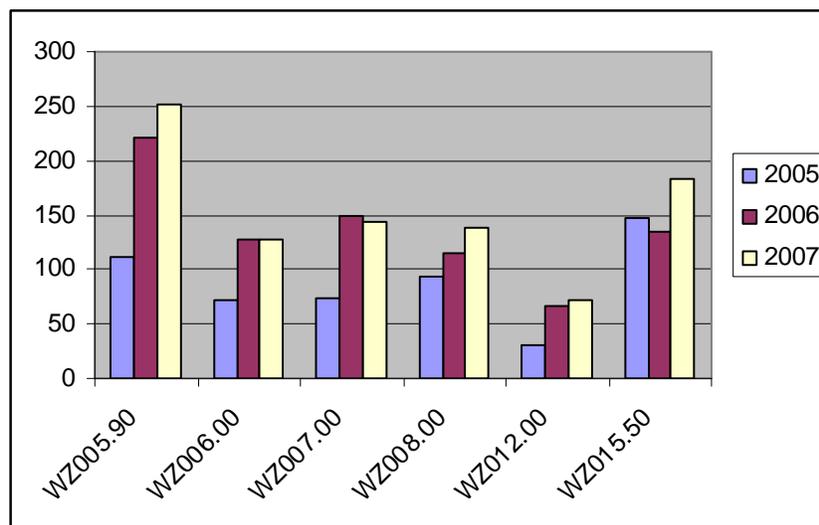
Station	Class	Closed Status	Open Status	Run #
WZ005.00	A		6	36F
WZ005.90	R		5	36F
WZ006.00	R		6	36F
WZ007.00	R		6	36F
WZ007.40	New	1	5	36F
WZ007.80	P	6		36F
WZ008.00	P	6		36F
WZ009.00	A		6	36F
WZ009.50	A		6	36F
WZ010.50	New		6	36F
WZ011.00	P	5		36F
WZ012.00	A		5	36F
WZ013.00	A		6	36F
WZ014.00	A		6	36F
WZ014.50	New	6		36F
WZ015.00	New	6		36F
WZ015.50	P	6		36F
WZ016.00	R		6	36F
WZ017.00	R		6	36F
WZ017.50	New		6	36F
WZ018.00	A		6	36F
WZ019.00	A		6	36F
WZ020.00	A		6	36F
WZ021.00	P	6		36F
WZ022.00	P	6		36F
WZ026.00	R		6	37F
WZ027.00	R	6		37F
WZ028.00	A		6	37F
WZ029.00	P	6		37F
WZ030.00	A		6	37F
WZ031.00	R		6	37F
WZ032.00	A		6	37F
WZ033.00	A		6	37F
WZ034.00	A		6	37F
WZ035.00	P	6		37F
WZ035.50	A		6	37F
WZ036.00	P	3	3	37F
WZ038.80	P	6		37F
WZ038.90	A		6	37F
WZ039.00	P	6		37F
WZ040.00	P	6		37F
WZ040.50	A		6	37F
WZ041.00	A		6	37F
WZ042.00	A		6	37F
WZ043.00	A		6	37F



Station	Class	Closed Status	Open Status	Run #
WZ044.00	A		6	37F
WZ045.00	P	6		37F
WZ046.00	P	7		37F
WZ047.00	P	6		37F
WZ048.00	P	6		37F
WZ048.50	P	6		37F
WZ049.00	P	6		37F
WZ054.00	P	6		37F
WZ055.00	A		6	37F

Figures 4 and 5 show the P90 score trends over the past three years for all stations that have shown increasing fecal coliform scores. During the transition from MPN to MF data points, each year the approved standard will be lower than the previous 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 P90s are expressed as a percentage of the approved standard. Stations that show the 2007 column at or above the 100 percent line no longer meet approved standards. The Vinalhaven P90 trends for the years 2005 through 2007 indicate that in 2006, fecal scores at station WZ6, WZ7, and WZ8 rose to the point that these stations no longer met approved standards, while scores at station WZ12 are on the rise, but still meets approved standard. Station WZ 12 is the only station in this grouping that is still classified as approved. Currently, there is no explanation for the elevated scores at these stations. There are no dwellings near station WZ6, but there is a small drainage that flows into the head of the cove. This drainage flows from a wet, wooded area and it is possible that wildlife is impacting the water quality at this site. At station WZ7, there is one seasonal dwelling that has a septic system which borders on the shore. This system has been checked numerous times (typically, at least once/season) but no malfunctions have ever been observed. There are no dwellings near station WZ8, but occasionally, up to six boats have been observed to anchor in the deeper waters outside of a cove, located approximately 0.5 miles from this sample site.

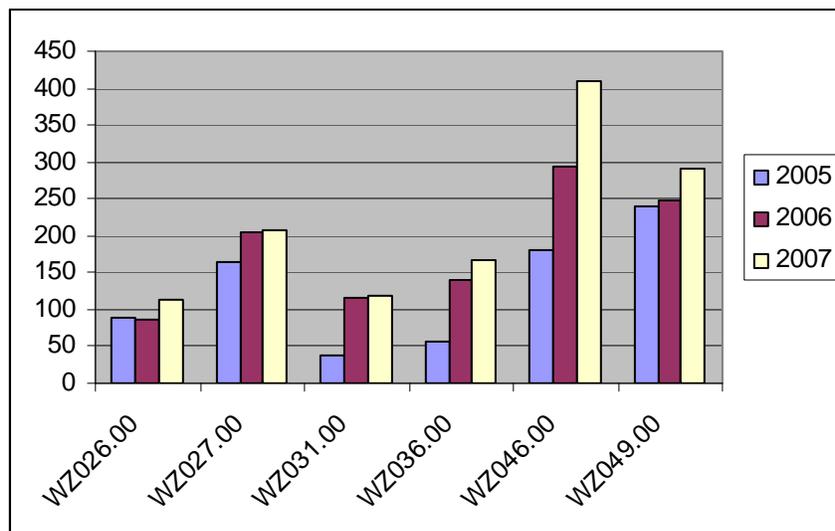
Figure 4. P90 scores (expressed as percent of approved standard) on Vinalhaven, 2005-2007





The North Haven trends for the years 2005 though 2007 show that fecal scores at stations WZ 26, WZ 31, and WZ 36 have risen to the point that these stations no longer meet approved standards. Stations WZ 26, and WZ 31 are classified as restricted. Stations WZ 36, WZ 46 and WZ49 are classified as prohibited. There are no dwellings nearby station WZ 26 but there are two small streams that enter the cove nearby the sample site. There are no dwellings or streams nearby station WZ 31. The elevated scores at this site are most likely related to wildlife. Occasionally, cruising boats anchor near to sample site WZ 36 and may contribute to the elevated scores at this site. Station WZ 46 has had elevated scores of unknown origin for quite some time. One possible explanation for the elevated scores at this site is non-point source pollution transported to the shore by a nearby stream. Samples taken from the stream have had one high fecal coliform score and on two sampling runs, animal waste was observed in the seaweed wrack line on the shore.

Figure 5. P90 scores (expressed as percent of approved standard) on North Haven Island, 2005-2007



Shoreline Survey Activity

No door to door shoreline survey work was conducted in shellfish growing area WZ in 2007. Drive by survey inspections were conducted as part of the random sampling runs.

North Haven was surveyed during the years of 2001-2003 and a new sanitary survey report was completed in 2003. The mainland portion of the southern shore of Vinalhaven (The Basin, Long Cove and Crockett Cove) including the surrounding islands was surveyed in 1997 and 1998. The north shore of Vinalhaven, including Winter Harbor and Seal Bay was surveyed in 2001. A new survey of Vinalhaven will be started in 2008 and will continue in 2009.

Following the 2003 shoreline survey of North Haven, several sites were identified as having malfunctioning septic systems. These sites have been revisited annually to note when systems are fixed. Table 5 illustrates the list of properties that still have malfunctioning systems. These



systems will be inspected again during the 2008 sampling season. All malfunctions will be reported to the North Haven town manager and the local plumbing inspector.

Table 5. Pollution sources on North Haven

Tax Map Page	Lot #	Description
6	5	Old iron tank, no Leach field fluid draining to stream
11	5	Old tank, plywood cover fluid draining down slope
31	21	Old iron tank, no cover Old septic overflow on shore
15	15	New tank installed with no leach field, septic overflow to shore

Aquaculture/Wet Storage Activity

North Haven has one aquaculture lease site located in the Pulpit Harbor Salt Pond. This area is currently classified as approved for shellfish harvest. The information on this lease site is shown below:

PHSP NH

Original Date: 8/18/2003 **Effective Date:** 8/18/2003 **Expiration Date:** 8/17/2013

NOAA Chart: 13308

Description: Pulpit Harbor Salt Pond North Haven Knox County

Acreage: 16.59

Transfer/Renewal History: Formerly experimental lease CAMP PN.

Species Cultivated: oyster eastern / american (*Crassostrea virginica*)

Cultivation Technique(s): Bottom - Suspended

Campbell, Adam and Michele

Adam Campbell

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207-867-4453 Fax:

Vinalhaven has one aquaculture lease site located in Old Harbor Pond. This area is currently classified as restricted for shellfish harvest. If product is sold it must first be relayed to a leased site in The Basin, and retested after a 2 week holding period. When testing shows that the product meets safety standards, it is released for market sale. The information on this lease site is shown below:

OHP VH

Original Date: 6/13/2007 **Effective Date:** 6/13/2007 **Expiration Date:** 6/12/2017

NOAA Chart: 13305

Description: Old Harbor Pond and The Basin, Vinalhaven, Knox County

Acreage: 6.75

Conditions: Contact the Department of Marine Resources Aquaculture Paralegal Assistant for a detailed list of conditions placed on this lease: 207-633-9599.

Transfer/Renewal History:

Species Cultivated: oyster eastern / american (*Crassostrea virginica*)

Cultivation Technique(s): Suspended



Weller, David

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Melissa Berry

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For more information on aquaculture lease sites, please visit the DMR website:

<http://www.maine.gov/dmr/aquaculture/leaseinventory2006/penobscotbay.htm>

Classification Changes Required

No classification changes are required at this time.

Summary

In recent years, both North Haven and Vinalhaven have been experiencing elevated water quality scores at sampling stations that had maintained good water quality in the past. Many of these areas are uninhabited, suggesting that wildlife may be the cause of the elevated scores. Based on the results for the current water quality review, no classification changes are required.

Vinalhaven is due for a new shoreline survey, and the field work will be conducted in 2008 and 2009. The survey will focus on areas known to have a good shellfish resource and areas that are currently classified as approved. Areas of development such as Carvers Harbor and areas with licensed overboard discharges and bold shores which are not suitable for shellfish habitat will not be surveyed. During the upcoming survey, pollution sources previously identified on North Haven will be revisited. All properties that are found to still have malfunctioning systems will be reported to the Department of Environmental Protection, the local town manager and the local plumbing inspector. Several of these properties have had known malfunctions for more than six years.



Appendix A. Transitioning to Membrane Filtration for Seawater and Pollution Source Samples

The Maine Department of Marine Resources has switched to a Membrane Filtration (MF) method for Fecal Coliforms using mTEC agar with a two hour resuscitation step. The geometric mean and the 90th percentile are calculated on 30 data points extending over a five year period. During the transition from MPN to MF, we will be accumulating MF data points. The statistical calculations will be a combination of MPN and MF data points.

During the transition the P90 standard for approved and restricted classification will migrate from the MPN to MF standards. The FDA has determined that the best way to handle the data is to perform the calculations as always for the data set, but to compare the data set to a hybrid weighted 90th percentile. This hybrid standard is calculated by weighting the relative contributions of each method to the database. This will mean that as the number of MPN data points reduce and the number of MF data points increase the 90th percentile standard that the sample site is compared to will change over time. Once all 30 data points are analyzed using MF, the 90th percentile for approved classification will be 31 and for restricted (for depuration) will be 163. The geomean approved standard of 14 fecal coliforms per 100 ml and geomean restricted standard of 88 fecal coliforms per 100 ml will remain the same for both methods.

Reports that display 90th percentiles will show the number of data points derived from MF analysis and will show the appropriate 90th percentile standard for that MPN/MF combination for approved and restricted classifications. It must be remembered that this weighted standard is only used for data sets encompassing data from the two different test methods, MF and MPN (3 tube/3 dilution). If decisions are to be made on a single test result analyzed by the MF method or a multiple number of test results all exclusively analyzed by the MF method, the 90th percentile standard is 31 fecal coliforms per 100 ml.

This was the second year the water quality program documented, in the database, the inability to collect a sample based on the following parameters: if the tide stage was too low to collect the sample, there was a safety issue with collecting the sample, the location was inaccessible or "other" which was accompanied by a comment on the data sheet. Stations that were unable to be sampled due to any of these parameters show 999 in the salinity column and have no data recorded in any of the columns except the time which is recorded so the actual tide stage can be computed. Stations that were missed due to the above parameters were required to be made up to assure that each station would receive the required six samples during the sampling season.



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. season.



Appendix C. 2007 Water Quality Station Data

Station	Date	Collector	Tide	Temp	Strat	ADV	Stat	CL	MFCOL	WIND
WZ003.00	02/27/07	FP	E	-1	R	-	C	P	<2.0	CL
WZ003.00	04/24/07	FP	E	5	R	-	C	P	2	N
WZ003.00	06/26/07	FP	H	15	R	-	C	P	22	SW
WZ003.00	08/06/07	FP	LE	21	R	-	C	P	<2.0	SE
WZ003.00	10/03/07	FP	LE	15	R	-	C	P	4	S
WZ003.00	12/12/07	FP	F	3	R	-	C	P	2	NW
WZ003.50	04/24/07	FP	E	6	R	-	C	P	<2.0	N
WZ003.50	05/16/07	FP	F	14	R	-	C	P	2	SW
WZ003.50	06/26/07	FP	H	20	R	-	C	P	<2.0	SW
WZ003.50	08/06/07	FP	LE	24	R	-	C	P	<2.0	S
WZ003.50	10/03/07	FP	LE	15	R	-	C	P	2	CL
WZ004.00	02/27/07	FP	E		R	-	C	P	<2.0	CL
WZ004.00	04/24/07	FP	E	4	R	-	C	P	<2.0	CL
WZ004.00	06/26/07	FP	H	12	R	-	C	P	<2.0	CL
WZ004.00	08/06/07	FP	LE	21	R	-	C	P	10	SE
WZ004.00	10/03/07	FP	L	15	R	-	C	P	<2.0	CL
WZ004.00	12/12/07	FP	F	5	R	-	C	P	<2.0	CL
WZ004.30	05/16/07	FP	F	7	R	-	C	P	<2.0	SW
WZ004.30	06/26/07	FP	H	12	R	-	C	P	<2.0	SW
WZ004.30	08/06/07	FP	LE	16	R	-	C	P	<2.0	S
WZ004.30	08/29/07	FP	F	15	R	-	C	P	<2.0	S
WZ004.30	10/03/07	FP	L	13	R	-	C	P	24	S
WZ004.30	12/12/07	FP	F	5	R	-	C	P	<2.0	CL
WZ005.00	02/27/07	FP	E		R	-	O	A	<2.0	CL
WZ005.00	04/24/07	FP	E	4	R	-	O	A	<2.0	CL
WZ005.00	06/26/07	FP	H	12	R	-	O	A	2	CL
WZ005.00	08/06/07	FP	LE	15	R	-	O	A	4	SE
WZ005.00	10/03/07	FP	L	15	R	-	O	A	6	CL
WZ005.00	12/12/07	FP	F	5	R	-	O	A	2	CL
WZ005.90	04/24/07	FP	LE	2	R	-	O	A	<2.0	N
WZ005.90	05/16/07	FP	HF	7	R	-	O	R	2	SW
WZ005.90	06/26/07	FP	HE	15	R	-	O	R	12	SW
WZ005.90	08/06/07	FP	L	20	R	B	O	R	38	S
WZ005.90	10/03/07	FP	L	15	R	-	O	R	12	S
WZ006.00	02/27/07	FP	E	0	R	N	O	A	<2.0	CL
WZ006.00	05/16/07	FP	HF	8	R	-	O	R	16	SW
WZ006.00	06/26/07	FP	HE	15	R	-	O	R	4	CL
WZ006.00	09/17/07	FP	F	15	R	-	O	R	<2.0	CL
WZ006.00	10/03/07	FP	LF	18	R	-	O	R	<2.0	S
WZ006.00	12/12/07	FP	HF	7	R	-	O	R	<2.0	CL
WZ007.00	02/27/07	FP	E	-1	R	-	O	A	<2.0	N
WZ007.00	04/24/07	FP	LE	3	R	-	O	A	<2.0	N



Station	Date	Collector	Tide	Temp	Strat	ADV	Stat	CL	MFCOL	WIND
WZ007.00	06/26/07	FP	HE	15	R	-	O	R	<2.0	S
WZ007.00	08/06/07	FP	L	18	R	-	O	R	11	S
WZ007.00	10/03/07	FP	LF	15	R	-	O	R	18	CL
WZ007.00	12/12/07	FP	HF	6	R	-	O	R	2	CL
WZ007.40	05/16/07	FP	HF	8	R	-	O	R	2	CL
WZ007.40	06/26/07	FP	E	17	R	-	O	R	<2.0	CL
WZ007.40	08/06/07	FP	L	25	R	-	O	R	2	S
WZ007.40	08/29/07	FP	HF	19	R	-	O	R	13	S
WZ007.40	11/27/07	FP	F	8	R	P	C	R	86	CL
WZ007.40	12/12/07	FP	HF	4	R	-	O	R	6	CL
WZ007.80	04/24/07	FP	L	4	R	-	C	P	<2.0	N
WZ007.80	05/16/07	FP	HF	7	R	-	C	P	2	SW
WZ007.80	06/26/07	FP	E	15	R	-	C	P	<2.0	S
WZ007.80	08/06/07	FP	LF	17	R	-	C	P	<2.0	S
WZ007.80	10/03/07	FP	LF	15	R	-	C	P	10	CL
WZ007.80	12/12/07	FP	H	5	R	-	C	P	4	NW
WZ008.00	02/27/07	FP	E	-2	R	-	C	P	<2.0	CL
WZ008.00	05/16/07	FP	H	8	R	-	C	P	66	CL
WZ008.00	06/26/07	FP	E	15	R	-	C	P	<2.0	CL
WZ008.00	09/17/07	FP	F	18	R	-	C	P	<2.0	CL
WZ008.00	10/03/07	FP	F	18	R	-	C	P	6	CL
WZ008.00	12/12/07	FP	H	5	R	-	C	P	<2.0	NW
WZ009.00	04/24/07	FP	L	4	R	-	O	A	<2.0	CL
WZ009.00	05/16/07	FP	H	8	R	-	O	A	2	CL
WZ009.00	06/26/07	FP	E	16	R	-	O	A	<2.0	CL
WZ009.00	08/06/07	FP	LF	20	R	-	O	A	<2.0	S
WZ009.00	10/03/07	FP	F	17	R	-	O	A	12	CL
WZ009.00	12/12/07	FP	H	4	R	-	O	A	3.6	NW
WZ009.50	02/27/07	FP	E		R	-	O	A	<2.0	CL
WZ009.50	04/24/07	FP	L	4	R	-	O	A	<2.0	CL
WZ009.50	06/26/07	FP	E	15	R	-	O	A	<2.0	CL
WZ009.50	08/06/07	FP	LF	20	R	-	O	A	<2.0	S
WZ009.50	10/03/07	FP	F	16	R	-	O	A	<2.0	CL
WZ009.50	12/12/07	FP	H	4	R	-	O	A	<2.0	NW
WZ010.50	05/16/07	FP	H	9	R	-	O	A	2	SW
WZ010.50	06/26/07	FP	E	13	R	-	O	A	<2.0	CL
WZ010.50	08/06/07	FP	F	20	R	-	O	A	<2.0	S
WZ010.50	08/29/07	FP	HF	17	R	-	O	A	<2.0	SW
WZ010.50	10/03/07	FP	F	15	R	-	O	A	<2.0	CL
WZ010.50	12/12/07	EXT	H	0	R	-	O	A	<2.0	NW
WZ011.00	05/16/07	FP	HE	9	R	-	C	P	<2.0	SW
WZ011.00	06/26/07	FP	E	16	R	-	C	P	<2.0	CL
WZ011.00	08/06/07	FP	F	23	R	-	C	P	<2.0	S
WZ011.00	08/29/07	FP	H	19	R	-	C	P	6	SW



Station	Date	Collector	Tide	Temp	Strat	ADV	Stat	CL	MFCOL	WIND
WZ011.00	10/03/07	FP	F	20	R	-	C	P	20	CL
WZ012.00	05/16/07	FP	HE	7	R	-	O	A	6	SW
WZ012.00	06/26/07	FP	E	14	R	-	O	A	<2.0	CL
WZ012.00	08/06/07	FP	F	20	R	-	O	A	2	S
WZ012.00	08/29/07	FP	H	18	R	-	O	A	2	CL
WZ012.00	10/03/07	FP	F	18	R	-	O	A	15	CL
WZ013.00	02/27/07	FP	E	0	R	-	O	A	<2.0	CL
WZ013.00	04/24/07	FP	LF	4	R	-	O	A	<2.0	N
WZ013.00	06/26/07	FP	E	14	R	-	O	A	<2.0	SW
WZ013.00	08/06/07	FP	F	17	R	-	O	A	<2.0	S
WZ013.00	10/03/07	EXT	L	12	R	-	O	A	38	E
WZ013.00	12/12/07	EXT	H	1	R	-	O	A	<2.0	NW
WZ014.00	02/27/07	FP	E	0	R	-	O	A	<2.0	CL
WZ014.00	05/16/07	FP	HE	7	R	-	O	A	<2.0	CL
WZ014.00	06/26/07	LL	HE	16	R	-	O	A	2	CL
WZ014.00	08/06/07	EXT	F	18	R	-	O	A	<2.0	SW
WZ014.00	10/03/07	EXT	F	12	R	-	O	A	<2.0	SW
WZ014.00	12/12/07	EXT	H	0	R	-	O	A	<2.0	CL
WZ014.50	05/16/07	FP	HE	8	R	-	C	P	2	NE
WZ014.50	06/26/07	FP	E	16	R	-	C	P	<2.0	CL
WZ014.50	08/06/07	EXT	LE	19	R	-	C	P	10	SW
WZ014.50	08/29/07	FP	H	18	R	-	C	P	4	S
WZ014.50	10/03/07	EXT	L	13	R	-	C	P	2	CL
WZ014.50	12/12/07	EXT	H	0	R	-	C	P	<2.0	CL
WZ015.00	02/27/07	FP	E	-1	R	-	C	P	<2.0	CL
WZ015.00	05/16/07	FP	HE	9	R	-	C	P	4	CL
WZ015.00	06/26/07	LL	E	16	R	-	C	P	<2.0	CL
WZ015.00	08/06/07	EXT	L	19	R	-	C	P	8	CL
WZ015.00	10/03/07	EXT	LE	13	R	-	C	P	14	CL
WZ015.00	12/12/07	EXT	H	0	R	-	C	P	<2.0	CL
WZ015.50	05/16/07	FP	E	8	R	-	C	P	220	NE
WZ015.50	06/26/07	LL	E	13	R	-	C	P	<2.0	CL
WZ015.50	08/06/07	EXT	F	17	R	-	C	P	18	SW
WZ015.50	08/29/07	FP	H	18	R	-	C	P	44	CL
WZ015.50	10/03/07	EXT	LF	13	R	-	C	P	120	CL
WZ015.50	12/12/07	EXT	HF	0	R	-	C	P	4	CL
WZ016.00	06/26/07	LL	E	13	R	-	O	A	<2.0	CL
WZ016.00	08/29/07	FP	HE	18	R	-	O	R	4	S
WZ016.00	09/17/07	FP	F	16	R	W	O	R	2	CL
WZ016.00	10/03/07	EXT	F	17	R	-	O	R	4	CL
WZ016.00	11/27/07	FP	F	9	R	P	O	R	10	CL
WZ016.00	12/12/07	EXT	HF	0	R	-	O	R	<2.0	CL
WZ017.00	06/26/07	LL	E	13	R	-	O	A	<2.0	CL



Station	Date	Collector	Tide	Temp	Strat	ADV	Stat	CL	MFCOL	WIND
WZ017.00	08/29/07	FP	HE	18	R	-	O	R	2	CL
WZ017.00	09/17/07	FP	F	15	R	-	O	R	<2.0	CL
WZ017.00	10/03/07	EXT	F	13	R	-	O	R	<2.0	CL
WZ017.00	11/27/07	FP	HF	8	R	P	O	R	7.3	CL
WZ017.00	12/12/07	EXT	HF	0	R	-	O	R	2	W
WZ017.50	05/16/07	FP	E	7	R	-	O	R	2	NE
WZ017.50	06/26/07	LL	E	14	R	-	O	R	<2.0	CL
WZ017.50	08/06/07	EXT	LF	17	R	-	O	R	<2.0	CL
WZ017.50	08/29/07	FP	HE	16	R	-	O	R	2	S
WZ017.50	10/03/07	EXT	LF	13	R	-	O	R	7.3	CL
WZ017.50	12/12/07	EXT	HF	1	R	-	O	R	16	NW
WZ018.00	06/26/07	LL	E	15	R	-	O	A	2	CL
WZ018.00	08/29/07	FP	HE	17	R	-	O	A	3.6	CL
WZ018.00	09/17/07	FP	F	16	R	-	O	A	6	CL
WZ018.00	10/03/07	EXT	F	14	R	-	O	A	6	SW
WZ018.00	11/27/07	FP	HF	9	R	P	O	A	31	CL
WZ018.00	12/12/07	EXT	HF	2	R	-	O	A	6	CL
WZ019.00	02/27/07	FP	LE	1	R	-	O	A	<2.0	CL
WZ019.00	04/24/07	FP	F	6	R	-	O	A	<2.0	N
WZ019.00	06/26/07	LL	E	13	R	-	O	A	<2.0	S
WZ019.00	08/06/07	EXT	LF	15	R	-	O	A	<2.0	SW
WZ019.00	10/03/07	EXT	LF	12	R	-	O	A	2	CL
WZ019.00	12/12/07	EXT	HF	2	R	-	O	A	<2.0	SW
WZ020.00	02/27/07	FP	LE	1	R	-	O	A	<2.0	CL
WZ020.00	04/24/07	FP	F	6	R	-	O	A	2	N
WZ020.00	06/26/07	LL	E	15	R	-	O	A	<2.0	CL
WZ020.00	08/06/07	EXT	L	17	R	-	O	A	4	SW
WZ020.00	10/03/07	EXT	F	12	R	-	O	A	<2.0	CL
WZ020.00	12/12/07	EXT	F	1	R	-	O	A	<2.0	CL
WZ021.00	04/24/07	FP	F	3	R	-	C	P	<2.0	CL
WZ021.00	05/16/07	FP	E	8	R	-	C	P	3.6	NE
WZ021.00	06/26/07	LL	E	14	R	-	C	P	4	CL
WZ021.00	08/06/07	EXT	L	15	R	-	C	P	2	SW
WZ021.00	10/03/07	EXT	F	11	R	-	C	P	2	SW
WZ021.00	12/12/07	EXT	F	2	R	-	C	P	<2.0	SW
WZ022.00	05/16/07	FP	E	8	R	-	C	P	40	NE
WZ022.00	06/26/07	LL	E	15	R	-	C	P	8	CL
WZ022.00	08/06/07	EXT	L	17	R	-	C	P	22	SW
WZ022.00	08/29/07	FP	HE	18	R	-	C	P	12	CL
WZ022.00	10/03/07	EXT	F	13	R	-	C	P	58	CL
WZ022.00	12/12/07	EXT	F	1	R	-	C	P	24	CL
WZ026.00	01/31/07	FP	HE	-2	R	-	O	A	<2.0	CL
WZ026.00	06/20/07	MHE	F	16	R	-	O	A	2	CL
WZ026.00	09/10/07	MHE	H	14	R	P	O	A	98	CL



Station	Date	Collector	Tide	Temp	Strat	ADV	Stat	CL	MFCOL	WIND
WZ026.00	09/25/07	FP	E	16	R	W	O	A	<2.0	CL
WZ026.00	10/09/07	FP	H	14	R	P	O	A	4	N
WZ026.00	11/14/07	EXT	F	4	R	-	O	A	2	SW
WZ027.00	01/31/07	FP	E	-2	R	N	C	P	<2.0	CL
WZ027.00	03/27/07	FP	E	4	R	N	C	P	<2.0	CL
WZ027.00	05/21/07	EXT	F	13	R	-	C	P	126	NW
WZ027.00	07/18/07	MHE	F	11	R	P	C	P	6	CL
WZ027.00	09/10/07	MHE	H	14	R	P	C	P	7.3	CL
WZ027.00	11/14/07	EXT	F	4	R	-	C	P	<2.0	CL
WZ028.00	01/31/07	FP	E	-3	R	-	O	A	<2.0	CL
WZ028.00	03/27/07	FP	E		R	W	O	A	<2.0	CL
WZ028.00	05/21/07	EXT	F	14	R	-	O	A	7.3	NW
WZ028.00	07/18/07	MHE	F	14	R	P	O	A	<2.0	CL
WZ028.00	09/10/07	MHE	H	12	R	P	O	A	8	SE
WZ028.00	11/14/07	EXT	F	4	R	-	O	A	<2.0	SW
WZ029.00	01/31/07	FP	E	-3	R	N	C	P	<2.0	CL
WZ029.00	05/21/07	EXT	F	16	R	-	C	P	<2.0	CL
WZ029.00	06/20/07	MHE	F	21	R	-	C	P	6	CL
WZ029.00	07/18/07	MHE	F	15	R	P	C	P	6	CL
WZ029.00	09/10/07	MHE	H	13	R	P	C	P	102	SE
WZ029.00	11/14/07	EXT	F	5	R	-	C	P	35	SW
WZ030.00	01/31/07	FP	E	-2	R	-	O	A	<2.0	CL
WZ030.00	05/21/07	EXT	F	8	R	-	O	A	<2.0	NW
WZ030.00	06/20/07	MHE	F	13	R	-	O	A	<2.0	CL
WZ030.00	07/18/07	MHE	F	15	R	P	O	A	<2.0	CL
WZ030.00	09/10/07	MHE	H	13	R	P	O	A	44	SE
WZ030.00	11/14/07	EXT	HF	6	R	-	O	A	<2.0	SW
WZ031.00	01/31/07	FP	E	-2	R	-	O	A	<2.0	CL
WZ031.00	05/21/07	EXT	F	14	R	-	O	A	2	CL
WZ031.00	06/20/07	MHE	F	16	R	-	O	R	2	CL
WZ031.00	07/18/07	MHE	F	15	R	P	C	R	<2.0	CL
WZ031.00	09/10/07	MHE	H	13	R	P	C	R	6	CL
WZ031.00	11/14/07	EXT	HF	6	R	-	C	R	<2.0	SW
WZ032.00	01/31/07	FP	E	-1	R	-	O	A	<2.0	CL
WZ032.00	03/27/07	FP	E	2	R	-	O	A	<2.0	CL
WZ032.00	05/21/07	EXT	F	8	R	-	O	A	8	CL
WZ032.00	07/18/07	MHE	F	13	R	P	O	A	<2.0	CL
WZ032.00	09/10/07	MHE	HE	14	R	P	O	A	<2.0	CL
WZ032.00	11/14/07	EXT	HF	6	R	-	O	A	<2.0	SW
WZ033.00	01/31/07	FP	E	0	R	-	O	A	<2.0	CL
WZ033.00	03/27/07	FP	E	2	R	-	O	A	<2.0	CL
WZ033.00	05/21/07	EXT	F	8	R	-	O	A	<2.0	NW
WZ033.00	07/18/07	MHE	F	13	R	P	O	A	<2.0	CL
WZ033.00	09/10/07	MHE	HE	13	R	P	O	A	4	CL



Station	Date	Collector	Tide	Temp	Strat	ADV	Stat	CL	MFCOL	WIND
WZ033.00	11/14/07	EXT	HF	6	R	-	O	A	<2.0	SW
WZ034.00	01/31/07	FP	E	1	R	-	O	A	<2.0	CL
WZ034.00	03/27/07	FP	E	3	R	-	O	A	<2.0	N
WZ034.00	05/21/07	EXT	F	8	R	-	O	A	<2.0	NW
WZ034.00	07/18/07	MHE	F	13	R	P	O	A	142	CL
WZ034.00	09/10/07	MHE	HE	11	R	P	O	A	<2.0	CL
WZ034.00	11/14/07	EXT	HF	7	R	-	O	A	<2.0	SW
WZ035.00	01/31/07	FP	E	2	R	-	C	P	<2.0	SW
WZ035.00	03/27/07	FP	LE	2	R	-	C	P	<2.0	N
WZ035.00	05/21/07	EXT	F	9	R	-	C	P	<2.0	CL
WZ035.00	07/18/07	MHE	F	13	R	P	C	P	<2.0	CL
WZ035.00	09/10/07	MHE	HE	13	R	P	C	P	<2.0	CL
WZ035.00	11/14/07	EXT	HF	7	R	-	C	P	<2.0	SW
WZ035.50	01/31/07	FP	E	2	R	-	O	A	<2.0	SW
WZ035.50	03/27/07	FP	LE	-1	R	-	O	A	<2.0	N
WZ035.50	05/21/07	EXT	F	9	R	-	O	A	<2.0	NW
WZ035.50	07/18/07	MHE	F	14	R	P	O	A	2	CL
WZ035.50	09/10/07	MHE	HE	13	R	P	O	A	2	CL
WZ035.50	11/14/07	EXT	H	8	R	-	O	A	<2.0	SW
WZ036.00	01/31/07	FP	E	2	R	-	O	A	2	CL
WZ036.00	03/27/07	FP	LE	-1	R	N	O	A	<2.0	CL
WZ036.00	05/21/07	EXT	F	7	R	-	O	A	2	CL
WZ036.00	07/18/07	MHE	F	15	R	P	C	P	2	CL
WZ036.00	09/10/07	MHE	E	14	R	P	C	P	40	CL
WZ036.00	11/14/07	EXT	H	6	R	-	C	P	2	CL
WZ038.80	01/31/07	FP	E	-3	R	-	C	P	<2.0	CL
WZ038.80	03/27/07	FP	LE	-1	R	-	C	P	<2.0	CL
WZ038.80	05/21/07	EXT	F	11	R	-	C	P	6	CL
WZ038.80	07/18/07	MHE	F	17	R	P	C	P	2	CL
WZ038.80	09/10/07	MHE	E	15	R	P	C	P	11	CL
WZ038.80	11/14/07	EXT	H	6	R	-	C	P	14	SW
WZ038.90	01/31/07	FP	E	1	R	-	O	A	<2.0	CL
WZ038.90	03/27/07	FP	LE	-1	R	-	O	A	<2.0	CL
WZ038.90	05/21/07	EXT	F	9	R	-	O	A	24	CL
WZ038.90	07/18/07	MHE	F	20	R	P	O	A	<2.0	CL
WZ038.90	09/10/07	MHE	E	17	R	P	O	R	4	CL
WZ038.90	11/14/07	EXT	H	6	R	-	O	R	3.6	SW
WZ039.00	01/31/07	FP	E	0	R	-	C	P	<2.0	SW
WZ039.00	03/27/07	FP	L	-1	R	-	C	P	4	CL
WZ039.00	05/21/07	EXT	F	8	R	-	C	P	2	CL
WZ039.00	07/18/07	MHE	F	15	R	P	C	P	<2.0	CL
WZ039.00	09/10/07	MHE	E	13	R	P	C	P	10	CL
WZ039.00	11/14/07	EXT	H	6	R	-	C	P	<2.0	SW



Station	Date	Collector	Tide	Temp	Strat	ADV	Stat	CL	MFCOL	WIND
WZ040.00	01/31/07	FP	E	1	R	N	C	P	<2.0	SW
WZ040.00	03/27/07	FP	L	0	R	-	C	P	<2.0	CL
WZ040.00	05/21/07	EXT	F	6	R	-	C	P	<2.0	NW
WZ040.00	07/18/07	MHE	HF	14	R	P	C	P	28	CL
WZ040.00	09/10/07	MHE	E	13	R	P	C	P	<2.0	CL
WZ040.00	11/14/07	EXT	H	6	R	-	C	P	<2.0	SW
WZ040.50	01/31/07	FP	E	1	R	-	O	A	<2.0	CL
WZ040.50	03/27/07	FP	L	-1	R	-	O	A	<2.0	CL
WZ040.50	05/21/07	EXT	F	7	R	-	O	A	<2.0	NW
WZ040.50	09/25/07	FP	E	15	R	-	O	A	<2.0	CL
WZ040.50	10/09/07	FP	HE	13	R	P	O	A	<2.0	N
WZ040.50	11/14/07	EXT	HE	7	R	-	O	A	<2.0	SW
WZ041.00	01/31/07	FP	E	2	R	-	O	A	<2.0	SW
WZ041.00	03/27/07	FP	L	1	R	-	O	A	<2.0	CL
WZ041.00	05/21/07	EXT	F	9	R	-	O	A	<2.0	NW
WZ041.00	07/18/07	MHE	HF	15	R	P	O	A	<2.0	CL
WZ041.00	09/10/07	MHE	E	13	R	P	O	A	<2.0	CL
WZ041.00	11/14/07	EXT	HE	7	R	-	O	A	4	SW
WZ042.00	01/31/07	FP	E	2	R	-	O	A	<2.0	CL
WZ042.00	03/27/07	FP	L	1	R	-	O	A	<2.0	CL
WZ042.00	05/21/07	EXT	F	7	R	-	O	A	2	CL
WZ042.00	07/18/07	MHE	H	14	R	P	O	A	<2.0	CL
WZ042.00	09/10/07	MHE	E	12	R	P	O	A	<2.0	CL
WZ042.00	11/14/07	EXT	HE	7	R	-	O	A	<2.0	SW
WZ043.00	01/31/07	FP	E	2	R	-	O	A	<2.0	CL
WZ043.00	05/21/07	EXT	HF	7	R	-	O	A	<2.0	NW
WZ043.00	06/20/07	MHE	F	9	R	-	O	A	<2.0	CL
WZ043.00	07/18/07	MHE	H	10	R	P	O	A	<2.0	CL
WZ043.00	09/10/07	MHE	E	11	R	P	O	A	740	CL
WZ043.00	11/14/07	EXT	HE	7	R	-	O	A	<2.0	S
WZ044.00	01/31/07	FP	E	1	R	-	O	A	<2.0	CL
WZ044.00	05/21/07	EXT	HF	7	R	-	O	A	2	CL
WZ044.00	06/20/07	MHE	F	13	R	-	O	A	2	CL
WZ044.00	07/18/07	MHE	H	10	R	P	O	A	2	CL
WZ044.00	09/10/07	MHE	E	12	R	P	O	A	10	CL
WZ044.00	11/14/07	EXT	E	7	R	-	O	A	4	SW
WZ045.00	01/31/07	FP	E	-1	R	W	C	P	<2.0	CL
WZ045.00	05/21/07	EXT	HF	8	R	-	C	P	<2.0	CL
WZ045.00	06/20/07	MHE	F	12	R	-	C	P	4	CL
WZ045.00	07/18/07	MHE	H	12	R	P	C	P	<2.0	CL
WZ045.00	09/10/07	MHE	E	12	R	P	C	P	2	CL
WZ045.00	11/14/07	EXT	E	7	R	-	C	P	<2.0	SW
WZ046.00	01/31/07	FP	E	-2	R	N	C	P	<2.0	CL
WZ046.00	05/21/07	EXT	HF	9	R	-	C	P	10	CL



Station	Date	Collector	Tide	Temp	Strat	ADV	Stat	CL	MFCOL	WIND
WZ046.00	06/20/07	MHE	F	15	R	-	C	P	<2.0	CL
WZ046.00	07/18/07	MHE	H	14	R	P	C	P	360	CL
WZ046.00	09/25/07	FP	E	15	R	-	C	P	10	CL
WZ046.00	11/14/07	EXT	E	7	R	-	C	P	36	SW
WZ047.00	01/31/07	FP	E	-1	R	-	C	P	<2.0	CL
WZ047.00	03/27/07	FP	LF	0	R	-	C	P	<2.0	CL
WZ047.00	05/21/07	EXT	HF	8	R	-	C	P	<2.0	CL
WZ047.00	07/18/07	MHE	H	13	R	P	C	P	10	CL
WZ047.00	09/10/07	MHE	E	12	R	P	C	P	10	CL
WZ047.00	11/14/07	EXT	E	7	R	-	C	P	4	SW
WZ048.00	01/31/07	FP	E	-3	R	-	C	P	<2.0	CL
WZ048.00	03/27/07	FP	LF	-1	R	-	C	P	<2.0	CL
WZ048.00	05/21/07	EXT	HF	10	R	-	C	P	<2.0	CL
WZ048.00	07/18/07	MHE	H	11	R	P	C	P	10	CL
WZ048.00	09/10/07	MHE	E	13	R	P	C	P	90	CL
WZ048.00	11/26/07	EXT	HF	4	R	-	C	P	<2.0	CL
WZ048.50	01/31/07	FP	E	-2	R	-	C	P	<2.0	CL
WZ048.50	03/27/07	FP	LF	-1	R	-	C	P	<2.0	CL
WZ048.50	05/21/07	EXT	HF	7	R	-	C	P	<2.0	CL
WZ048.50	07/18/07	MHE	HE	10	R	P	C	P	24	CL
WZ048.50	09/10/07	MHE	E	13	R	P	C	P	68	CL
WZ048.50	11/26/07	EXT	HF	4	R	-	C	P	6	SW
WZ049.00	01/31/07	FP	E	-1	R	-	C	P	<2.0	CL
WZ049.00	05/21/07	EXT	HF	7	R	-	C	P	<2.0	CL
WZ049.00	06/20/07	MHE	F	13	R	-	C	P	<2.0	CL
WZ049.00	09/10/07	MHE	E	13	R	P	C	P	6	CL
WZ049.00	09/25/07	FP	E	16	R	-	C	P	2	CL
WZ049.00	11/14/07	EXT	E	6	R	-	C	P	140	S
WZ054.00	01/31/07	FP	HE	-1	R	-	C	P	<2.0	CL
WZ054.00	03/27/07	FP	E	2	R	-	C	P	<2.0	CL
WZ054.00	05/21/07	EXT	F	13	R	-	C	P	<2.0	NW
WZ054.00	09/10/07	MHE	E	13	R	P	C	P	112	CL
WZ054.00	09/25/07	FP	E	16	R	-	C	P	31	S
WZ054.00	11/14/07	EXT	F	6	R	-	C	P	<2.0	SE
WZ055.00	01/31/07	FP	HE	-1	R	-	O	A	<2.0	CL
WZ055.00	03/27/07	FP	E	3	R	-	O	A	<2.0	CL
WZ055.00	05/21/07	EXT	F	8	R	-	O	A	<2.0	NW
WZ055.00	09/10/07	MHE	E	13	R	P	O	A	<2.0	CL
WZ055.00	09/25/07	FP	E	16	R	-	O	A	6	S
WZ055.00	11/14/07	EXT	F	6	R	-	O	A	18	SE