



GROWING AREA EQ
Roque Bluffs, Machias and Machiasport
ANNUAL REVIEW for 2009

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APPROVAL

Division Director:

_____ Date: _____
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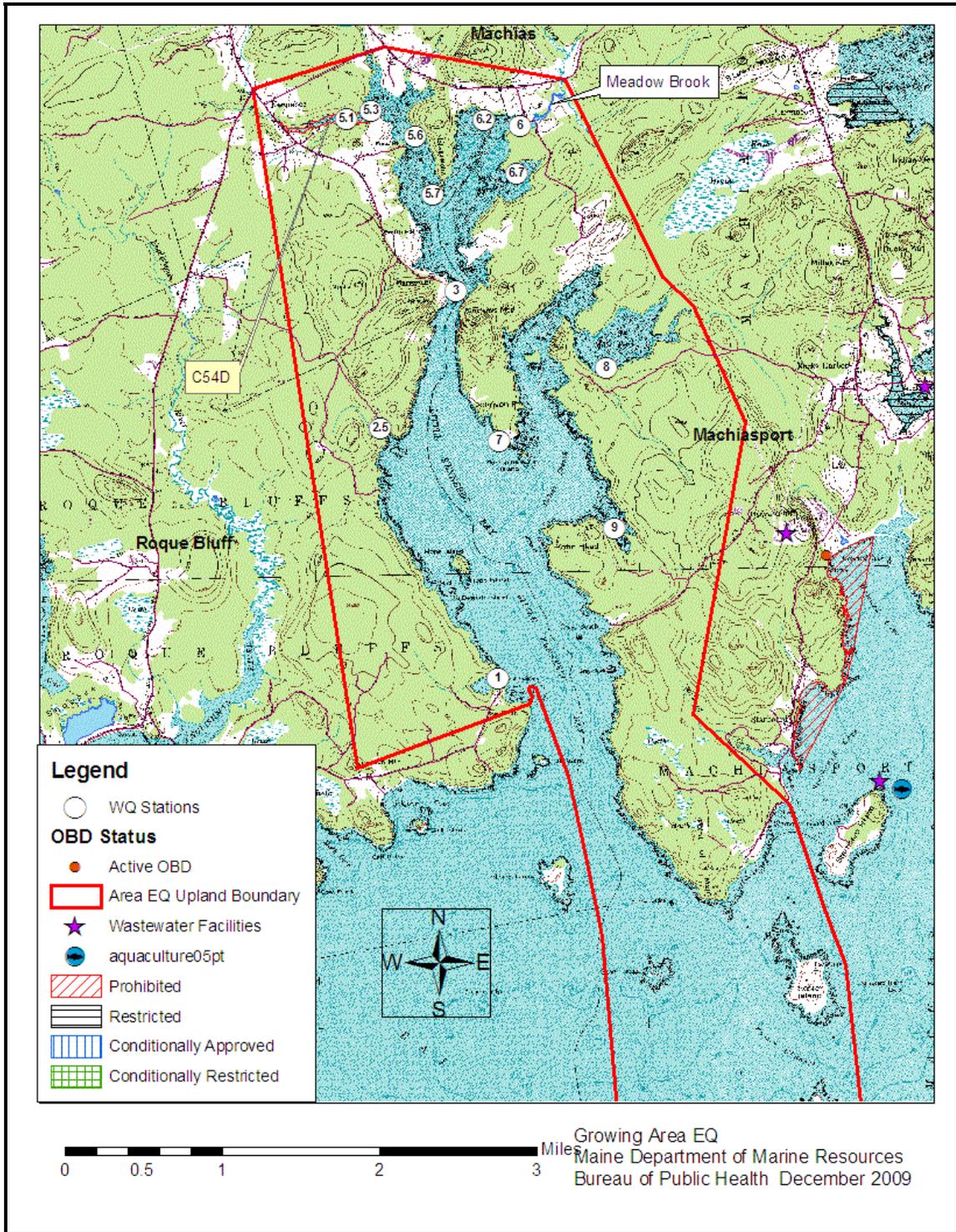
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Figure 1. Growing Area EQ, with Water Quality Stations





Executive Summary

This is an annual report for Growing Area EQ written in compliance with the requirements of the 2007 Model Ordinance and the National Shellfish Sanitation Program. The next triennial report is due in 2011; the next sanitary survey report is due in 2020.

Growing area EQ has had no significant changes in known pollution sources during the review period. Area EQ has one prohibited area, Area No. 54D. No new pollution sources were identified in 2009. Meadow Brook (stream #EQ 158.10) was sampled three times while investigating intermittent high bacterial scores at station EQ6. All sample stations met the sampling requirements for their classifications for this time period.

No water quality stations were added, removed, activated or deactivated during this review period. No stations were re-classified during this review period. Two stations, EQ005.10 and EQ006.00, showed a downward change in water quality during this review. EQ005.1 is a boundary station for C54-D and is currently classified as prohibited because it is embedded within the closure. Pollution Area C54D is closed due to water quality not meeting the approved standard. Station EQ006.00 is located in an area which was re-classified from prohibited to approved in 2008, because of a long term trend of water quality meeting the approved standard. Both stations have scores that meet the approved standard, but the P90 score exceeds 90% of the approved standard. If the trends continue upward (decreasing water quality), classification changes may be required in the future. The remaining sample station scores remained steady or showed an improvement in water quality.

Growing Area Description

Growing Area EQ is located in Washington County, Maine in the towns of Roque Bluffs, Machias and Machiasport. Figure 1 shows the growing area and the active sample sites, proposed new sites, upland boundary, nearby aquaculture sites and the prohibited area (C54D). The area EQ shoreline stretches from Seawall Point, Roque Bluffs around Little Kennebec Bay and Point of Maine to Starboard Island, Machiasport. The upland boundary illustrated in Figure 1 is enclosed by a line beginning at Seawall Point; extending West to Johnson Mountain; then North to the intersection of the Roque Bluffs-West Kennebec Roads; then East to the East Kennebec-Cross Roads intersection; then East to Meadow Brook; then Southeast to Shagadee Mountain, Machiasport; and then South to Point of Maine. The shore is sparsely populated without any villages. Any freshwater inflow is from small streams. Sheep (<50) are seasonally pastured upland of the eastern arm of Little Kennebec Bay. Small groups of workboat moorings (<5) are at Seawall Point, Marston Point and Yoho Head. There are no wastewater treatment facilities or licensed overboard discharges within the margins of the growing area. There are no aquaculture or wet storage activities in Area EQ. There is no light or heavy industry in the area.



Current Classification(s)

At the end of 2009, shellfish areas in growing area EQ had the following classifications:

Approved: 9 sample stations (EQ 1, 2.5, 3, 5.7, 6, 6.7, 7, 8, 9)

Prohibited: Area No. 54D, West Branch of Little Kennebec Bay in Kennebec; 2 sample stations (EQ 5, 5.1). The water quality at station EQ 5 failed to meet approved standard. No pollution source has been identified.

Please visit the DMR website to view legal notices:

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

Activity during Review Period

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

Current Management Plan(s) for Conditional Area(s)

There are no conditional areas in Growing Area EQ.

Water Quality Review and Discussion

Table 1 lists all the active approved and prohibited stations in Growing Area WQ, with their respective geometric mean and P90 calculations for 2009. Please refer to Appendix A 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. The standards fluctuate yearly as a result of the DMR transition from a most probable number (MPN) fecal coliform test method to a membrane filtration (MF) method and are dependent on the number of samples analyzed by MPN vs. 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 MF count column. This fluctuating standard will cease when all 30 data points have been analyzed by the MF method. All active stations meet the NSSP classification currently assigned to them. No classification changes are required at this time. Stations EQ005.10 and EQ006.00 are approaching the NSSP limit for the approved standard and warrant closer observation during 2010.

Table 1. Growing Area EQ Geometric Mean and P90 Scores

| Station | Class | Count | MFCOUNT | GeoMean | SDV | MAX | P90 | Approved_Std | Restricted_Std |
|----------|-------|-------|---------|---------|------|-----|-----|--------------|----------------|
| EQ001.00 | A | 30 | 21 | 2.4 | 0.26 | 54 | 5.5 | 35 | 195 |
| EQ002.50 | A | 30 | 20 | 2.7 | 0.31 | 42 | 7.1 | 36 | 199 |



| Station | Class | Count | MFCCount | GeoMean | SDV | MAX | P90 | Approved_Std | Restricted_Std |
|----------|-------|-------|----------|---------|------|-----|-----|--------------|----------------|
| EQ003.00 | A | 30 | 20 | 2.9 | 0.22 | 14 | 5.6 | 36 | 199 |
| EQ005.10 | P | 30 | 22 | 6.3 | 0.57 | 280 | 34 | 35 | 191 |
| EQ005.70 | A | 30 | 20 | 3.1 | 0.37 | 100 | 9.5 | 36 | 199 |
| EQ006.00 | A | 30 | 22 | 6 | 0.56 | 240 | 32 | 35 | 191 |
| EQ006.70 | A | 30 | 21 | 3 | 0.4 | 74 | 9.9 | 35 | 195 |
| EQ007.00 | A | 30 | 20 | 2.6 | 0.33 | 106 | 6.9 | 36 | 199 |
| EQ008.00 | A | 30 | 20 | 2.8 | 0.28 | 20 | 6.4 | 36 | 199 |
| EQ009.00 | A | 30 | 20 | 2.3 | 0.16 | 14 | 3.8 | 36 | 199 |

All active stations in approved and prohibited areas were sampled 6 times in the open status during 2009 following a systematic random sampling (SRS) schedule. Area EQ has 2 flood stations, EQ 3 and EQ 6 which were sampled 14 and 11 times, respectively, during adverse (flood) conditions. The fecal coliform scores from the flood stations under adverse conditions were not used for calculating the station's P90 scores. The sample collection counts are displayed in Table 2; individual results for each SRS sample collection are presented in Appendix B.

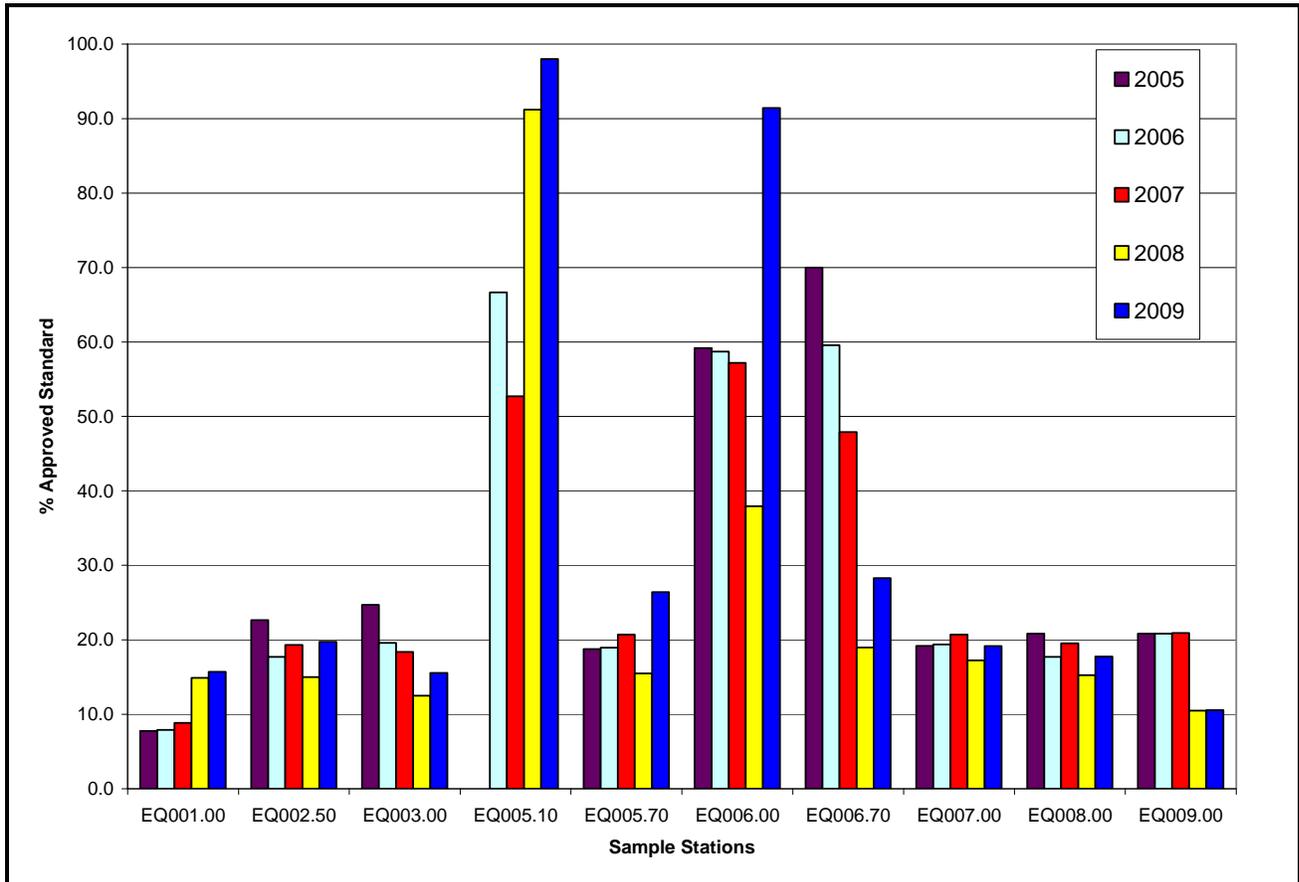
Table 2. Sample Collection Counts for 2009 Review Year

| Station | Class | Adverse | Random | Random | Total | Comments |
|----------|-------|---------|--------|--------|-------|---------------|
| | | Closed | Open | Closed | | |
| EQ001.00 | A | | 6 | | 6 | |
| EQ002.50 | A | | 6 | | 6 | |
| EQ003.00 | A | 14 | 6 | | 20 | Flood Station |
| EQ005.10 | P | | | 6 | 6 | |
| EQ005.70 | A | | 6 | | 6 | |
| EQ006.00 | A | 11 | 7 | | 18 | Flood Station |
| EQ006.70 | A | | 6 | | 6 | |
| EQ007.00 | A | | 6 | | 6 | |
| EQ008.00 | A | | 6 | | 6 | |
| EQ009.00 | A | | 6 | | 6 | |

Figure 2 shows the P90 trends (as % of approved standard) over the past 5 years, for all active stations. Most of the approved stations showed little change in water quality during the past 5 years. Station EQ005.10 (prohibited area-boundary station) and station EQ006.00 (approved) have had increasing scores and are approaching 100% of the approved standard. These stations will require downward re-classification if the increasing trend continues.



Figure 2. Area EQ P90 score trend chart for active stations (expressed as the percent of the approved standard), 2005-2009.



No pollution sources for the increased scores at Station EQ005.10 have been identified. Previous reports could not identify a pollution source but identified several houses with questionable leach fields proximate to Kennebec Brook which flows into the head of the cove (Goodwin 2008). Station EQ005.00 further up the cove was discontinued due to persistent elevated scores. The pollution source affecting station EQ005.00 may have increased in intensity. A follow up survey of the shoreline between stations EQ 5 and 5.1 will be attempted during 2010 to try to locate any obvious pollution sources. An alternative margin station (EQ005.30) will be established, and inactive station EQ005.60 will be reactivated during 2010 in the event that EQ005.10 fails to meet approved criteria.

The increased scores at Station EQ006.00 may be associated with agricultural activity (pasture) located near this station. Previous reports could not identify a pollution source but identified a sheep pasture proximate to Meadow Brook which flows into the head of the cove (Goodwin 2008 & 2009). Further monitoring of this site and scores will continue during 2010. An



alternative margin station (EQ006.20) will be reactivated during 2010 in the event that EQ006.00 fails to meet approved criteria.

Recommendations for Upward Classification

There are no recommendations for upward classification at this time.

Shoreline Survey Activity

Growing area EQ has had increases in bacterial scores at two stations during the review period. DMR shoreline survey activity was through drive through observations during random water sampling runs and flood sampling (Table 3). A complete sanitary survey required for the 12 year sanitary survey was completed in 2008 (Goodwin 2009). There are no documented licensed overboard discharges (OBDs) or marine pump out stations in area EQ (Maine DEP 2009a & 2009b). Any new OBDs or increases in OBD flows, whether by volume or duration, are prohibited by Maine law under the Classification of Maine waters 38M.R.S.A. §464 4. (A)(6) (Maine Statutes 2010) <http://janus.state.me.us/legis/statutes/38/title38sec464.html>. No DEP violations affecting Area EQ waters were reported for 2009 (Maine DEP MER 2010). No DEP permit issuances were reported for area EQ during this period (EPA NPDES 2010). No significant changes in the watershed development were noted during the drive through surveys. Active pasture land extending near to high water mark was observed in proximity of station EQ 6.

Table 3. Drive-through Survey Assessments

| Grow Area | Number of Visits | Year | Comments |
|----------------|------------------|------|-----------------|
| EQ – all sites | 6 | 2009 | Random sampling |
| EQ3 | 14 | 2009 | Flood sampling |
| EQ6 | 11 | 2009 | Flood sampling |

Aquaculture/Wet Storage Activity

There are no aquaculture/wet storage facilities in area EQ (Maine DMR Aquaculture 2010).

Classification Changes

There were no classification changes during this review period. There are no classification changes required as a result of this review.



Summary

The water quality at all active stations in Area EQ continues to support the current classification under the NSSP. At two stations (EQ005.10 and EQ006.00) P90 scores have shown marked increases and will be closely monitored during 2010. Follow up survey work will be conducted to try to identify pollution sources near these two sites. At all other stations P90 scores have remained steady or improved. As a result of water quality review in this report, no classification changes are necessary at this time. Management and sampling of the area will remain the same with the exception of the addition of station EQ 5.3 and re-activation of station EQ 5.6.

Future Work Plans

An investigation into possible pollution sources at Meadow Brook will be initiated. Water samples will be taken at Meadow Brook to determine if an adjacent sheep pasture (especially after rainfall) is affecting scores. Preparations to enact a closure around Meadow Brook in case water quality scores show scores which fail to meet approved standard will be made. Water quality station EQ006.20 (Figure 1) will be reactivated to evaluate the impact of Meadow Brook and establish a prohibited area boundary station.

An investigation into possible pollution sources at Kennebec Brook will be initiated. Water samples will be taken at Kennebec Brook to see if the stream is a pollution source. Preparations to expand the current closure (54D) will be made. A new water quality station (EQ 5.3) will be activated 1000 feet seaward of EQ 5.1 (Figure 1) on the boundary line of Pollution Area No. 54D and station EQ 5.6 will be re-activated approximately 3000 feet seaward of station EQ 5.1 (2000 feet seaward of the 54D Boundary) to establish an alternative prohibited area boundary station (Figure 1). A shoreline survey in the Kennebec Brook area will be conducted to see if a pollution source can be identified. If stream samples or survey results warrant further survey work, then a request will be made to DEP to help locate the pollution source.



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Appendix A. Key to Water Quality Table Headers

Station = water quality monitoring station

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

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

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

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

SDV = standard deviation

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

P90 = 90th percentile

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

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



Appendix B. Growing Area EQ 2009 Data

| Station | Date | Collector | Tide | Wind | Temp | Salin | Strat | Adv | Status | Class | Col |
|----------|-----------|-----------|------|------|------|-------|-------|-----|--------|-------|-----|
| EQ001.00 | 11-May-09 | CREW | H | S | 9 | 29 | R | P | O | A | <2 |
| | 26-May-09 | CREW | HF | S | 9 | 30 | R | X | O | A | <2 |
| | 29-Jul-09 | CREW | F | S | 13 | 30 | R | P | O | A | 2 |
| | 19-Aug-09 | CREW | HE | CL | 17 | 32 | R | O | O | A | 4 |
| | 30-Sep-09 | CREW | E | SW | 13 | 30 | R | P | O | A | <2 |
| | 19-Oct-09 | CREW | HE | N | 8 | 30 | R | P | O | A | <2 |
| EQ002.50 | 11-May-09 | CREW | H | S | 9 | 25 | R | P | O | A | <2 |
| | 26-May-09 | CREW | HF | S | 10 | 30 | R | X | O | A | <2 |
| | 29-Jul-09 | CREW | F | S | 14 | 30 | R | P | O | A | <2 |
| | 19-Aug-09 | CREW | HE | CL | 18 | 30 | R | O | O | A | 4 |
| | 30-Sep-09 | CREW | E | SW | 13 | 26 | R | P | O | A | 29 |
| | 19-Oct-09 | CREW | HE | N | 8 | 31 | R | P | O | A | <2 |
| EQ003.00 | 11-May-09 | CREW | H | S | 6 | 30 | R | P | O | A | <2 |
| | 26-May-09 | CREW | HF | S | 9 | 30 | R | X | O | A | <2 |
| | 29-Jul-09 | CREW | F | CL | 15 | 30 | R | P | O | A | 2 |
| | 19-Aug-09 | CREW | HE | CL | 17 | 30 | R | O | O | A | 6 |
| | 30-Sep-09 | CREW | E | SW | 14 | 30 | R | P | O | A | 9.1 |
| | 19-Oct-09 | CREW | HE | N | 8 | 32 | R | P | O | A | 3.6 |
| EQ005.10 | 11-May-09 | CREW | H | S | 10 | 6 | R | P | C | P | 50 |
| | 26-May-09 | CREW | HF | W | 12 | 30 | R | X | C | P | <2 |
| | 29-Jul-09 | CREW | F | CL | 17 | 29 | R | P | C | P | 8 |
| | 19-Aug-09 | CREW | E | CL | 20 | 30 | R | O | C | P | 40 |
| | 30-Sep-09 | CREW | E | W | 15 | 26 | R | P | C | P | 42 |
| | 19-Oct-09 | CREW | HE | NW | 7 | 26 | R | P | C | P | 40 |
| EQ005.70 | 11-May-09 | CREW | HE | S | 8 | 30 | R | P | O | A | <2 |
| | 26-May-09 | CREW | HF | S | 8 | 31 | R | X | O | A | <2 |
| | 29-Jul-09 | CREW | F | CL | 14 | 30 | R | P | O | A | <2 |
| | 19-Aug-09 | CREW | E | S | 20 | 30 | R | O | O | A | 6 |
| | 30-Sep-09 | CREW | E | SW | 15 | 26 | R | P | O | A | 100 |
| | 19-Oct-09 | CREW | HE | NW | 8 | 30 | R | P | O | A | 2 |
| EQ006.00 | 11-May-09 | CREW | HE | S | 11 | 8 | R | P | O | A | 9.1 |
| | 26-May-09 | CREW | HF | S | 11 | 30 | R | X | O | A | <2 |
| | 07-Jul-09 | RG | HF | SE | 10 | 28 | R | P | O | A | 10 |
| | 29-Jul-09 | CREW | F | S | 20 | 29 | R | P | O | A | <2 |
| | 19-Aug-09 | CREW | E | CL | 21 | 25 | R | O | O | A | 152 |
| | 30-Sep-09 | CREW | E | SW | 15 | 13 | R | P | O | A | 240 |
| | 19-Oct-09 | CREW | HE | NW | 8 | 30 | R | P | O | A | 9.1 |
| EQ006.70 | 11-May-09 | CREW | HE | S | 8 | 28 | R | P | O | A | 2 |



| Station | Date | Collector | Tide | Wind | Temp | Salin | Strat | Adv | Status | Class | Col |
|----------|-----------|-----------|------|------|------|-------|-------|-----|--------|-------|-----|
| | 26-May-09 | CREW | HF | S | 11 | 30 | R | W | O | A | <2 |
| | 29-Jul-09 | CREW | F | S | 15 | 30 | R | P | O | A | 4 |
| | 19-Aug-09 | CREW | E | CL | 20 | 31 | R | O | O | A | 4 |
| | 30-Sep-09 | CREW | E | SW | 15 | 26 | R | P | O | A | 68 |
| | 19-Oct-09 | CREW | HE | NW | 8 | 30 | R | P | O | A | <2 |
| EQ007.00 | 11-May-09 | CREW | HE | S | 7 | 30 | R | P | O | A | <2 |
| | 26-May-09 | CREW | H | S | 8 | 31 | R | X | O | A | <2 |
| | 29-Jul-09 | CREW | F | S | 12 | 31 | R | P | O | A | <2 |
| | 19-Aug-09 | CREW | E | S | 17 | 31 | R | O | O | A | <2 |
| | 30-Sep-09 | CREW | E | SW | 13 | 30 | R | P | O | A | 8 |
| | 19-Oct-09 | CREW | HE | NW | 9 | 32 | R | P | O | A | <2 |
| EQ008.00 | 11-May-09 | CREW | HE | S | 8 | 23 | R | P | O | A | 2 |
| | 26-May-09 | CREW | H | W | 8 | 30 | R | X | O | A | <2 |
| | 29-Jul-09 | CREW | F | CL | 15 | 30 | R | P | O | A | <2 |
| | 19-Aug-09 | CREW | E | CL | 17 | 32 | R | O | O | A | 2 |
| | 30-Sep-09 | CREW | E | SW | 15 | 28 | R | P | O | A | 12 |
| | 19-Oct-09 | CREW | HE | NW | 8 | 30 | R | P | O | A | <2 |
| EQ009.00 | 11-May-09 | CREW | HE | S | | 30 | R | P | O | A | <2 |
| | 26-May-09 | CREW | H | W | 10 | 31 | R | X | O | A | <2 |
| | 29-Jul-09 | CREW | F | S | 14 | 31 | R | P | O | A | <2 |
| | 19-Aug-09 | CREW | E | CL | 17 | 32 | R | O | O | A | 2 |
| | 30-Sep-09 | CREW | E | SW | 14 | 30 | R | P | O | A | 2 |
| | 19-Oct-09 | CREW | HE | NW | 8 | 32 | R | P | O | A | <2 |