

**2007**

**COMPREHENSIVE**

**SANITARY SURVEY**

**OF**

**ALABAMA'S AREA II**

**SHELLFISH GROWING WATERS**

**IN**

**MOBILE & BALDWIN COUNTIES**

Survey Dates: 2006-2007-2008

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Prepared by:  
Christine Collins

Maps, Charts and Graphs provided by:  
AL Dept. of Conservation and Natural Resources-Marine Resource Division,  
AL Dept. of Environmental Management, AL Dept. of Public Health-Mobile County/Baldwin County,  
Alabama Department of Public Health Seafood Branch, and AL Oil and Gas Board

Edited by:  
Toni Ackerson

Alabama Department of Public Health Seafood Branch  
Division of Food, Milk & Lodging  
4168 Commanders Drive  
Mobile, Alabama 36615

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## Definitions

**14/43 STANDARD** means the NSSP bacteriological water quality standard for fecal coliform bacteria for water approved for direct market of shellfish. The median or geometric mean shall not exceed 14 MPN/100 ml of water, and MPN values of water shall not exceed 43 MPN/100 ml more than 10% of the time.

**AMPC** means Above Management Plan Conditions. AMPC are those conditions when fecal coliform have historically been demonstrated to be elevated above the 14/43 as determined by regression analysis.

**APC** means Adverse Pollution Conditions. APC are those conditions when fecal coliform have historically been demonstrated to be elevated.

**APPROVED** is a shellfish harvesting area classification of the National Shellfish Sanitation Program for the harvest of shellfish for direct consumption. A survey indicates that the approved waters are removed from actual and potential pollution sources so that fecal material, pathogenic microorganisms, and poisonous or deleterious substances are not present in dangerous concentrations. At least fifteen of the most recent samples collected at each station during adverse pollution conditions are used to determine compliance with the 14/43 fecal coliform standard. An approved area must meet the 14/43 fecal coliform standard at all times the area is open to shellfish harvesting, including during adverse pollution conditions.

**CONDITIONALLY APPROVED** is a shellfish harvesting area classification of the National Shellfish Sanitation Program for the harvest of shellfish for direct consumption. A survey indicates that poisonous and deleterious substances are not present, microbiological pollution is intermittent and conditions associated with the release, persistence, and distribution of bacterial pollution are known. At least fifteen (THIRTY) of the most recent samples collected at each station during ALL TYPES OF SAMPLING conditions are used to determine compliance with the 14/43 fecal coliform standard. The survey must clearly demonstrate that the area will meet approved area classification criteria when the area is used as a source of shellfish for direct market.

**CONDITIONALLY RESTRICTED** is a shellfish harvesting area classification of the National Shellfish Sanitation Program. A survey indicates that the area is not so contaminated with concentration levels of poisonous, deleterious, or microbiological substances that shellfish consumption would not be hazardous following harvest and subsection to a suitable and effective treatment process of relay or depuration. Since bacteriological pollution is intermittent, the survey must define the conditions associated with release, persistence, and distribution of bacterial pollution. At least fifteen of the most recent samples collected at each station during adverse pollution conditions are used to determine compliance with the 88/260 fecal coliform standard. The survey must clearly demonstrate that the area will meet restricted area classification criteria when the area is used as a source of shellfish. Shellfish harvesting from conditionally restricted areas is allowed only by special license and requires State approved monitoring.

**DATE** means date that samples are collected.

**FC** means fecal coliform bacteria (MPN/100 ml for water, MPN/100 g for shellfish meat).

**FDA** means the U.S. Food and Drug Administration.

**HARVEST** means removing shellfish from shellfish harvesting areas and its placement on or in a manmade conveyance or other means of transport.

**ISSC** means the Interstate Shellfish Sanitation Conference.

**LOGFC** means log(base 10)-transformed fecal coliform value.

**ML** means milliliter.

**MPC** means Management Plan Conditions where fecal coliform have not been historically demonstrated to be elevated above the 14/43 STANDARD; as determined by previous analysis.

**MPN** means Most Probable Number. MPN is a statistical estimate of the number of bacteria.

**NSSP** means the National Shellfish Sanitation Program.

**PRODUCT-MOMENT CORRELATION** is a statistical procedure that measures the closeness of linear relationship between two variables.

**PROHIBITED** is a shellfish harvesting area classification of the National Shellfish Sanitation Program. A survey indicates that sampling results indicate fecal material, pathogenic microorganisms, or poisonous or deleterious substances are consistently or unpredictably present in dangerous concentrations, or the shoreline survey identifies actual or potential pollution sources of high magnitude which may affect the growing area. No shellfish may be harvested from prohibited areas for human consumption.

**RANK CORRELATION** is a statistical procedure that measures the degree of association between the ranks of two data sets, without considering magnitude of the data values.

**REGRESSION** is a statistical procedure that defines an equation of a line through a set of paired data points, such that the sum of the squares of the vertical distances from the data points to the line is minimized.

**RESTRICTED** is a shellfish harvesting area classification of the National Shellfish Sanitation Program. A survey indicates that the area is not so contaminated with poisonous and deleterious substances that the consumption of shellfish would not be hazardous after relaying and/or undergoing a controlled purification process. At least fifteen of the most recent samples collected at each station during adverse pollution conditions are used to determine compliance with the 88/260 fecal coliform standard. The bacteriological water quality of every station in the restricted area must meet the 88/260 standard. Shellfish harvesting from restricted areas is allowed only by special license and requires State approved monitoring.

**RIVER STAGE** means documented height of the Mobile River as gauged by the Army Corp of Engineers at Barry Steam Plant in Bucks, Alabama .

**SHELLFISH** means edible species of oysters, clams and mussels.

**SHELLFISH HARVESTING AREA** means the water extents of an area classified by the Alabama Department of Public Health's Administrative Code for the harvest of shellfish.

**SHORELINE SURVEY AREA** means the water and land extents where actual or potential pollution sources are determined to impact water quality of the shellfish harvesting area.

**TIDE** means the tidal stage when samples are collected.

**UNCLASSIFIED** is a shellfish harvesting area classification. Areas are designated Unclassified in the absence of a comprehensive shellfish harvesting area survey. No shellfish may be harvested for human consumption from Unclassified areas.

## INTRODUCTION – AREA II

Shellfish are an important aquatic species with great economic value. (appendix: Table I-1) Shellfish are filter-feeding mollusks usually found abundantly in Alabama's sub tidal coastal waters. One shellfish may filter up to 400 gallons of water per day while feeding. Shellfish retain and concentrate up to 100 fold much of the suspended and dissolved materials, including microorganisms, chemical contaminants, bacteria and viruses. They are passive vectors of enteric diseases, including typhoid, hepatitis and salmonellosis. Excluding the shell, the entire animal including the gastrointestinal tract is consumed. If contaminated, shellfish present a potential health hazard to the consumer since they are often eaten raw or partially cooked.

Alabama is a member of the Interstate Shellfish Sanitation Conference (ISSC), a cooperative, voluntary association of the states; U.S. Food and Drug Administration (FDA); National Marine Fisheries Services (NMFS); Environmental Protection Agency (EPA); and the shellfish industry. The ISSC meets every other year to develop and revise methods of shellfish sanitation for adoption by the Conference under guidance from FDA and the National Shellfish Sanitation Program (NSSP).

FDA's responsibilities include reviewing each state's shellfish control program to determine conformity with the NSSP. The FDA incorporates changes into the NSSP Model Ordinance, which defines the standards and guidelines used nationally for the classification of shellfish harvesting areas. NMFS and EPA responsibilities include acting as consultants to the ISSC.

State responsibilities include adopting laws and regulations for sanitary control of the shellfish industry, formulating comprehensive shellfish harvesting area surveys, conducting laboratory investigations, and adopting controls to ensure that shellfish are grown, harvested, and processed in a safe and sanitary manner. The Shellfish Sanitation Rules of the State Board of Health, Bureau of Environmental Services, Division of Food, Milk, and Lodging, Chapter 420-3-18, were revised and adopted on November 19, 2003 and became effective on December 25, 2003. The National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish, 2001 Revision, was simultaneously incorporated by reference and made a part of Alabama's Shellfish Sanitation Rules. These documents contain the criteria applied to Alabama's shellfish growing areas for classification and management purposes.

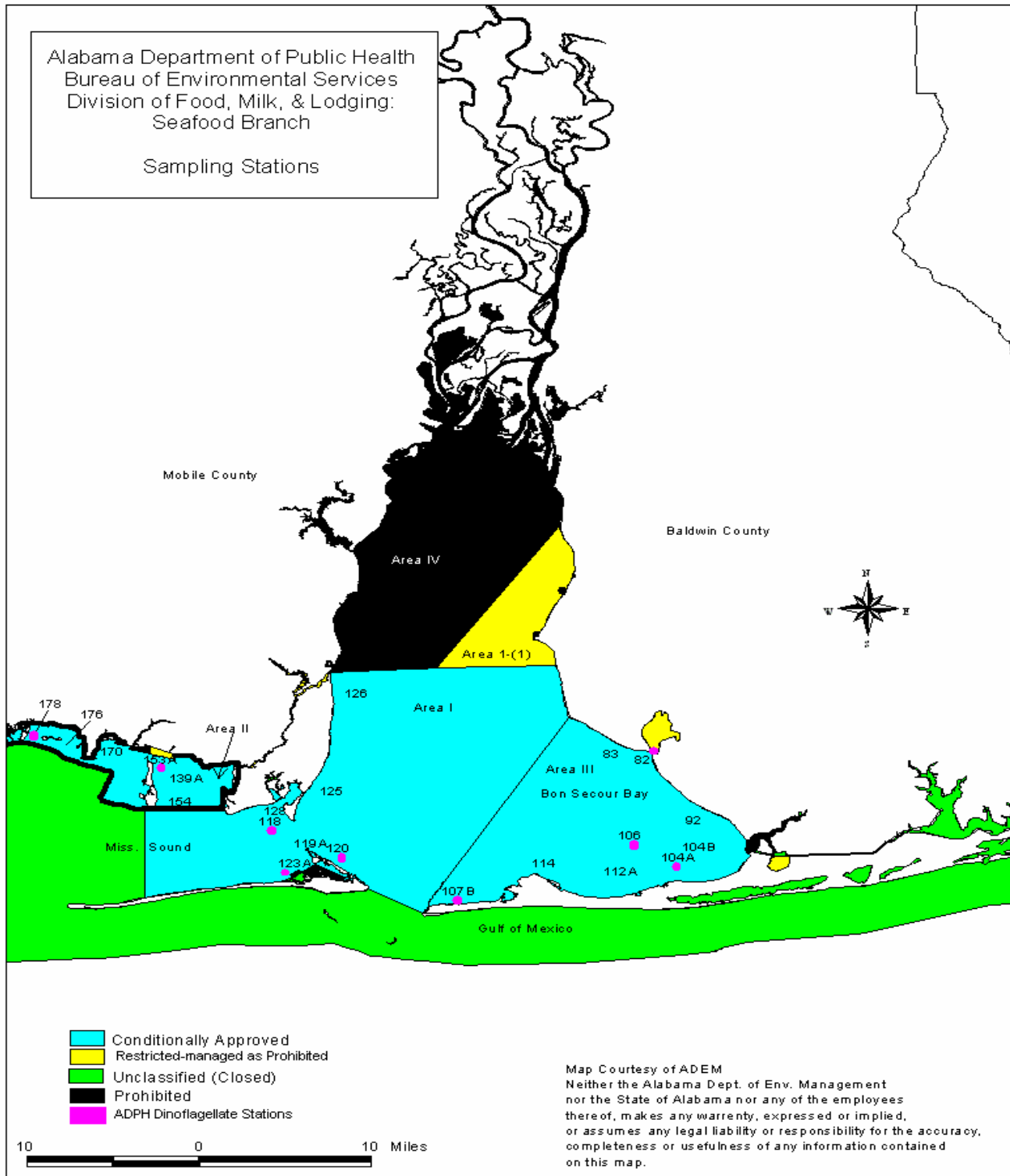
Shellfish industry's responsibilities include cooperating with control authorities by obtaining shellfish only from safe sources, maintaining sanitary operating conditions and practices, and keeping and making available to control authorities records documenting the origin and disposition of all shellfish.

This comprehensive survey is an evaluation and report of all environmental factors, including actual and potential pollution sources which have an impact on the water quality of the shellfish harvesting areas of the state of Alabama. It includes a shoreline survey, an evaluation of the effects of any meteorological, hydrodynamic, and geographic characteristics on the growing areas; a survey of bacteriological water quality, and an analysis of the data. It is the basis for the classification and management of the area as conditionally approved. This classification has been in effect since 1992 and remains the same as a result of routine updates, reviews, and incorporated evaluations of recent information. This survey will be updated through triennial evaluation and an annual review to assure that the data is current and the classifications remain appropriate. This survey will expire and another complete survey will be performed within twelve years.

## CHAPTER II.A. DESCRIPTION OF GROWING AREAS

There are four designated Alabama shellfish growing areas in Mobile Bay; Area I which includes Area I-1 (classified Restricted and managed as Prohibited), Area II, Area III, and Area IV (classified as Prohibited),

### LOCATION MAP SHOWING GROWING AREAS





## II.B. DESCRIPTION OF AREA II

**Area II** is designated **Conditionally Approved**. Area II includes that portion of Portersville Bay and Grand Bay north of a line extending from Barron Point westward to the southern most tip of Isle Aux Herbes (Coffee Island), then westward to Marker No. "17" at the Bayou La Batre Ship Channel, then northward to Marker No. "22" at the Bayou La Batre Ship Channel then westward to the Alabama-Mississippi Line.

### CLASSIFICATION EXCEPTIONS TO AREA II

1. All of Bayou La Batre and that portion of adjoining waters bordered by a line 1,000 feet west of and parallel to a line extending from the mouth of Bayou La Batre to BC Marker then extending due east to the BC Marker, then along the southern boundary of the Bayou Coden Channel to a point due south of Niolon Lane, and then extending due north to a point on the beach at the south end of Niolon Lane. This portion of Area II is designated Prohibited.
2. All of Bayou Coden and that portion of adjoining waters bordered on the east by a line 1,000 feet east of and parallel to a line extending from the mouth of Bayou Coden southward to Marker No. "8", then extending westward to Marker No. "8", then along the southern boundary of the Bayou Coden Channel to a point due south of Niolon Lane, and then extending due north to a point on the beach at the south end of Niolon Lane. This portion of Area II is designated Restricted.
3. That portion of West Fowl River east of Channel Marker 28. This portion of Area II is designated Prohibited.

## **II.C. CLASSIFICATION HISTORY - GROWING AREA II**

The conditional management plan for Area II is based on determinations made from regression analysis performed in 1991. A conditional management plan document entitled *A Management plan for Area I and II of Mobile Bay*, dated July 26, 1991 describes how the eight foot river stage at the Barry Steam Plant on the Mobile River was selected to be the management criteria. Data used in this document to classify Area II came from bay water samples collected from the original Area I-C and I-E (now Area II) during the period from 1978-1991. A total of 295 samples were collected during all river stages and that data was analyzed for the relationships between fecal coliform counts, and high and low river stages, which reflected predictive positive probability conditions of high fecal coliform counts (defined as  $\geq 14$ ) existing when high river stages (defined as  $> 8$ ) were present.

Conditional management plans are required to include performance standards, discussions, and data supporting these performance standards. The performance standards are the environmental conditions identified for the closure and reopening of the growing area. Water and/or oyster sample results are compared to performance standard levels, which in turn, results in the appropriate action being taken, closure or subsequent reopening of the harvest area.

Other criteria for area closures included any pollution source(s) causing the performance standards to fall below acceptable limits, whether it be fecal coliform, marine biotoxins, or other deleterious substances.

The original survey was conducted by the Alabama Department of Public Health Seafood Branch on July 26, 1991. This survey superceded a November 20, 1990 fecal coliform monitoring plan. The 1991 survey resulted in the present conditional management plan where closure (for predictive high fecal samples being  $> 14$ ) was based on river stage (reaching eight feet at Barry Steam Plant). Annual and Triennial Reevaluation sanitary survey update reports based on the *NSSP Model Ordinance* requirements are on file with ADPH Seafood Branch (1995-2006). The previous total comprehensive sanitary survey of Mobile Bay's shellfish growing waters was complete in 1992.

## **II.D. GENERAL AREA MANAGEMENT PLAN – GROWING AREA II**

Temporary closures for Conditionally Approved harvest areas are based on trigger points which are representative of conditions that exist when shellstock are most probably unsafe for human consumption. The present management plan closes a shellfish harvesting area during any of the following conditions: 1) when there is discharge or spillage of any substance that is considered hazardous to public health, 2) when there is the presence of biotoxins in concentration levels deemed to be detrimental to the public health, 3) when the stage of the Mobile River reaches eight (8) feet at Barry Steam Plant, Bucks, Alabama as measured and reported by the Army Corps of Engineers, Mobile District Water Information Center, or 4) any other event such as a tropical storm, hurricane, tidal surge, etc. that could pose any significant potential public health threat. Closures resulting from discharges or spillage of hazardous substances and unusual weather events (tropical storms, hurricanes, heavy rains greater than 5 inches) are defined as Emergency Closures.

## **II.E. PROCEDURES FOR CLOSURE – GROWING AREA II**

1) Hazardous discharge or spillage of any substance which could adversely affect shellfish growing waters would be reported to the Seafood Branch by one of the following agencies: Alabama Dept. of Environmental Management (ADEM), the U.S. Coast Guard, or the U.S. Army Corps of Engineers. ADPH-Seafood Branch would then notify ADPH-Montgomery who would actually issue the *Closure Order*. ADPH-Seafood would then contact ADCNR-MRD (who would physically enforce the *Closure Order*), Alabama's

FDA Shellfish Specialist, the Baldwin and/or Mobile County Health Department, and the ISSC. All correspondences will transpire through contacts made by telephone, fax, radio, and/or email. ADPH will continue to answer any phone calls from the general public about the closure.

2) The presence of harmful biotoxins in shellfish growing waters and/or oysters would be reported by ADPH Mobile Laboratory according to the procedures in the Alabama Harmful Algal Bloom Response Plan 2008. The lab results would be distributed to State, Local, and Federal Agencies. Once ADPH-Seafood Branch and ADPH-Central Office receives results of probable biotoxin contamination, they both would coordinate to prepare for further event monitoring and proceed to area closure protocol. All correspondences will transpire through contacts made by telephone, fax, radio, and/or email. ADPH will continue to answer any phone calls from the general public about the closure.

3) Whenever the Mobile River stage nears 8', particularly during a heavy rain event (according to the U.S. Army Corps of Engineers' web-page or phone information line), ADPH-Seafood will continue to monitor the river stage. The Seafood Branch notifies ADCNR-MRD that the river stage is nearing 8' and probable closure is likely. If the river stage reaches 8', ADPH issues a *Closure Notice* and *Order*, and contacts ADCNR-MRD by telephone, fax, or radio, so they can enforce the order. Also, Alabama's FDA Shellfish Specialist, the Baldwin and/or Mobile County Health Department, and the ISSC are notified about the closure. ADPH makes public closure notifications via media outlets, phone communications, and a press release posted on the ADPH web page. The Seafood Branch will continue to answer any phone calls from the general public about the closure.

4) A severe tropical storm or hurricane in the region necessitates the monitoring of NOAA's weather services. A *Closure Order* is issued whenever there is a *Hurricane Warning* or *Mandatory Hurricane Evacuation Order* issued by the State. ADPH notifies ADCNR-MRD by telephone, fax, or radio and then issues a *Press Release* and *Closure Order*. The Alabama FDA Shellfish Specialist, local health departments and the ISSC are notified by phone, fax, or email. ADPH will continue to answer any phone calls from the general public about the closure.

## **II.F. PROCEDURES FOR REOPENING – GROWING AREA II**

1) The area is sampled by the Seafood Branch. When fecal coliform or deleterious sample results drop to safe levels, and an examination of the environmental conditions determines the pollution event has ended, and that sufficient time has elapsed to have allowed for the area and the resident shellfish to flush pollutants, (according to Alabama's Guide for the Control of Molluscan Shellfish and the NSSP Model Ordinance guidance documents), the harvesting area will be reopened (appendix Table II-2). A *Press Release* and *Open Order* will be issued by ADPH-Central Office and/or ADPH-Seafood Branch who will also notify the FDA Shellfish Specialist, the ISSC, and the mayor of Bayou La Batre via phone, fax or email. For enforcement reasons, ADCNR-MRD will be notified by phone, fax, or email prior to the reopening order being issued. ADPH will continue to answer any phone calls from the general public about the reopening.

2) Following a Harmful Algal Bloom event, the harvesting waters will be reopened after the area is sampled by the Seafood Branch and the following criteria has been met: the performance standards established in the management plan are again fully met (see Alabama HAB Response Plan, Version 6.08.02 on file); the flushing time for dissipation of the bloom is adequate; a time interval has elapsed which is sufficient to permit reduction of the toxic concentration levels which will be exhibited by shellfish sample results and mouse bio-assays. A *Press Release* and *Open Order* will be issued by ADPH-Central Office and/or ADPH-Seafood Branch who will also notify the FDA Shellfish Specialist, the ISSC, and the mayor of Bayou La Batre via phone, fax or email. For enforcement reasons, ADCNR-MRD will be notified by phone,

fax, or email prior to the reopening order being issued. ADPH will continue to answer any phone calls from the general public about the reopening.

3) ADPH-Seafood Branch monitors the Army Corps of Engineers web page for current and predicted river readings. When the Mobile River Stage falls below 8', which is shown by previous studies to be enough allowable time for shellfish to properly purge, ADPH-Seafood samples the shellfish growing area. If the sample results show that the 14/43 fecal coliform standard is met, the harvest area will be reopened. A *Press Release* and *Open Order* will be issued by ADPH-Central Office and/or ADPH-Seafood Branch who will also notify the FDA Shellfish Specialist, the ISSC, and the mayor of Bayou La Batre via phone, fax or email. For enforcement reasons, ADCNR-MRD will be notified by phone, fax, or email prior to the reopening order being issued. ADPH will continue to answer any phone calls from the general public about the reopening.

4) The reopening procedure for a *Hurricane Closure* begins once the warning and evacuation warnings have expired. The U.S. Coast Guard will first open the bay for boat traffic. Then ADPH will conduct seawater and shellfish sampling in the growing area. If the seawater sample results show that the 14/43 fecal coliform standard is met, and the shellfish sample results show that the shellfish meet the average fecal coliform level in the shellfish prior to the emergency closure the harvest area will be reopened. A *Press Release* and *Open Order* will be issued by ADPH-Central Office and/or ADPH-Seafood Branch who will also notify the FDA Shellfish Specialist, the ISSC, and the mayor of Bayou La Batre via phone, fax or email. For enforcement reasons, ADCNR-MRD will be notified by phone, fax, or email prior to the reopening order being issued. ADPH will continue to answer any phone calls from the general public about the reopening.

## **II.G. CLOSINGS AND OPENINGS-AREA II**

**2007 – Closed 4 working days**

**2006 – Closed 24 working days**

**2005 – Closed 54 working days**

**2004 – Closed 40 working days**

**2003 – Closed 68 working days**

**2002 - Closed 15 working days**

**2001 – Closed 39 working days**

**(For details see Appendix table II-2)**

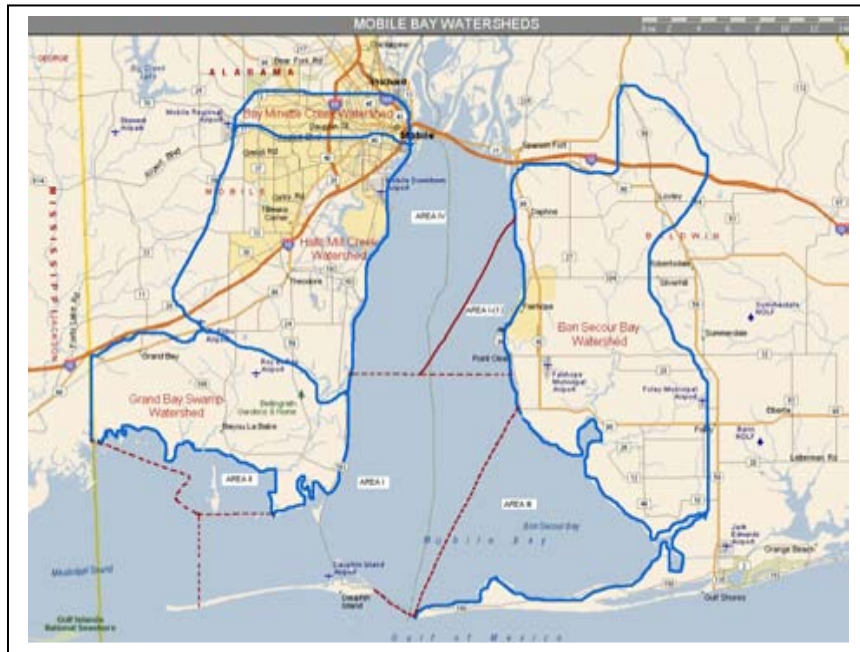
## CHAPTER III. POLLUTION SOURCE SURVEY - AREA II

Shellfish harvesting areas classified as approved, conditionally approved, restricted, or conditionally restricted must be sufficiently removed from sources of pollution in order to prevent the harvest of potentially contaminated shellfish. The results of geographic surveys, pollution source surveys, and hydrographic surveys complement water quality studies in developing classifications. Drainage patterns, pollution source locations, and water circulation are evaluated to establish water quality stations. Water quality sample results are generally useful in characterizing the effects of actual and potential point and non-point pollution sources. However, certain conditions, such as the discharge of human waste from boats in marinas or interruption in chlorination of wastewater treatment plant effluent, warrant classifications based primarily or exclusively on pollution source survey results.

The impact as direct or indirect was identified for pollution sources adversely impacting the growing area. A pollution source having direct impact was defined as any waste discharge which has immediate impact on the growing area. A pollution source having indirect impact was defined as any waste discharge which lacks immediate impact on the growing area, because the waste discharge reaches the growing area in a roundabout way.

The pollution source survey for Growing Area II was conducted on August 22, 2008 by Seafood staff personnel, Jeff McCool and Chris Collins.

(Drainage Systems)



### A.1. Domestic Wastewater Treatment Plants

### A.2. Septic Systems

### A.3. Marinas and Moorings

### A.4. Marine Biotoxins

### A.5. Gas Platforms

### III.A.1. DOMESTIC WASTEWATER TREATMENT PLANTS – AREA II

There is one domestic wastewater treatment plant (WWTP) located in Area II which does have an established prohibited zone around the outfall. The Alabama Department of Environmental Management (ADEM) is responsible for monitoring this plant and all other sewage treatment plants in Alabama.

The impact of the domestic wastewater plant (WWTP) system on the shellfish harvesting area was evaluated which included the WWTP collection system, the plant’s design and operational practices, and its effluent and sludge disposal abilities. In the rare event that a tropical storm or hurricane causes coastal flooding or interruptions in lift station functions, electronic warning notifications are issued through the Mobile and Baldwin County Health Departments and/or ADEM giving the exact location and amount of sewage released into what area so that emergency closures of the growing area is applied appropriately.

The Bayou La Batre WWTP was inspected by ADEM on May 21, 2008. Results of site evaluations and monthly operating reports are summarized in the following table and inventory sheet.

WWTP	Flow MGD	Type	Disposal	Impact
Bayou La Batre	1.00	Secondary	Outfall	*Some

\*Raised fecal coliform levels on portions of the shellfish harvesting area during heavy or elongated rain events even when the river stage is below 8'



EXISTING WASTEWATER TREATMENT FACILITIES INVENTORY  
SOUTH ALABAMA REGION

COUNTY: Mobile  
DATE OF SURVEY: 5/21/08  
NPDES PERMIT NO.: AL0022632

GENERAL INFORMATION

FACILITY: Bayou La Batre WWTP  
PHYSICAL ADDRESS: 14601 Shell Belt Rd.  
MAILING ADDRESS: 13321 North Watzell Ave. 36509  
PRIMARY CONTACT PERSON: Marlin Johnson  
PHONE: (251) 824-2172  
LOCATION (LATITUDE/LONGITUDE): \_\_\_\_\_  
EXISTING DEMAND (MGAL/DAY): 0.5  
EXISTING CAPACITY (MGAL/DAY): 1.0  
AREA SERVED: Bayou La Batre  
TOTAL NUMBER OF CUSTOMERS: 948  
RESIDENTIAL: \_\_\_\_\_  
NON-RESIDENTIAL: \_\_\_\_\_  
TYPE OF TREATMENT: Secondary  
METHOD OF SLUDGE DISPOSAL: Class B Land application Mobile + Baldwin Counties  
EFFLUENT RECEIVING WATERS: Portersville Bay  
TREATMENT SYSTEM PROBLEMS/FUTURE PLANS:  
Construction of a brand new wastewater treatment plant  
is expected in the near future.



### III.A.2. SEPTIC SYSTEMS – AREA II

The impact of septic systems on the shellfish harvesting area has been evaluated yearly. The most recent physical shoreline survey was conducted on August 22, 2008 by Seafood staff personnel, Jeff McCool and Chris Collins.

Soil suitability is of major importance for septic systems to function adequately. Some areas of the shoreline have severe limitations for treatment of waste in their drain fields. These soil conditions indicated that the capacity for disposal of domestic waste is limited. The Mobile County Health Department (MCHD) is responsible for evaluating the lots with severe limitations. The on-site treatment systems are designed and certified by a registered engineer prior to any new system being installed or for any repair of an existing system. The attached report indicates MCHD's information log about the on-site systems located in the Area II shoreline.

Septic systems were identified as either having a direct impact if the septic system discharged directly to the surface water of the area or an indirect impact if the property serviced by a septic tank was within 100 feet of the shoreline area. The majority of the on-site systems were more than a 100 feet from the shoreline. Much of the area surveyed was well removed from shellfish growing resources or on sanitary sewer or not inhabited at all.

The August 22, 2008 shoreline survey of Portersville Bay Area II, along Coden Beach Road, included 17 houses and 3 mobile homes, all of which had indirect pollution sources consisting of private septic tanks that had field lines running away from the shoreline and behind the residences. Likewise, the section of Shellbelt Road off of Niolin Road along Portersville Bay, included 12 houses and 9 mobile homes serviced by private septic tanks.

In summary, the septic systems in the shoreline survey present a potential source of fecal coliform bacteria which could enter Growing Area II. Groundwater may contribute fecal coliform bacteria from waterfront septic systems functioning properly as well as storm water may contribute fecal coliform bacteria from failing septic systems. However, bacteriological sample results taken by the MCHD and the ADPH-Seafood Branch have not shown any problems.

Number of waterfront septic systems

Type	Direct	Indirect
Single family residences	0	41
Businesses	0	0





## AREA II SEPTIC SYSTEMS

Mobile County Watersheds													
Watershed Name	County Acres	Acres in Watershed	Estimated Number of Households or Businesses in Watershed	Is Entire Watershed Sewered?	If NOT, Est. % of HH or Bus on Managed Sewer Systems	Est. No. on Sewer	Est. No. NOT on Sewer	Est. % of non-sewered HH or Bus with Improper Onsite Disposal	Est. No. of Improper Onsite Systems	Est. No. of HH or Bus on Advanced Systems	No. of HH or Bus on Rural Water Supply	Est. No. of Private Wells	Water Tests Provided through ADPH in this County
Bay Minette Creek	1,004,912	26,343	11,453	Yes	0	11,453	0	0	0	0	0	0	Bacteria
Halls Mill Creek	1,004,912	116,141	79,566	Yes	0	79,566	0	0	0	0	0	0	Bacteria
Grand Bay Swamp	1,004,912	57,436	500	No	10	643	5,783	10	578	180	0	0	Bacteria

### III.A.3. AREA II MARINAS AND MOORINGS



The impact of marinas and moorings on the shellfish harvesting area was evaluated. The distance of classification boundaries from marinas was determined to provide for the reduction of fecal coliform to safe levels from a hypothetical discharge of human waste from boats in marinas and moorings in the shoreline survey area. A prohibited buffer zone was defined in the vicinity of each marina where fecal coliform from the hypothetical discharge exceeded 14 MPN/100 ml.

The hypothetical discharge assumed that there were two people per boat and the contribution of fecal coliform was  $2 \times 10^9$  fecal coliform per person per day. Unless the number of boats capable of discharging waste from marine sanitation devices was quantified, full occupancy of all slips in the marina was assumed.

Impacts for the marinas and moorings were determined by dilution analysis calculations. For buffer zones determined by calculation, the hypothetical discharge of fecal coliform in human feces from boats in the marina was assumed to mix uniformly into the volume of water in the marina and vicinity. The resulting buffer zones provide sufficient reduction in fecal coliform such that any discharge from marinas and moorings has no impact on the shellfish harvesting area.

This basic FDA marina buffer zone formula was used:

$$\text{Volume} = \frac{(\text{Boat occupancy})(\text{fecal coliform contribution/person/day})(\text{Number of boats or wet slips})}{(14 \text{ MPN}/100 \text{ ml}) (283.1605 \text{ dl}/\text{cubic feet})}$$

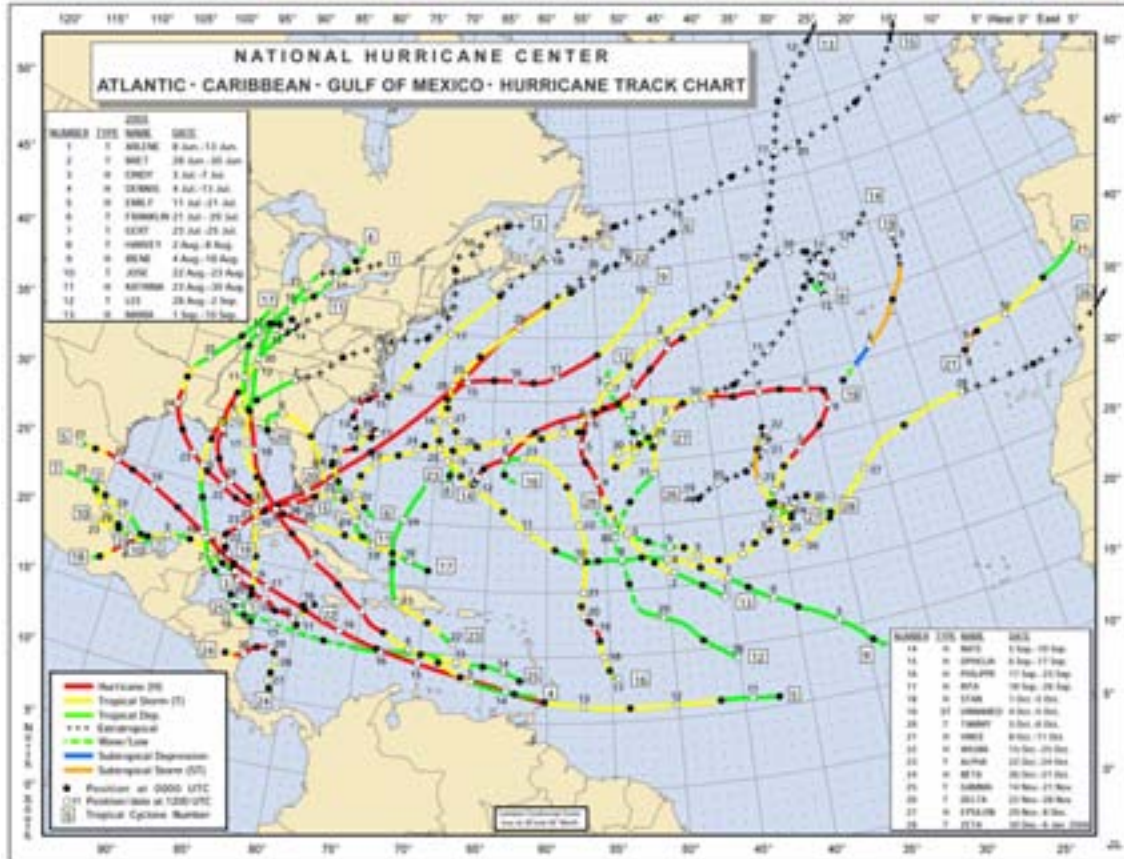
$$\text{Radius} = \text{Square root}((180^\circ/\text{Shoreline angle})(V \text{ cubic feet})/(3.14)(\text{Water depth in feet}))$$

NAME OF MARINA	NUMBER OF SLIPS OR BOATS	PUMP-OUT	FUELING	SHORE-LINE ANGLE (DEGREES)	MEAN WATER DEPTH	MINIMUM BUFFER ZONE VOLUME (CUBIC FEET)	MINIMUM BUFFER ZONE RADIUS (FEET)
Bayou La Batre Bayou Moorings	180	No	No	180	18'	450,000,000	4.007
	PEOPLE PER BOAT						
	5						

### III.A.4. HURRICANES

The Alabama coastal area was not affected by the 2007, 2006, 2003, 2002, 2001, 2000, 1999, Atlantic Hurricane storm seasons.

#### 2005 Atlantic Hurricane Season

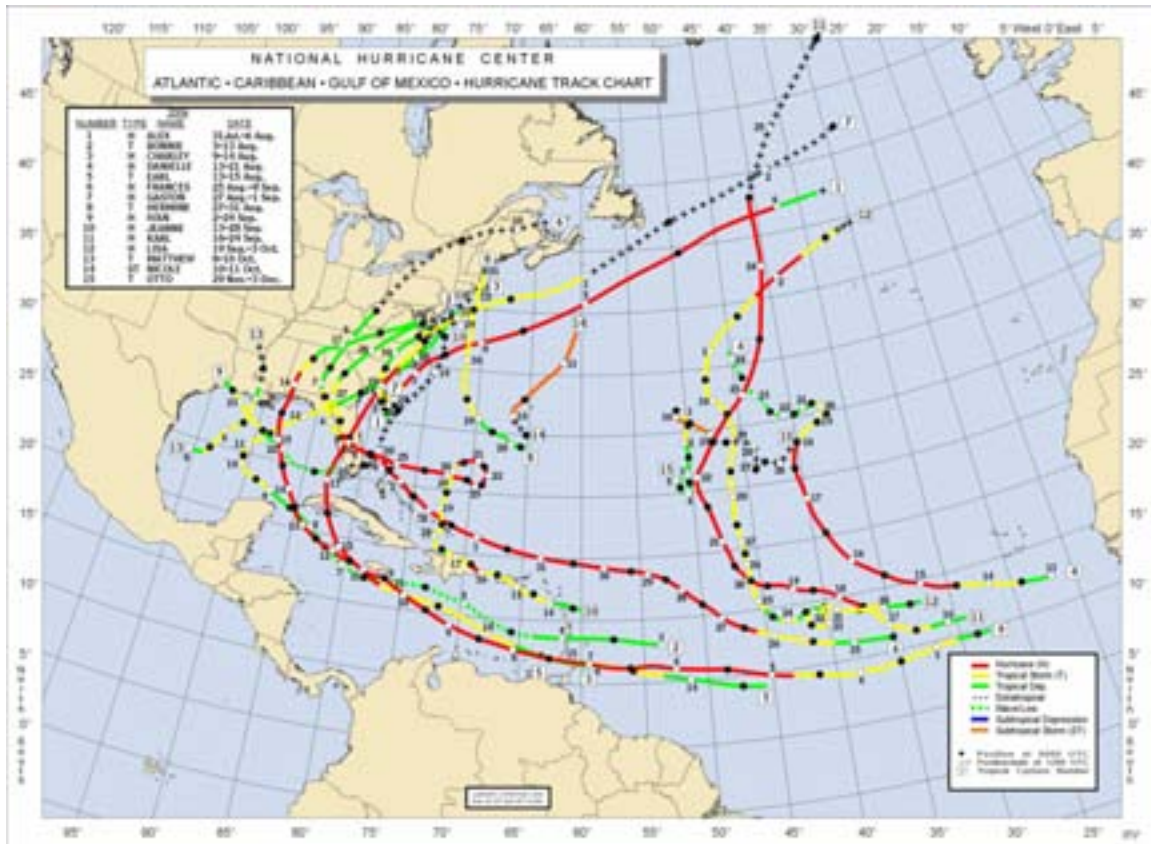


July 10, 2005 - Hurricane Dennis was the fourth named storm, first hurricane, and first major hurricane of the 2005 Atlantic Hurricane Season. Dennis made landfall as a Category 3 hurricane (wind speed 120 mph) at Santa Rosa Island, between Pensacola and Navarre Beach, Florida. Damage was lessened due to the fast forward movement and hurricane force winds extending only 40 miles from the center of the storm. Alabama coastal counties received minimal damage. Shellfish harvesting was ordered closed as a precautionary measure and reopened after it was determined growing waters met required standards.

August 25, 2005 – Hurricane Katrina first made landfall just north of Miami, Florida as a Category 1 hurricane (wind speed 90 mph.) Katrina then moved into the Gulf of Mexico and made landfall August 29, 2005 as a Category 4 hurricane (wind speed 145 mph) near the Louisiana and Mississippi state line. Katrina was the most destructive and costliest natural disaster in the history of the United States. This was not only due to wind speed but more so with the 30 foot storm surge. Mobile and Baldwin counties of Alabama

experienced a 15 foot storm surge, the highest recorded since 1917. Homes and businesses located on the immediate coast received major damage. The majority of the seafood processors were badly damaged or destroyed; however, most have been repaired or rebuilt and are permitted to operate. Shellfish harvesting was ordered closed as a precautionary measure and reopened after determining growing waters met required standards.

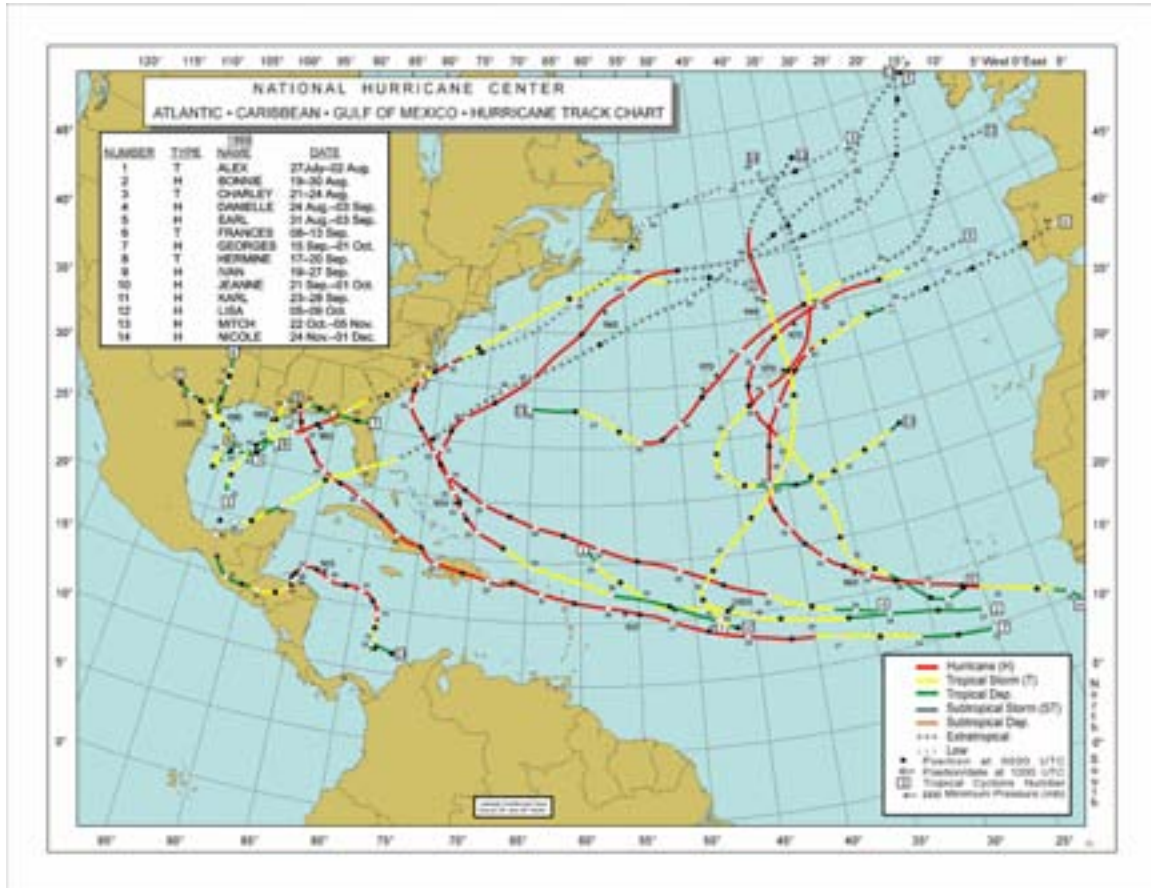
## 2004 Hurricane Season



September 16, 2004 – Hurricane Ivan was the strongest hurricane of the 2004 Atlantic hurricane season. Just before landfall near Gulf Shores, Alabama, Ivan’s eye wall weakened considerably to a Category 3 hurricane (winds 120 mph.) Ivan’s storm surge of 14 feet high with high surf and wind brought extensive damage to Orange Beach and Gulf Shores. Evacuation in the areas of Mobile and Baldwin counties south of Interstate 10 was ordered, including a third of the incorporated territory of the City of Mobile. The heaviest damage as Ivan made landfall on the U.S. coastline was observed in Baldwin County, which lies east of Alabama’s shellfish growing areas and most of Alabama’s seafood processing facilities.



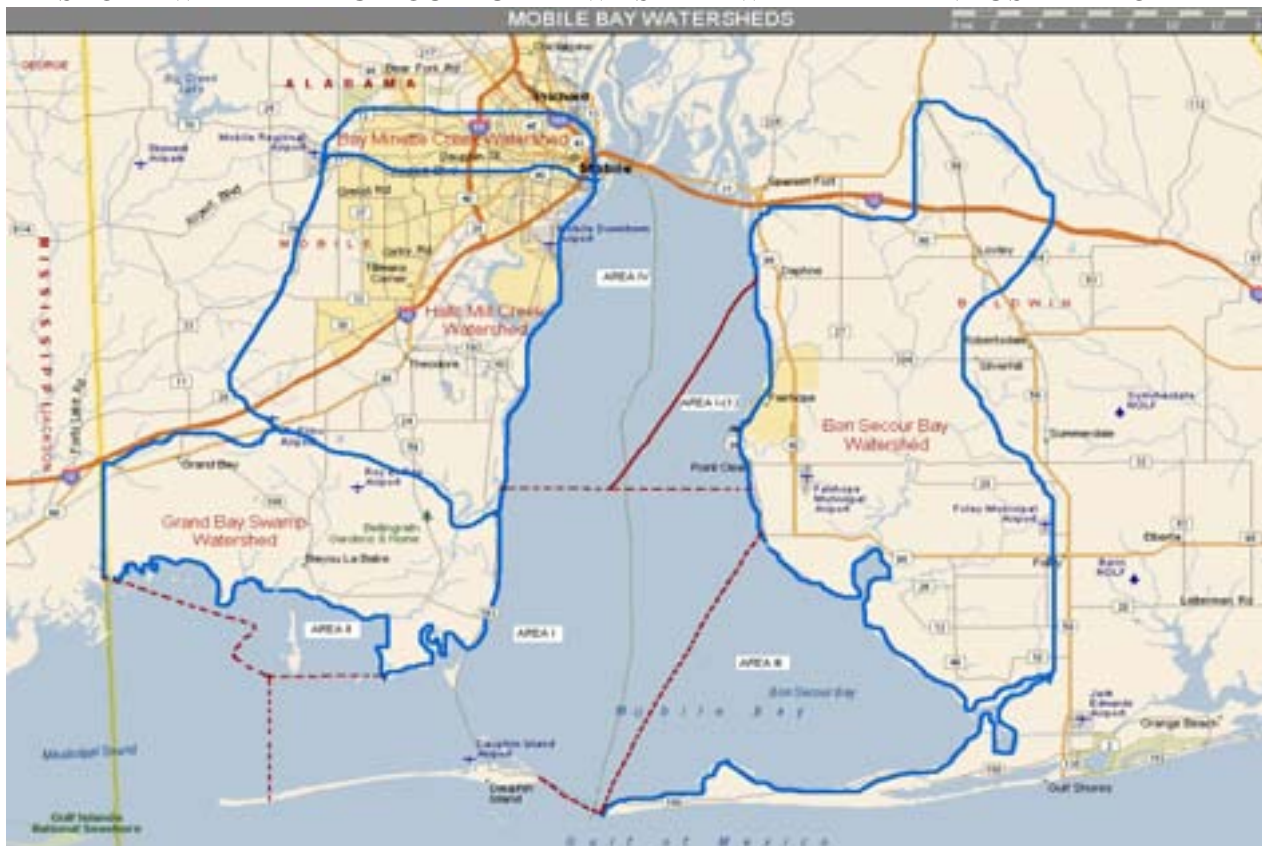
## 1998 Hurricane Season



September 26 – 30, 1998 – Hurricane Georges made landfall on the central Gulf Coast near Biloxi, Mississippi. The Alabama coastline received winds in excess of 90 mph, and a storm surge between 5-12 feet. In Bayou La Batre and Coden, Alabama, many seafood processing facilities were severely flooded. The roads leading into Bayou La Batre and Coden were officially opened to traffic September 30, 1998. Shellfish harvesting was ordered closed as a precautionary measure and reopened after determining growing waters met required standards.

## AREA II

### STORMWATER - AGRICULTURAL WASTE - WILDLIFE - INDUSTRIAL OPERATIONS



#### III.A.4. Storm water-Area II

The impact of storm water on the shellfish harvesting area was evaluated. There is no treatment of storm water runoff in the study area. The area receives runoff from a few tidal creeks and man-made canals that discharge into the area.

The main drainage basin for this area is the Grand Bay Swamp Watershed.

No additional storm water discharge structures have been installed since the 2000 pollution source survey. With the exception of routine cleaning of drainage ditches, no significant alterations have been made that would require a different area classification than that of being Conditionally Approved.

#### III.A.5. Agricultural Waste-Area II

Impacts of agricultural operations on the shellfish harvesting area were evaluated. There are no domestic farm animals in the study area.

#### III.A.6. Wildlife Areas-Area II

The impact of wildlife on the shellfish harvesting area was evaluated. Wildlife populations throughout the study area have not significantly changed since the 2003 pollution source survey. No additional wildlife areas or preserves have been designated within the study area.

Abundant wildlife along the shoreline of the study area has the potential to increase fecal coliform in the nearshore waters of the shellfish harvesting area. Bacteriological sampling stations are located throughout the shellfish harvesting area in order to monitor the direct and indirect impacts of wildlife. No wildlife impact was noted.

#### III.A.7. Industrial Operations-Area II

There are no industrial waste discharges in the study area.

## AREA II

### III.A.8. MARINE BIOTOXINS

*Karenia brevis* is a toxic dinoflagellate associated with Gulf Coast saltwater fish kills, neurotoxic shellfish poisoning, and an airborne irritant in sea spray, that can cause respiratory discomfort in humans and other animals. The phenomenon, known as "red tide," occurs when *K. brevis* concentrations increase above normal background levels of 1,000 cells/liter. Red tide concentrations above 250,000 cells/liter can cause fish kills. Concentrations as low as 5,000 cells/liter may cause shellfish to become toxic if the animals are exposed over long periods of time. Shellfish become toxic by feeding on dinoflagellates and absorbing toxin into their digestive tissues. Toxic shellfish may cause illness in humans and other animals when ingested.

Shellfish harvesting areas are closed when *K. brevis* concentrations exceed 5,000 cells/liter. Field studies indicate that shellfish may retain toxicity for two to four weeks; therefore, after *K. brevis* concentrations return to normal in the water, shellfish meats must be tested for toxicity before the area may be reopened to shellfish harvesting. The Alabama Harmful Algal Bloom Response Plan 2008, Version 6.08.02, and the Contingency Plan for Control of Shellfish Potentially Contaminated by Marine Biotoxins, are on file at the ADPH-Seafood Branch office and explain the procedures used in greater details.

For the first time in history, all shellfish growing waters in Mobile Bay were closed for shellfish harvesting on November 10, 1996 due to the presence of Red Tide (then *Gymnodinium breve*). During November there were 85 bay water samples and 33 bay shellfish samples collected and analyzed for the presence of *G. breve* and biotoxins. The samples met the required standards to allow shellfish harvesting to resume on December 6, 1996.

The second Red Tide event in Alabama's history began in the coastal waters of northwest Florida and was transported by the Gulf of Mexico counter-current into coastal waters of Alabama in September, 1999. Red Tide organisms were first noted in September of 1999 at Fort Morgan. Very low numbers of the organisms appeared from Gulf Shores east to Fort Morgan into October. *G. breve* was detected in some shellfish growing waters, however, well below action levels. Monitoring of gulf waters and shellfish waters continued. Samples collected October 17, 1999 showed substantial increases at Gulf Shores State Park and the West end of Gulf Shores. Counts had moved from a low range to a medium range. Shellfish growing water samples showed no presence of the Red Tide organism. On November 9, *G. breve* was detected in some shellfish growing waters, again well below action levels. Samples collected on November 15 and November 23 showed no red tide organisms at Gulf Shores or Mobile Bay.

On October 3, 2005 low levels of *Karenia brevis* were detected at Gulf Shores and Orange Beach in Alabama. The bloom started in the coastal waters of northwest Florida and was transported by the Gulf of Mexico counter-current into coastal waters of Alabama. Sampling sites were expanded to include shellfish growing waters, and testing increased from monthly to biweekly. On October 5, 2005 levels on beaches had reached medium levels. No shellfish growing waters exceeded standards for closure. On October 17, 2005 one sample site in shellfish growing water Area II had levels of 29,000 cells per liter. The area was immediately closed to shellfish harvesting. Samples collected in Area II, October 20 and 25, showed very low levels or no *Karenia brevis*. Shellfish were also collected for toxin analysis, and after none was found, the area was reopened for shellfish harvesting. Levels at beaches were also very low, and sampling was returned to routine status.

The most recent *K. brevis* bloom in Alabama's coastal waters occurred from October 2007 through January 2008. Samples with concentration levels above the 5,000 cells/liter action level, ranging from 7,000 cells/liter to 2,100,000 cells/liter, were collected in swimming waters along Fort Morgan's beaches and the Bon Secour Bay coastline in Baldwin County. Some sample points were adjacent to and a few within the Area III oyster harvesting area. On October 19, 2007, when cell concentrations climbed to 2,400 cells/liter at Ft. Morgan Ferry Landing near Sample Station 107B, (maximum *K. brevis* concentrations at this sampling station rose to 34,000 cells/liter), ADPH took the precautionary measure of closing Area III to shellfish harvesting. Cooperative sampling, monitoring, and reporting were performed by these state agencies: AL Department of Environmental Management (ADEM), ADEM's beach monitoring program, AL Department of Conservation and Natural Resources-Marine Resources Division (ADCNR-MRD), AL Department of Public Health (ADPH-Mobile County and Baldwin County), AL Department of Public Health-Seafood Branch (ADPH-Seafood), and AL Department of Public Health Lab (ADPH-Lab). The closure remained in force from October 23 through February 19, 2008. Final toxin analysis and mouse bioassay for shellfish testing was performed by Florida Fish and Wildlife Research Institute. (appendix: Table III-2)

ADPH ROUTINE DINOFLAGELLATE TESTING  
MOBILE BAY - AREA II

DINOFLAGELLATE RESULTS 2007

DINOFLAGELLATE RESULTS 2006

DINOFLAGELLATE RESULTS 2005

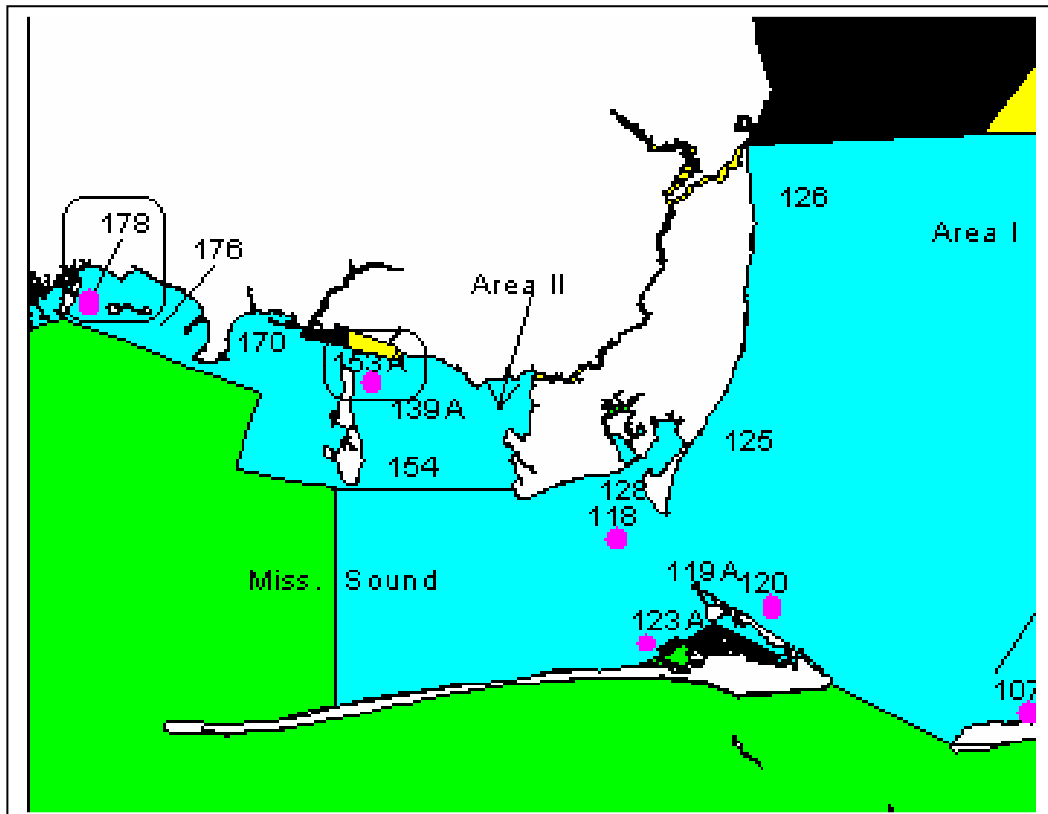
DINOFLAGELLATE RESULTS 2004

DINOFLAGELLATE RESULTS 2003

DINOFLAGELLATE RESULTS 2002

DINOFLAGELLATE RESULTS 2001

(appendix: Table III-3)





# MOBILE BAY, ALABAMA AREA MAP



- Shipping fairways
- Bay pipelines
- EXXON
- LEGACY
- MOBIL
- OTHERS
- SHELL
- Plant locations
- OCS pipelines
- OCS platforms
- Mobile Bay wells
- Mobile Bay platforms
- Field Boundaries
- Mississippi Lease Blocks
- Islands
- State Lease Blocks
- OCS Lease Blocks
- Manned N



By  
Henry E. Moore, Jr.

Mobile Bay, Alabama

STATE OF ALABAMA

OIL AND GAS BOARD

## NATURAL GAS PLATFORMS

There are a total of eight natural gas platforms located within the conditionally approved harvesting waters of Alabama. Six are located in Area I (on map: #1, #5, #6, #7, #8 and #9). There are no platforms in Area II and two platforms in Area III (on map: #3 and #4).

### AREA I

- The North Dauphin Island Platform (#1) was de-manned in April of 2008. The platform is now used only as a metering station for gas storage fields.
- The unmanned Goose Bayou Field Platform (#2) was removed by Legacy in 2005 and moved to Area III, Saxon Bay Field (#3).
- The only manned platform is the Exxon/Mobil – A/A Aux Platform for the Mary Ann Field, east of Billy Goat Hole channel (#5). There is zero discharge. All rainwater and waste are pipelined ashore and injected into the ground via a well.
- The remaining four wells have been removed and capped off.

None of the platforms or wells is located near commercial quantities of shellfish.

### AREA II

There are no natural gas platforms in the study area.

### AREA III

There are two natural gas platforms located in Area III (#3 and #4).

- The Goose Bayou Field Platform (#2) was relocated from Area I to the Saxon Bay Field (#3).
- The other platform is the Exxon/Mobil 95E Platform in Mary Ann Field (#4).

Both platforms are unmanned with zero waste discharge.

The platforms are permitted to discharge rainwater runoff.

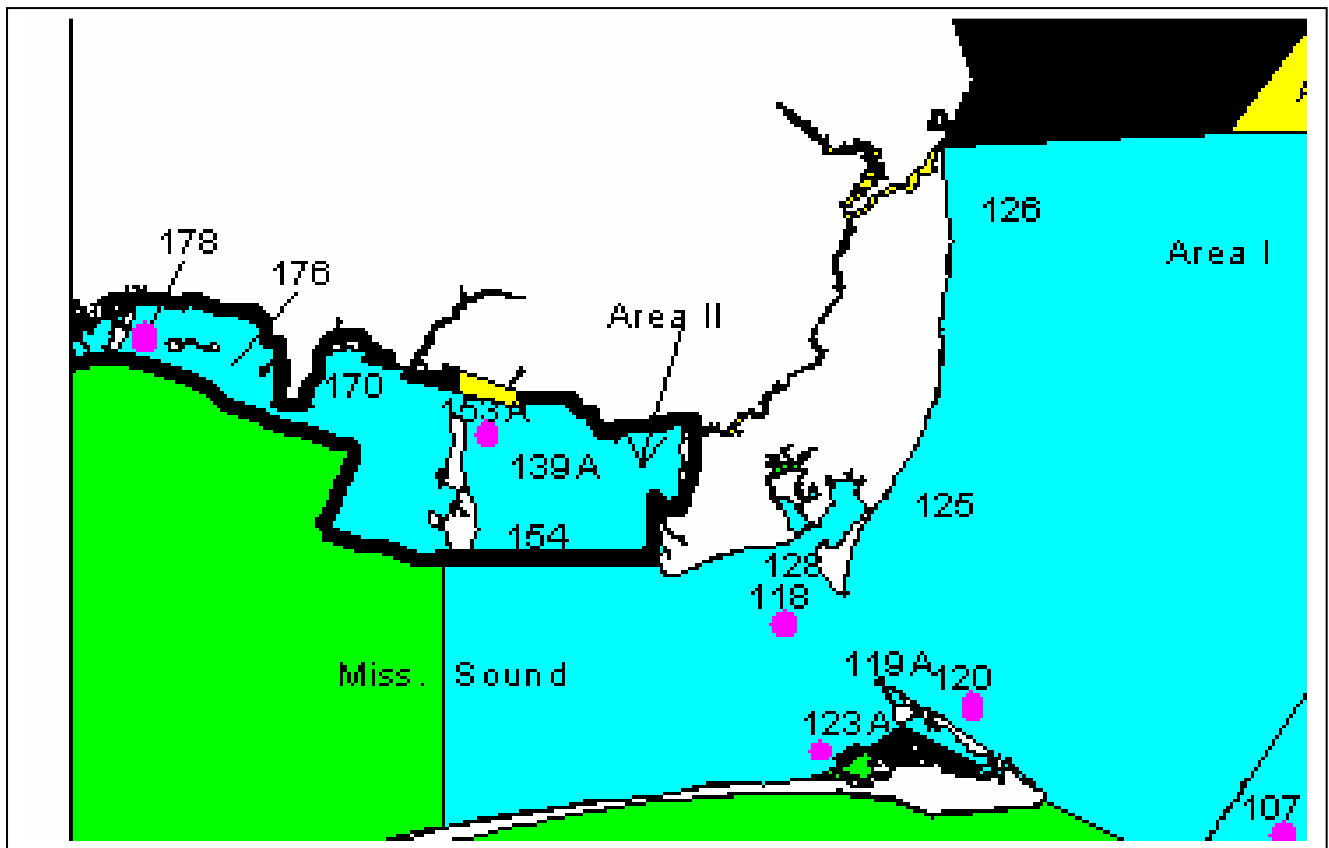
Neither platform is located near any commercial quantities of shellfish.

#### IV.A. BACTERIOLOGICAL WATER QUALITY– AREA II

There are six (6) bacteriological water quality sampling stations in Area II. The number and location of sampling stations were established based on the locations of actual or potential pollution sources, freshwater drainage, shellfish classification boundary lines, and landmarks. The location of the sampling stations is illustrated in the map of Area II below and in the following table.

The locations of the 6 sampling stations used to develop the current classification are:

<u>Station</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Common Name/Location</u>	<u>Current Classification</u>
139A	30°21.00'	88°11.83'		Conditionally Approved
153A	30°22.05'	88°13.79'	Upper Portersville Bay	Conditionally Approved
154	30°19.80'	88°12.60'	Lower Portersville Bay	Conditionally Approved
170	30°22.44'	88°17.70'		Conditionally Approved
176	30°22.68'	88°19.58'		Conditionally Approved
178	30°22.46'	88°20.18'	Grand Bay	Conditionally Approved



#### **IV. A. BACTERIOLOGICAL DATA ANALYSIS – AREA II**

Results of water sample analysis from each water sampling station must meet *NSSP Model Ordinance* requirements for the indicator bacteria fecal coliform. The acceptable level of fecal coliform in shellfish growing area waters in open status that are impacted by non-point pollution sources is the most probable number (MPN), 14 fecal coliforms per 100 milliliters (14 FC/100 ml) with not more than 10% of the samples exceeding 43 FC/100 ml MPN. ADPH uses the Adverse Pollution Condition Standard for bacteriological sample collection. Samples are collected during conditions when fecal coliforms may be elevated due to high river stage and/or recent rainfall. At least thirty (30) water samples from each sampling station are required to classify a shellfish growing area.

Thereafter, five (5) bacteriological water quality samples must be collected annually at each established sampling station in a Conditionally Approved area. Each annual reevaluation of the growing area's classification status must include an analysis of at least the previous fifteen (15) water sample results from each sampling station.

For this Comprehensive Survey, ADPH analyzed the last thirty (30) samples collected at each station. The results of the fecal coliform analyses for each station are found in the "Mobile Bay Bacteriological Sample Results Area II" section of this survey report.

Five (5) water samples were collected from each sampling station in Area II during calendar year 2007.

All established water quality sampling station results in Area II met the *NSSP Model Ordinance* water quality requirements.

#### **ANALYSIS CONFIRMING THE CONDITIONAL MANAGEMENT PLAN ESTABLISHED FOR GROWING AREA II**

FDA Regional Shellfish Specialist, John Veasey, performed a correlation and regression analysis using Alabama's Area II 2002-2005 sample data, US ACOE's Mobile River stage records, and NOAA's Mobile Regional Airport rainfall accumulation records.

Significant coefficients representing rises in fecal coliform levels positively associated the elevations with both local rainfall and river stages. The correlations between log fecal coliforms and rainfall were slightly higher than the correlations between log fecal coliforms and river stages. This is logical since the samples utilized for this study were taken during times when the river stage was below or at 8 feet – the trigger point for closure.

It was noted through other comparisons that samples collected during closed status, even though the river stage was below 8 feet, had higher fecal counts, rainfall amounts, and river stages than fecal counts observed in samples taken during open status.

The analysis indicated that ADPH's river stage management criteria are effective in managing Area II's growing waters. The correlations between river stage and fecal coliform levels were minimal. While stronger correlations existed between rainfall and fecal coliforms, they too were minimal and likely addressed by ADPH's river stage management plan. No failure to meet the *NSSP Model Ordinance* fecal coliform requirements at each station has occurred since ADPH implemented its current management plan.

(appendix: Table IV-1)



# MOBILE BAY

## BACTERIOLOGICAL SAMPLE RESULTS

### AREA II

2001 - 2007

Sta 139A	Sta153A	Sta 154	Sta 170	Sta 176	Sta 178
13.0	2.0	1.8	1.8	7.8	4.5
2.0	46.0	79.0	23.0	1.8	1.8
1.8	4.5	1.8	1.8	1.8	1.8
1.8	1.8	1.8	1.8	1.8	1.8
1.8	1.8	1.8	1.8	1.8	1.8
1.8	1.8	1.8	1.8	1.8	1.8
2.0	1.8	1.8	17.0	1.8	1.8
1.8	1.8	1.8	1.8	1.8	1.8
1.8	1.8	1.8	1.8	1.8	1.8
1.8	33.0	1.8	1.8	1.8	1.8
1.8	4.5	1.8	1.8	1.8	13.0
4.5	1.8	1.8	1.8	1.8	1.8
23.0	6.8	11.0	7.8	7.8	1.8
1.8	49.0	2.0	49.0	1.8	1.8
2.0	1.8	1.8	1.8	1.8	1.8
4.5	4.5	1.8	4.5	2.0	1.8
2.0	13.0	1.8	11.0	2.0	4.5
2.0	1.8	2.0	1.8	1.8	1.8
17.0	2.0	2.0	1.8	13.0	1.8
1.8	4.5	7.8	2.0	1.8	2.0
1.8	1.8	1.8	1.8	1.8	1.8
4.5	1.8	1.8	1.8	1.8	1.8
1.8	1.8	2.0	1.8	1.8	1.8
1.8	23.0	4.5	4.5	1.8	1.8
2.0	4.5	1.8	4.5	1.8	1.8
1.8	1.8	1.8	1.8	1.8	1.8
1.8	1.8	1.8	1.8	1.8	1.8
1.8	1.8	1.8	1.8	1.8	1.8
1.8	1.8	1.8	2.0	1.8	1.8
1.8	1.8	1.8	1.8	1.8	1.8

TOTAL SAMPLES ANALYZED: 180

MEDIAN FECAL COLIFORM: 1.8

GEO MEAN FECAL COLIFORM: 2.5

% > 43 FECAL COLIFORM: 2%

**STATION:139A  
AREA II**

**30 MOST RECENT SAMPLES**

DATE	TEMP	SAL	RIV	FEC	STATUS
10/25/2007	61.2	19.5	2.6	13.0	O
8/29/2007	84.0	26.8	2.2	2.0	O
7/10/2007	88.2	29.4	1.7	1.8	O
6/11/2007	88.2	29.0	2.0	1.8	O
4/17/2007	65.1	22.0	2.1	1.8	O
12/18/2006	64.0	23.4	2.6	1.8	O
11/1/2006	71.1	26.0	3.1	2.0	O
8/15/2006	88.2	27.0	1.9	1.8	O
7/25/2006	85.1	23.0	3.7	1.8	O
6/27/2006	82.0	24.0	3.7	1.8	O
5/23/2006	81.1	25.0	3.4	1.8	O
1/23/2006	63.1	9.0	6.4	4.5	O
1/19/2006	55.0	24.0	3.5	23.0	O
10/17/2005	72.1	28.0	3.1	1.8	O
5/18/2005	75.0	12.0	3.7	2.0	O
3/29/2005	66.0	12.0	6.7	4.5	O
1/4/2005	66.0	8.0	4.5	2.0	O
10/5/2004	82.0	18.0	2.6	2.0	O
7/28/2004	88.2	18.0	1.7	17.0	O
5/25/2004	79.2	18.0	4.0	1.8	O
1/14/2004	51.1	22.0	4.3	1.8	O
11/12/2003	72.1	20.0	3.8	4.5	O
9/24/2003	75.0	18.0	3.7	1.8	O
12/17/2002	57.0	17.0	6.9	1.8	O
10/1/2002	82.0	22.0	5.8	2.0	O
8/27/2002	87.1	20.0	2.5	1.8	O
6/12/2002	88.2	15.0	2.2	1.8	O
5/23/2002	72.1	20.0	2.5	1.8	O
4/16/2002	78.1	6.0	3.8	1.8	O
11/27/2001	75.0	23.0	3.3	1.8	O

**No. of Samples: 30                      Number > 43: 0**  
**Geo. Mean FEC: 2.5                      % > 43: 0%**

**STATION:153A  
AREA II**

**30 MOST RECENT SAMPLES**

DATE	TEMP	SAL	RIV	FEC	STATUS
11/5/2007	68.0	29.0	2.4	2.0	O
10/25/2007	63.1	21.6	2.6	46.0	O
8/29/2007	85.1	27.7	2.2	4.5	O
7/10/2007	89.1	28.4	1.7	1.8	O
6/11/2007	89.1	29.0	2.0	1.8	O
4/17/2007	67.1	27.0	2.1	1.8	O
12/18/2006	64.0	23.2	2.6	1.8	O
11/1/2006	72.1	25.2	3.1	1.8	O
8/15/2006	88.2	28.0	1.9	1.8	O
7/25/2006	83.1	26.0	3.7	33.0	O
6/27/2006	82.0	26.0	3.7	4.5	O
5/23/2006	81.1	25.0	3.4	1.8	O
1/23/2006	63.1	10.0	6.4	6.8	O
1/19/2006	55.0	24.0	3.5	49.0	O
10/17/2005	73.0	28.0	3.1	1.8	O
5/18/2005	75.0	16.0	3.7	4.5	O
3/29/2005	69.1	11.0	6.7	13.0	O
1/4/2005	66.0	8.0	4.5	1.8	O
10/5/2004	82.0	22.0	2.6	2.0	O
7/28/2004	88.2	18.0	1.7	4.5	O
5/25/2004	83.1	17.0	4.0	1.8	O
1/14/2004	51.1	22.0	4.3	1.8	O
11/12/2003	71.1	18.0	3.8	1.8	O
9/24/2003	78.1	20.0	3.7	23.0	O
12/17/2002	56.1	17.0	6.9	4.5	O
10/1/2002	83.1	23.0	5.8	1.8	O
8/27/2002	87.1	25.0	2.5	1.8	O
6/12/2002	88.2	18.0	2.2	1.8	O
5/23/2002	70.2	22.0	2.5	1.8	O
4/16/2002	78.1	6.0	3.8	1.8	O

**No. of Samples: 30**

**Number > 43: 2**

**Geo. Mean FEC: 3.5**

**% > 43: 7%**

**STATION:154  
AREA II**

**30 MOST RECENT SAMPLES**

DATE	TEMP	SAL	RIV	FEC	STATUS
11/5/2007	67.1	29.1	2.4	1.8	O
10/25/2007	62.1	22.2	2.6	79.0	O
8/29/2007	84.0	24.6	2.2	1.8	O
7/10/2007	89.1	29.2	1.7	1.8	O
6/11/2007	88.2	29.0	2.0	1.8	O
4/17/2007	65.1	26.0	2.1	1.8	O
12/18/2006	64.0	23.8	2.6	1.8	O
11/1/2006	73.0	24.0	3.1	1.8	O
8/15/2006	88.2	28.0	1.9	1.8	O
7/25/2006	85.1	24.0	3.7	1.8	O
6/27/2006	83.1	26.0	3.7	1.8	O
5/23/2006	81.1	25.0	3.4	1.8	O
1/23/2006	63.1	9.0	6.4	11.0	O
1/19/2006	55.0	27.0	3.5	2.0	O
10/17/2005	73.0	28.0	3.1	1.8	O
5/18/2005	75.0	13.0	3.7	1.8	O
3/29/2005	67.1	14.0	6.7	1.8	O
1/4/2005	66.0	5.0	4.5	2.0	O
10/5/2004	82.0	18.0	2.6	2.0	O
7/28/2004	89.1	15.0	1.7	7.8	O
5/25/2004	80.1	20.0	4.0	1.8	O
1/14/2004	50.0	18.0	4.3	1.8	O
11/12/2003	72.1	18.0	3.8	2.0	O
9/24/2003	75.0	18.0	3.7	4.5	O
12/17/2002	57.0	15.0	6.9	1.8	O
10/1/2002	82.0	22.0	5.8	1.8	O
8/27/2002	87.1	20.0	2.5	1.8	O
6/12/2002	86.0	15.0	2.2	1.8	O
5/23/2002	72.1	15.0	2.5	1.8	O
4/16/2002	78.1	8.0	3.8	1.8	O

**No. of Samples: 30                      Number > 43: 1**  
**Geo. Mean FEC: 2.4                      % > 43: 3%**



**STATION:170  
AREA II**

**30 MOST RECENT SAMPLES**

DATE	TEMP	SAL	RIV	FEC	STATUS
11/5/2007	68.0	29.3	2.4	1.8	O
10/25/2007	62.1	23.2	2.6	23.0	O
8/28/2007	86.0	29.0	2.0	1.8	O
7/10/2007	88.2	28.5	1.7	1.8	O
6/11/2007	89.1	27.0	2.0	1.8	O
4/17/2007	64.0	27.0	2.1	1.8	O
12/18/2006	66.0	21.9	2.6	17.0	O
11/1/2006	71.1	23.6	3.1	1.8	O
8/15/2006	89.1	29.0	1.9	1.8	O
7/25/2006	84.0	27.0	3.7	1.8	O
6/27/2006	83.1	27.0	3.7	1.8	O
5/23/2006	81.1	27.0	3.4	1.8	O
1/23/2006	64.0	14.0	6.4	7.8	O
1/19/2006	55.0	26.0	3.5	49.0	O
10/17/2005	72.1	28.0	3.1	1.8	O
5/18/2005	77.0	18.0	3.7	4.5	O
3/29/2005	66.0	14.0	6.7	11.0	O
1/4/2005	66.0	8.0	4.5	1.8	O
10/5/2004	82.0	20.0	2.6	1.8	O
7/28/2004	88.2	25.0	1.7	2.0	O
5/25/2004	82.0	15.0	4.0	1.8	O
1/14/2004	50.0	20.0	4.3	1.8	O
11/12/2003	72.1	22.0	3.8	1.8	O
9/24/2003	77.0	20.0	3.7	4.5	O
12/17/2002	57.0	17.0	6.9	4.5	O
10/1/2002	83.1	23.0	5.8	1.8	O
8/27/2002	88.2	25.0	2.5	1.8	O
6/12/2002	86.0	18.0	2.2	1.8	O
5/23/2002	72.1	22.0	2.5	2.0	O
4/16/2002	76.1	10.0	3.8	1.8	O

**No. of Samples: 30                      Number > 43: 1**  
**Geo. Mean FEC: 2.9                      % > 43: 3%**

**STATION:176  
AREA II**

**30 MOST RECENT SAMPLES**

DATE	TEMP	SAL	RIV	FEC	STATUS
10/25/2007	64.0	25.2	2.6	7.8	O
8/28/2007	87.1	30.1	2.0	1.8	O
7/10/2007	87.1	27.8	1.7	1.8	O
6/11/2007	87.1	29.0	2.0	1.8	O
4/17/2007	67.1	29.0	2.1	1.8	O
12/18/2006	64.0	19.8	2.6	1.8	O
11/1/2006	72.1	25.8	3.1	1.8	O
8/15/2006	87.1	28.0	1.9	1.8	O
7/25/2006	84.0	27.0	3.7	1.8	O
6/27/2006	84.0	27.0	3.7	1.8	O
5/23/2006	81.1	27.0	3.4	1.8	O
1/23/2006	62.1	17.0	6.4	1.8	O
1/19/2006	55.0	29.0	3.5	7.8	O
10/17/2005	75.0	28.0	3.1	1.8	O
5/18/2005	73.0	19.0	3.7	1.8	O
3/29/2005	70.2	18.0	6.7	2.0	O
1/4/2005	64.0	10.0	4.5	2.0	O
10/5/2004	82.0	22.0	2.6	1.8	O
7/28/2004	88.2	25.0	1.7	13.0	O
5/25/2004	82.0	15.0	4.0	1.8	O
1/14/2004	50.0	24.0	4.3	1.8	O
11/12/2003	70.2	23.0	3.8	1.8	O
9/24/2003	78.1	24.0	3.7	1.8	O
12/17/2002	56.1	18.0	6.9	1.8	O
10/1/2002	82.0	25.0	5.8	1.8	O
8/27/2002	88.2	28.0	2.5	1.8	O
6/12/2002	88.2	20.0	2.2	1.8	O
5/23/2002	70.2	21.0	2.5	1.8	O
4/16/2002	76.1	12.0	3.8	1.8	O
11/27/2001	72.1	26.0	3.3	1.8	O

**No. of Samples: 30                      Number > 43: 0**  
**Geo. Mean FEC: 2.1                      % > 43: 0%**

**STATION:178**  
**AREA II**  
**30 MOST RECENT SAMPLES**

DATE	TEMP	SAL	RIV	FEC	STATUS
10/25/2007	64.0	25.2	2.6	4.5	O
8/28/2007	87.1	30.1	2.0	1.8	O
7/10/2007	87.1	27.8	1.7	1.8	O
4/17/2007	67.1	29.0	2.1	1.8	O
12/18/2006	64.0	19.8	2.6	1.8	O
11/1/2006	72.1	25.8	3.1	1.8	O
8/15/2006	87.1	28.0	1.9	1.8	O
7/25/2006	84.0	27.0	3.7	1.8	O
6/27/2006	83.1	28.0	3.7	1.8	O
5/23/2006	80.1	26.0	3.4	1.8	O
1/19/2006	55.0	29.0	3.5	13.0	O
10/17/2005	75.0	28.0	3.1	1.8	O
5/18/2005	73.0	19.0	3.7	1.8	O
3/29/2005	70.2	18.0	6.7	1.8	O
1/4/2005	64.0	10.0	4.5	1.8	O
10/5/2004	82.0	22.0	2.6	1.8	O
7/28/2004	88.2	25.0	1.7	4.5	O
5/25/2004	82.0	15.0	4.0	1.8	O
1/14/2004	50.0	24.0	4.3	1.8	O
11/12/2003	70.2	23.0	3.8	2.0	O
9/24/2003	78.1	24.0	3.7	1.8	O
12/17/2002	56.1	18.0	6.9	1.8	O
10/1/2002	82.0	25.0	5.8	1.8	O
8/27/2002	88.2	28.0	2.5	1.8	O
6/12/2002	85.1	20.0	2.2	1.8	O
5/23/2002	70.2	23.0	2.5	1.8	O
4/16/2002	76.1	12.0	3.8	1.8	O
11/27/2001	72.1	26.0	3.3	1.8	O
9/18/2001	84.0	22.0	2.5	1.8	O
7/17/2001	85.1	22.0	2.7	1.8	O

<b>No. of</b>	<b>30</b>	<b>Number &gt; 43:</b>	<b>0</b>
<b>Geo. Mean FEC:</b>	<b>2.1</b>	<b>% &gt; 43:</b>	<b>0%</b>

## AREA II BACTERIOLOGICAL SAMPLE RESULTS

*From: 01/01/01 to: 12/31/07*

STATION	DATE	TEMP	SAL	RIV	FEC	STATUS	COMMENTS
139A							
	10/25/2007	61	20	2.6	13.0	O	
	8/29/2007	84	27	2.2	2.0	O	
	7/10/2007	88	29	1.7	1.8	O	
	6/11/2007	88	29	2.0	1.8	O	
	4/17/2007	65	22	2.1	1.8	O	
	1/15/2007	66	7	7.5	4.5	C	closed on 1/12/07 Riv 7.81' - 8.12' opened on 1/19/07
	12/18/2006	64	23	2.6	1.8	O	
	11/1/2006	71	26	3.1	2.0	O	
	8/15/2006	88	27	1.9	1.8	O	
	7/25/2006	85	23	3.7	1.8	O	
	6/27/2006	82	24	3.7	1.8	O	
	5/23/2006	81	25	3.4	1.8	O	
	3/30/2006	68	15	7.8	1.8	C	closed on 3/28/06 Riv 8.02' - 8.19' opened 4/2/06
	3/8/2006	65	15	7.1	1.8	C	closed on 3/2/06 Riv 8.24' - 8.74' opened on 3/11/06
	2/18/2006	61	7	7.7	1.8	C	closed on 2/15/06 Riv 8.09' - 8.21' opened 2/21/06
	2/3/2006	62	9	7.8	540.0	C	closed on 1/30/06 Riv 8.25' - 8.25' opened 2/6/06
	1/23/2006	63	9	6.4	4.5	O	
	1/19/2006	55	24	3.5	23.0	O	
	12/13/2005	52	26	2.8		O	no FEC data available due to lab accident
	10/17/2005	72	28	3.1	1.8	O	
	9/14/2005	84	19	2.8	1.8	C	closed on 8/29/05 emergency closure (Katrina) opened 9/22/05
	7/26/2005	88	5	6.7	1.8	C	closed on 7/10/05 emergency closure (Dennis) opened on 7/29/05
	5/18/2005	75	12	3.7	2.0	O	
	4/22/2005	74	1	7.3	1.8	C	closed on 4/1/05 Riv 8.16' - 8.78' opened on 4/24/05
	3/29/2005	66	12	6.7	4.5	O	
	1/4/2005	66	8	4.5	2.0	O	
	12/26/2004	50	15	7.3	4.5	C	closed on 11/28/04 Riv 7.82' - 8.30' opened 12/30/04
	10/5/2004	82	18	2.6	2.0	O	
	7/28/2004	88	18	1.7	17.0	O	
	5/25/2004	79	18	4.0	1.8	O	
	3/5/2004	63	3	7.4	11.0	C	still closed from 2/12/04
	2/26/2004	50	8	7.9	540.0	C	closed on 2/12/04 Riv 7.73' - 8.46' opened 3/9/04
	1/14/200	51	22	4.3	1.8	O	

### LEGEND

STATION= Station  
 DATE= Sampling Date  
 TEMP= Temperature (° Fahrenheit)

SAL= Salinity (ppT)  
 RIV= River Stage  
 FEC= Fecal Coliform

O= Open Status  
 C= Closed Status  
 BLANK SPACE= No Data Available

## AREA II BACTERIOLOGICAL SAMPLE RESULTS

**From: 01/01/01 to: 12/31/07**

STATION	DATE	TEMP	SAL	RIV	FEC	STATUS	COMMENTS
	11/12/2003	72	20	3.8	4.5	O	
	9/24/2003	75	18	3.7	1.8	O	
	7/14/2003	80	5	7.7	2.0	C	closed on 7/6/03 Riv 8.17' - 8.54' 7/17/03
	6/26/2003	83	1	8.0	4.0	C	closed on 6/24/03 Riv 8.00' - 8.21' opened on 6/28/03
	6/4/2003	83	10	7.4	1.8	C	closed on 5/1/03 Riv 8.30' - 8.81' opened on 5/9/03
	5/6/2003	81	4	7.5	1.8	C	closed on 5/1/03 Riv 8.30' - 8.81' opened on 5/9/03
	4/19/2003	76	8	7.3	4.5	C	closed on 4/14/03 Riv 9.15' - 9.51' opened on 4/22/03
	3/25/2003	67	5	7.9	2.0	C	closed on 2/26/03 Riv 7.97' - 8.60' opened on 3/28/03
	1/9/2003	55	12	6.9	2.0	C	closed on 12/27/02 Riv > 8.00' opened on 1/14/03
	12/17/2002	57	17	6.9	1.8	O	
	10/1/2002	82	22	5.8	2.0	O	
	8/27/2002	87	20	2.5	1.8	O	
	6/12/2002	88	15	2.2	1.8	O	
	5/23/2002	72	20	2.5	1.8	O	
	4/16/2002	78	6	3.8	1.8	O	
	2/9/2002	52	19	7.7	70.0	C	closed on 1/29/02 Riv 8.04' - 8.43' opened on 2/12/02
	12/27/2001	45	22	7.7	2.0	C	closed on 12/23/01 Riv 8.18' - 8.36' opened on 12/31/01
	11/27/2001	75	23	3.3	1.8	O	
	9/18/2001	84	13	2.5	2.0	O	
	7/17/2001	86	15	2.7	1.8	O	
	6/27/2001	83	13	1.8	1.8	O	
	5/16/2001	80	18	2.1	1.8	O	
	4/19/2001	64	8	6.2	1.8	C	closed on 4/9/01 Riv 8.36' - 9.03' opened on 4/21/01
	4/4/2001	72	3	7.2	1.8	C	closed on 3/4/01 Riv 8.48' - 8.86' opened on 4/6/01
	1/23/2001	58	27	5.7	1.8	O	
	1/17/2001	59	32	2.4	33.0	O	
153A	11/5/2007	68	29	2.4	2.0	O	
	10/25/2007	63	22	2.6	46.0	O	
	8/29/2007	85	28	2.2	4.5	O	
	7/10/2007	89	28	1.7	1.8	O	
	6/11/2007	89	29	2.0	1.8	O	
	4/17/2007	67	27	2.1	1.8	O	

### LEGEND

STATION= Station  
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 FEC= Fecal Coliform

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 C= Closed Status  
 BLANK SPACE= No Data Available

## AREA II BACTERIOLOGICAL SAMPLE RESULTS

**From: 01/01/01 to: 12/31/07**

STATION	DATE	TEMP	SAL	RIV	FEC	STATUS	COMMENTS
	1/15/2007	66	8	7.5	1.8	C	closed on 1/12/07 Riv 7.81' - 8.12' opened on 1/19/07
	12/18/2006	64	23	2.6	1.8	O	
	11/1/2006	72	25	3.1	1.8	O	
	8/15/2006	88	28	1.9	1.8	O	
	7/25/2006	83	26	3.7	33.0	O	
	6/27/2006	82	26	3.7	4.5	O	
	5/23/2006	81	25	3.4	1.8	O	
	3/30/2006	68	15	7.8	1.8	C	closed on 3/28/06 Riv 8.02' - 8.19' opened 4/2/06
	3/8/2006	65	16	7.1	1.8	C	closed on 3/2/06 Riv 8.24' - 8.74' opened on 3/11/06
	2/18/2006	61	8	7.7	1.8	C	closed on 2/15/06 Riv 8.09' - 8.21' opened 2/21/06
	2/3/2006	62	9	7.8	540.0	C	closed on 1/30/06 Riv 8.25' - 8.25' opened 2/6/06
	1/23/2006	63	10	6.4	6.8	O	
	1/19/2006	55	24	3.5	49.0	O	
	12/13/2005	52	29	2.8		O	no FEC data available due to lab accident
	10/17/2005	73	28	3.1	1.8	O	
	9/14/2005	84	20	2.8	4.0	C	closed on 8/29/05 emergency closure (Katrina) opened 9/22/05
	7/26/2005	89	7	6.7	1.8	C	closed on 7/10/05 emergency closure (Dennis) opened on 7/29/05
	5/18/2005	75	16	3.7	4.5	O	
	4/22/2005	75	2	7.3	4.5	C	closed on 4/1/05 Riv 8.16' - 8.78' opened on 4/24/05
	3/29/2005	69	11	6.7	13.0	O	
	1/4/2005	66	8	4.5	1.8	O	
	12/26/2004	50	15	7.3	13.0	C	closed on 11/28/04 Riv 7.82' - 8.30' opened 12/30/04
	10/5/2004	82	22	2.6	2.0	O	
	7/28/2004	88	18	1.7	4.5	O	
	5/25/2004	83	17	4.0	1.8	O	
	3/5/2004	63	4	7.4	17.0	C	still closed from 2/12/04
	2/26/2004	50	14	7.9	33.0	C	closed on 2/12/04 Riv 7.73' - 8.46' opened 3/9/04
	1/14/2004	51	22	4.3	1.8	O	
	11/12/2003	71	18	3.8	1.8	O	
	9/24/2003	78	20	3.7	23.0	O	
	7/14/2003	83	6	7.7	23.0	C	closed on 7/6/03 Riv 8.17' - 8.54' 7/17/03
	6/26/2003	83	1	8.0	1.8	C	closed on 6/24/03 Riv 8.00' - 8.21' opened on 6/28/03
	6/4/2003	84	13	7.4	4.5	C	closed on 5/1/03 Riv 8.30' - 8.81' opened on 5/9/03
	5/6/2003	81	5	7.5	1.8	C	closed on 5/1/03 Riv 8.30' - 8.81' opened on 5/9/03

### LEGEND

STATION= Station  
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O= Open Status  
 C= Closed Status  
 BLANK SPACE= No Data Available

## AREA II BACTERIOLOGICAL SAMPLE RESULTS

**From: 01/01/01 to: 12/31/07**

STATION	DATE	TEMP	SAL	RIV	FEC	STATUS	COMMENTS
	4/19/2003	76	8	7.3	2.0	C	closed on 4/14/03 Riv 9.15' - 9.51' opened on 4/22/03
	3/25/2003	69	7	7.9	1.8	C	closed on 2/26/03 Riv 7.97' - 8.60' opened on 3/28/03
	1/9/2003	58	12	6.9	2.0	C	closed on 12/27/02 Riv > 8.00' opened on 1/14/03
	12/17/2002	56	17	6.9	4.5	O	
	10/1/2002	83	23	5.8	1.8	O	
	8/27/2002	87	25	2.5	1.8	O	
	6/12/2002	88	18	2.2	1.8	O	
	5/23/2002	70	22	2.5	1.8	O	
	4/16/2002	78	6	3.8	1.8	O	
	2/9/2002	51	22	7.7	2.0	C	closed on 1/29/02 Riv 8.04' - 8.43' opened on 2/12/02
	12/27/2001	45	24	7.7	2.0	C	closed on 12/23/01 Riv 8.18' - 8.36' opened on 12/31/01
	11/27/2001	75	25	3.3	2.0	O	
	9/18/2001	84	13	2.5	1.8	O	
	7/17/2001	86	20	2.7	1.8	O	
	6/27/2001	83	15	1.8	1.8	O	
	5/16/2001	80	22	2.1	1.8	O	
	4/19/2001	57	10	6.2	1.8	C	closed on 4/9/01 Riv 8.36' - 9.03' opened on 4/21/01
	4/4/2001	72	6	7.2	2.0	C	closed on 3/4/01 Riv 8.48' - 8.86' opened on 4/6/01
	1/23/2001	58	27	5.7	2.0	O	
	1/17/2001	54	35	2.4	49.0	O	
154	11/5/2007	67	29	2.4	1.8	O	
	10/25/2007	62	22	2.6	79.0	O	
	8/29/2007	84	25	2.2	1.8	O	
	7/10/2007	89	29	1.7	1.8	O	
	6/11/2007	88	29	2.0	1.8	O	
	4/17/2007	65	26	2.1	1.8	O	
	1/15/2007	66	5	7.5	2.0	C	closed on 1/12/07 Riv 7.81' - 8.12' opened on 1/19/07
	12/18/2006	64	24	2.6	1.8	O	
	11/1/2006	73	24	3.1	1.8	O	
	8/15/2006	88	28	1.9	1.8	O	
	7/25/2006	85	24	3.7	1.8	O	
	6/27/2006	83	26	3.7	1.8	O	
	5/23/2006	81	25	3.4	1.8	O	

### LEGEND

STATION= Station  
 DATE= Sampling Date  
 TEMP= Temperature (° Fahrenheit)

SAL= Salinity (ppT)  
 RIV= River Stage  
 FEC= Fecal Coliform

O= Open Status  
 C= Closed Status  
 BLANK SPACE= No Data Available

## AREA II BACTERIOLOGICAL SAMPLE RESULTS

**From: 01/01/01 to: 12/31/07**

STATION	DATE	TEMP	SAL	RIV	FEC	STATUS	COMMENTS
	3/30/2006	68		7.8	2.0	C	closed on 3/28/06 Riv 8.02' - 8.19' opened 4/2/06
	3/8/2006	64	12	7.1	1.8	C	closed on 3/2/06 Riv 8.24' - 8.74' opened on 3/11/06
	2/18/2006	62	8	7.7	1.8	C	closed on 2/15/06 Riv 8.09' - 8.21' opened 2/21/06
	2/3/2006	62	7	7.8	7.8	C	closed on 1/30/06 Riv 8.25' - 8.25' opened 2/6/06
	1/23/2006	63	9	6.4	11.0	O	
	1/19/2006	55	27	3.5	2.0	O	
	12/13/2005	52	25	2.8		O	no FEC data available due to lab accident
	10/17/2005	73	28	3.1	1.8	O	
	9/14/2005	84	19	2.8	1.8	C	closed on 8/29/05 emergency closure (Katrina) opened 9/22/05
	7/26/2005	88	6	6.7	1.8	C	closed on 7/10/05 emergency closure (Dennis) opened on 7/29/05
	5/18/2005	75	13	3.7	1.8	O	
	4/22/2005	74	2	7.3	4.5	C	closed on 4/1/05 Riv 8.16' - 8.78' opened on 4/24/05
	3/29/2005	67	14	6.7	1.8	O	
	1/4/2005	66	5	4.5	2.0	O	
	12/26/2004	50	14	7.3	23.0	C	closed on 11/28/04 Riv 7.82' - 8.30' opened 12/30/04
	10/5/2004	82	18	2.6	2.0	O	
	7/28/2004	89	15	1.7	7.8	O	
	5/25/2004	80	20	4.0	1.8	O	
	3/5/2004	63	3	7.4	4.0	C	still closed from 2/12/04
	2/26/2004	50	12	7.9	49.0	C	closed on 2/12/04 Riv 7.73' - 8.46' opened 3/9/04
	1/14/2004	50	18	4.3	1.8	O	
	11/12/2003	72	18	3.8	2.0	O	
	9/24/2003	75	18	3.7	4.5	O	
	7/14/2003	78	5	7.7	13.0	C	closed on 7/6/03 Riv 8.17' - 8.54' 7/17/03
	6/26/2003	83	1	8.0	2.0	C	closed on 6/24/03 Riv 8.00' - 8.21' opened on 6/28/03
	6/4/2003	83	12	7.4	1.8	C	closed on 5/1/03 Riv 8.30' - 8.81' opened on 5/9/03
	5/6/2003	81	4	7.5	2.0	C	closed on 5/1/03 Riv 8.30' - 8.81' opened on 5/9/03
	4/19/2003	76	6	7.3	6.8	C	closed on 4/14/03 Riv 9.15' - 9.51' opened on 4/22/03
	3/25/2003	68	8	7.9	2.0	C	closed on 2/26/03 Riv 7.97' - 8.60' opened on 3/28/03
	1/9/2003	54	17	6.9	1.8	C	closed on 12/27/02 Riv > 8.00' opened on 1/14/03
	12/17/2002	57	15	6.9	1.8	O	
	10/1/2002	82	22	5.8	1.8	O	
	8/27/2002	87	20	2.5	1.8	O	
	6/12/2002	86	15	2.2	1.8	O	

### LEGEND

STATION= Station  
 DATE= Sampling Date  
 TEMP= Temperature (° Fahrenheit)

SAL= Salinity (ppT)  
 RIV= River Stage  
 FEC= Fecal Coliform

O= Open Status  
 C= Closed Status  
 BLANK SPACE= No Data Available



## AREA II BACTERIOLOGICAL SAMPLE RESULTS

**From: 01/01/01 to: 12/31/07**

STATION	DATE	TEMP	SAL	RIV	FEC	STATUS	COMMENTS
	5/23/2002	72	15	2.5	1.8	O	
	4/16/2002	78	8	3.8	1.8	O	
	2/9/2002	50	15	7.7	4.5	C	closed on 1/29/02 Riv 8.04' - 8.43' opened on 2/12/02
	12/27/2001	43	25	7.7	1.8	C	closed on 12/23/01 Riv 8.18' - 8.36' opened on 12/31/01
	11/27/2001	75	23	3.3	1.8	O	
	9/18/2001	84	14	2.5	1.8	O	
	7/17/2001	86	15	2.7	1.8	O	
	6/27/2001	83	13	1.8	1.8	O	
	5/16/2001	78	21	2.1	1.8	O	
	4/19/2001	64	6	6.2	1.8	C	closed on 4/9/01 Riv 8.36' - 9.03' opened on 4/21/01
	4/4/2001	72	3	7.2	2.0	C	closed on 3/4/01 Riv 8.48' - 8.86' opened on 4/6/01
	1/17/2001	53	22	2.4	7.8	O	
170	11/5/2007	68	29	2.4	1.8	O	
	10/25/2007	62	23	2.6	23.0	O	
	8/28/2007	86	29	2.0	1.8	O	
	7/10/2007	88	29	1.7	1.8	O	
	6/11/2007	89	27	2.0	1.8	O	
	4/17/2007	64	27	2.1	1.8	O	
	1/15/2007	64	11	7.5	22.0	C	closed on 1/12/07 Riv 7.81' - 8.12' opened on 1/19/07
	12/18/2006	66	22	2.6	17.0	O	
	11/1/2006	71	24	3.1	1.8	O	
	8/15/2006	89	29	1.9	1.8	O	
	7/25/2006	84	27	3.7	1.8	O	
	6/27/2006	83	27	3.7	1.8	O	
	5/23/2006	81	27	3.4	1.8	O	
	3/30/2006	68	16	7.8	1.8	C	closed on 3/28/06 Riv 8.02' - 8.19' opened 4/2/06
	3/8/2006	64	18	7.1	1.8	C	closed on 3/2/06 Riv 8.24' - 8.74' opened on 3/11/06
	2/18/2006	62	8	7.7	1.8	C	closed on 2/15/06 Riv 8.09' - 8.21' opened 2/21/06
	2/3/2006	62	14	7.8	350.0	C	closed on 1/30/06 Riv 8.25' - 8.25' opened 2/6/06
	1/23/2006	64	14	6.4	7.8	O	
	1/19/2006	55	26	3.5	49.0	O	
	12/13/2005	52	28	2.8		O	no FEC data available due to lab accident
	10/17/2005	72	28	3.1	1.8	O	

### LEGEND

STATION= Station  
 DATE= Sampling Date  
 TEMP= Temperature (° Fahrenheit)

SAL= Salinity (ppT)  
 RIV= River Stage  
 FEC= Fecal Coliform

O= Open Status  
 C= Closed Status  
 BLANK SPACE= No Data Available

## AREA II BACTERIOLOGICAL SAMPLE RESULTS

**From: 01/01/01 to: 12/31/07**

STATION	DATE	TEMP	SAL	RIV	FEC	STATUS	COMMENTS
	9/14/2005	83	16	2.8	1.8	C	closed on 8/29/05 emergency closure (Katrina) opened 9/22/05
	7/26/2005	89	9	6.7	540.0	C	closed on 7/10/05 emergency closure (Dennis) opened on 7/29/05
	5/18/2005	77	18	3.7	4.5	O	
	4/22/2005	74	4	7.3	1.8	C	closed on 4/1/05 Riv 8.16' - 8.78' opened on 4/24/05
	3/29/2005	66	14	6.7	11.0	O	
	1/4/2005	66	8	4.5	1.8	O	
	12/26/2004	50	20	7.3	2.0	C	closed on 11/28/04 Riv 7.82' - 8.30' opened 12/30/04
	10/5/2004	82	20	2.6	1.8	O	
	7/28/2004	88	25	1.7	2.0	O	
	5/25/2004	82	15	4.0	1.8	O	
	3/5/2004	63	6	7.4	33.0	C	still closed from 2/12/04
	2/26/2004	50	11	7.9	540.0	C	closed on 2/12/04 Riv 7.73' - 8.46' opened 3/9/04
	1/14/2004	50	20	4.3	1.8	O	
	11/12/2003	72	22	3.8	1.8	O	
	9/24/2003	77	20	3.7	4.5	O	
	7/14/2003	83	6	7.7	2.0	C	closed on 7/6/03 Riv 8.17' - 8.54' 7/17/03
	6/26/2003	82	3	8.0	7.8	C	closed on 6/24/03 Riv 8.00' - 8.21' opened on 6/28/03
	6/4/2003	83	12	7.4	1.8	C	closed on 5/1/03 Riv 8.30' - 8.81' opened on 5/9/03
	5/6/2003	82	10	7.5	2.0	C	closed on 5/1/03 Riv 8.30' - 8.81' opened on 5/9/03
	4/19/2003	76	10	7.3	2.0	C	closed on 4/14/03 Riv 9.15' - 9.51' opened on 4/22/03
	3/25/2003	68	10	7.9	2.0	C	closed on 2/26/03 Riv 7.97' - 8.60' opened on 3/28/03
	1/9/2003	57	20	6.9	1.8	C	closed on 12/27/02 Riv > 8.00' opened on 1/14/03
	12/17/2002	57	17	6.9	4.5	O	
	10/1/2002	83	23	5.8	1.8	O	
	8/27/2002	88	25	2.5	1.8	O	
	6/12/2002	86	18	2.2	1.8	O	
	5/23/2002	72	22	2.5	2.0	O	
	4/16/2002	76	10	3.8	1.8	O	
	2/9/2002	51	25	7.7	1.8	C	closed on 1/29/02 Riv 8.04' - 8.43' opened on 2/12/02
	12/27/2001	50	30	7.7	1.8	C	closed on 12/23/01 Riv 8.18' - 8.36' opened on 12/31/01
	11/27/2001	73	26	3.3	1.8	O	
	9/18/2001	84	15	2.5	4.5	O	
	7/17/2001	86	20	2.7	1.8	O	
	6/27/2001	83	16	1.8	4.0	O	

### LEGEND

STATION= Station  
 DATE= Sampling Date  
 TEMP= Temperature (° Fahrenheit)

SAL= Salinity (ppT)  
 RIV= River Stage  
 FEC= Fecal Coliform

O= Open Status  
 C= Closed Status  
 BLANK SPACE= No Data Available

## AREA II BACTERIOLOGICAL SAMPLE RESULTS

**From: 01/01/01 to: 12/31/07**

STATION	DATE	TEMP	SAL	RIV	FEC	STATUS	COMMENTS
	5/16/2001	80	22	2.1	1.8	O	
	4/19/2001	67	13	6.2	1.8	C	closed on 4/9/01 Riv 8.36' - 9.03' opened on 4/21/01
	4/4/2001	72	7	7.2	2.0	C	closed on 3/4/01 Riv 8.48' - 8.86' opened on 4/6/01
	1/23/2001	56	22	5.7	4.5	O	
	1/17/2001	54	32	2.4	49.0	O	
176	10/25/2007	64	25	2.6	7.8	O	
	8/28/2007	87	30	2.0	1.8	O	
	7/10/2007	87	28	1.7	1.8	O	
	6/11/2007	87	29	2.0	1.8	O	
	4/17/2007	67	29	2.1	1.8	O	
	1/15/2007	64	10	7.5	1.8	C	closed on 1/12/07 Riv 7.81' - 8.12' opened on 1/19/07
	12/18/2006	64	20	2.6	1.8	O	
	11/1/2006	72	26	3.1	1.8	O	
	8/15/2006	87	28	1.9	1.8	O	
	7/25/2006	84	27	3.7	1.8	O	
	6/27/2006	84	27	3.7	1.8	O	
	5/23/2006	81	27	3.4	1.8	O	
	3/30/2006	67	18	7.8	1.8	C	closed on 3/28/06 Riv 8.02' - 8.19' opened 4/2/06
	3/8/2006	65	21	7.1	4.5	C	closed on 3/2/06 Riv 8.24' - 8.74' opened on 3/11/06
	2/18/2006	61	10	7.7	1.8	C	closed on 2/15/06 Riv 8.09' - 8.21' opened 2/21/06
	2/3/2006	62	17	7.8	1.8	C	closed on 1/30/06 Riv 8.25' - 8.25' opened 2/6/06
	1/23/2006	62	17	6.4	1.8	O	
	1/19/2006	55	29	3.5	7.8	O	
	12/13/2005	52	29	2.8		O	no FEC data available due to lab accident
	10/17/2005	75	28	3.1	1.8	O	
	9/14/2005	82	21	2.8	1.8	C	closed on 8/29/05 emergency closure (Katrina) opened 9/22/05
	7/26/2005	89	12	6.7	1.8	C	closed on 7/10/05 emergency closure (Dennis) opened on 7/29/05
	5/18/2005	73	19	3.7	1.8	O	
	4/22/2005	75	6	7.3	1.8	C	closed on 4/1/05 Riv 8.16' - 8.78' opened on 4/24/05
	3/29/2005	70	18	6.7	2.0	O	
	1/4/2005	64	10	4.5	2.0	O	
	12/26/2004	50	20	7.3	4.5	C	closed on 11/28/04 Riv 7.82' - 8.30' opened 12/30/04
	10/5/2004	82	22	2.6	1.8	O	

### LEGEND

STATION= Station  
 DATE= Sampling Date  
 TEMP= Temperature (° Fahrenheit)

SAL= Salinity (ppT)  
 RIV= River Stage  
 FEC= Fecal Coliform

O= Open Status  
 C= Closed Status  
 BLANK SPACE= No Data Available

## AREA II BACTERIOLOGICAL SAMPLE RESULTS

**From: 01/01/01 to: 12/31/07**

STATION	DATE	TEMP	SAL	RIV	FEC	STATUS	COMMENTS
	7/28/2004	88	25	1.7	13.0	O	
	5/25/2004	82	15	4.0	1.8	O	
	3/5/2004	64	8	7.4	4.5	C	still closed from 2/12/04
	1/14/2004	50	24	4.3	1.8	O	
	11/12/2003	70	23	3.8	1.8	O	
	9/24/2003	78	24	3.7	1.8	O	
	7/14/2003	83	10	7.7	1.8	C	closed on 7/6/03 Riv 8.17' - 8.54' 7/17/03
	6/26/2003	83	5	8.0	1.8	C	closed on 6/24/03 Riv 8.00' - 8.21' opened on 6/28/03
	6/4/2003	83	15	7.4	1.8	C	closed on 5/1/03 Riv 8.30' - 8.81' opened on 5/9/03
	5/6/2003	82	10	7.5	1.8	C	closed on 5/1/03 Riv 8.30' - 8.81' opened on 5/9/03
	4/19/2003	76	14	7.3	2.0	C	closed on 4/14/03 Riv 9.15' - 9.51' opened on 4/22/03
	3/25/2003	68	12	7.9	1.8	C	closed on 2/26/03 Riv 7.97' - 8.60' opened on 3/28/03
	1/9/2003	56	23	6.9	1.8	C	closed on 12/27/02 Riv > 8.00' opened on 1/14/03
	12/17/2002	56	18	6.9	1.8	O	
	10/1/2002	82	25	5.8	1.8	O	
	8/27/2002	88	28	2.5	1.8	O	
	6/12/2002	88	20	2.2	1.8	O	
	5/23/2002	70	21	2.5	1.8	O	
	4/16/2002	76	12	3.8	1.8	O	
	2/9/2002	54	24	7.7	1.8	C	closed on 1/29/02 Riv 8.04' - 8.43' opened on 2/12/02
	12/27/2001	50	32	7.7	1.8	C	closed on 12/23/01 Riv 8.18' - 8.36' opened on 12/31/01
	11/27/2001	72	26	3.3	1.8	O	
	9/18/2001	84	22	2.5	1.8	O	
	7/17/2001	85	22	2.7	1.8	O	
	6/27/2001	83	14	1.8	1.8	O	
	5/16/2001	78	22	2.1	1.8	O	
	4/19/2001	68	15	6.2	2.0	C	closed on 4/9/01 Riv 8.36' - 9.03' opened on 4/21/01
	4/4/2001	72	8	7.2	1.8	C	closed on 3/4/01 Riv 8.48' - 8.86' opened on 4/6/01
	1/17/2001	54	33	2.4	1.8	O	
178	10/25/2007	64	25	2.6	4.5	O	
	8/28/2007	87	30	2.0	1.8	O	
	7/10/2007	87	28	1.7	1.8	O	
	4/17/2007	67	29	2.1	1.8	O	

### LEGEND

STATION= Station  
 DATE= Sampling Date  
 TEMP= Temperature (° Fahrenheit)

SAL= Salinity (ppT)  
 RIV= River Stage  
 FEC= Fecal Coliform

O= Open Status  
 C= Closed Status  
 BLANK SPACE= No Data Available

## AREA II BACTERIOLOGICAL SAMPLE RESULTS

**From: 01/01/01 to: 12/31/07**

STATION	DATE	TEMP	SAL	RIV	FEC	STATUS	COMMENTS
	1/15/2007	64	10	7.5	2.0	C	closed on 1/12/07 Riv 7.81' - 8.12' opened on 1/19/07
	12/18/2006	64	20	2.6	1.8	O	
	11/1/2006	72	26	3.1	1.8	O	
	8/15/2006	87	28	1.9	1.8	O	
	7/25/2006	84	27	3.7	1.8	O	
	6/27/2006	83	28	3.7	1.8	O	
	5/23/2006	80	26	3.4	1.8	O	
	3/30/2006	67	18	7.8	1.8	C	closed on 3/28/06 Riv 8.02' - 8.19' opened 4/2/06
	3/8/2006	65	21	7.1	1.8	C	closed on 3/2/06 Riv 8.24' - 8.74' opened on 3/11/06
	2/18/2006	61	10	7.7	1.8	C	closed on 2/15/06 Riv 8.09' - 8.21' opened 2/21/06
	2/3/2006	61	18	7.8	1.8	C	closed on 1/30/06 Riv 8.25' - 8.25' opened 2/6/06
	1/19/2006	55	29	3.5	13.0	O	
	12/13/2005	52	29	2.8		O	no FEC data available due to lab accident
	10/17/2005	75	28	3.1	1.8	O	
	9/14/2005	82	21	2.8	1.8	C	closed on 8/29/05 emergency closure (Katrina) opened 9/22/05
	7/26/2005	89	12	6.7	1.8	C	closed on 7/10/05 emergency closure (Dennis) opened on 7/29/05
	5/18/2005	73	19	3.7	1.8	O	
	4/22/2005	75	6	7.3	1.8	C	closed on 4/1/05 Riv 8.16' - 8.78' opened on 4/24/05
	3/29/2005	70	18	6.7	1.8	O	
	1/4/2005	64	10	4.5	1.8	O	
	12/26/2004	50	20	7.3	4.5	C	closed on 11/28/04 Riv 7.82' - 8.30' opened 12/30/04
	10/5/2004	82	22	2.6	1.8	O	
	7/28/2004	88	25	1.7	4.5	O	
	5/25/2004	82	15	4.0	1.8	O	
	3/5/2004	63	8	7.4	7.8	C	still closed from 2/12/04
	1/14/2004	50	24	4.3	1.8	O	
	11/12/2003	70	23	3.8	2.0	O	
	9/24/2003	78	24	3.7	1.8	O	
	7/14/2003	83	10	7.7	1.8	C	closed on 7/6/03 Riv 8.17' - 8.54' 7/17/03
	6/26/2003	83	5	8.0	1.8	C	closed on 6/24/03 Riv 8.00' - 8.21' opened on 6/28/03
	6/4/2003	83	15	7.4	1.8	C	closed on 5/1/03 Riv 8.30' - 8.81' opened on 5/9/03
	5/6/2003	82	10	7.5	2.0	C	closed on 5/1/03 Riv 8.30' - 8.81' opened on 5/9/03
	4/19/2003	76	14	7.3	1.8	C	closed on 4/14/03 Riv 9.15' - 9.51' opened on 4/22/03
	3/25/2003	68	12	7.9	1.8	C	closed on 2/26/03 Riv 7.97' - 8.60' opened on 3/28/03

### LEGEND

STATION= Station  
 DATE= Sampling Date  
 TEMP= Temperature (° Fahrenheit)

SAL= Salinity (ppT)  
 RIV= River Stage  
 FEC= Fecal Coliform

O= Open Status  
 C= Closed Status  
 BLANK SPACE= No Data Available

## AREA II BACTERIOLOGICAL SAMPLE RESULTS

**From: 01/01/01 to: 12/31/07**

STATION	DATE	TEMP	SAL	RIV	FEC	STATUS	COMMENTS
	1/9/2003	56	23	6.9	1.8	C	closed on 12/27/02 Riv > 8.00' opened on 1/14/03
	12/17/2002	56	18	6.9	1.8	O	
	10/1/2002	82	25	5.8	1.8	O	
	8/27/2002	88	28	2.5	1.8	O	
	6/12/2002	85	20	2.2	1.8	O	
	5/23/2002	70	23	2.5	1.8	O	
	4/16/2002	76	12	3.8	1.8	O	
	2/9/2002	54	24	7.7	1.8	C	closed on 1/29/02 Riv 8.04' - 8.43' opened on 2/12/02
	12/27/2001	50	32	7.7	1.8	C	closed on 12/23/01 Riv 8.18' - 8.36' opened on 12/31/01
	11/27/2001	72	26	3.3	1.8	O	
	9/18/2001	84	22	2.5	1.8	O	
	7/17/2001	85	22	2.7	1.8	O	
	6/27/2001	83	14	1.8	1.8	O	
	5/16/2001	78	22	2.1	1.8	O	
	4/19/2001	68	15	6.2	1.8	C	closed on 4/9/01 Riv 8.36' - 9.03' opened on 4/21/01
	4/4/2001	72	8	7.2	1.8	C	closed on 3/4/01 Riv 8.48' - 8.86' opened on 4/6/01
	1/17/2001	54	33	2.4	1.8	O	

### LEGEND

STATION= Station  
 DATE= Sampling Date  
 TEMP= Temperature (° Fahrenheit)

SAL= Salinity (ppT)  
 RIV= River Stage  
 FEC= Fecal Coliform

O= Open Status  
 C= Closed Status  
 BLANK SPACE= No Data Available

## SUMMARY – AREA II

This comprehensive sanitary survey shows that:

- shellfish harvested from Area II during *open status* meet *NSSP Model Ordinance* requirements for allowing direct harvest for human consumption.
- human or animal fecal matter is not present in Area II at levels that present an actual or potential public health hazard.
- Area II is sufficiently removed from major sources of pollution so that shellfish are not exposed to pathogenic organisms, poisonous or deleterious substances, or marine biotoxins in quantities which are dangerous to public health.
- the 14/43 STANDARD (geometric mean of fecal coliform not exceeding 14 MPN/100 ml, with no more than 10% of the samples exceeding 43 MPN/100 ml) was met, with at least 15 samples (actually 30) collected under routine sampling conditions.
- the regression models indicate that both river stage and rainfall have impacts on the amounts of fecal coliform contributed by rainfall, storm water runoff, or storm winds and surge. Managing area closures on the 8 foot river stage, more than adequately closes all harvesting waters in ample time to prevent fecal coliform contamination.

Since Area II meets all of the criteria for a **CONDITIONALLY APPROVED** harvest area, it is deemed as being appropriately classified and managed by ADPH – Seafood Branch.

# OYSTER LANDINGS

## TABLE I-1



## OYSTER LANDINGS

As Reported by:

Alabama Department of Conservation and Natural Resources-Marine Resource Division

Alabama Reported Oyster Landings  
Landings in Pounds of Meat

SPECIES	YEAR	MEAT LBS	VALUE	REPORTED TRIPS
Oyster	2001	621,193	\$1,313,639.	12,663
Oyster	2002	759,336	\$1,596,336.	14,213
Oyster	2003	810,865	\$1,620,541.	10,861
Oyster	2004	918,116	\$2,103,746.	12,719
Oyster	2005	1,041,342	\$3,020,278.	14,216
Oyster	2006	939,605	\$3,639,217.	17,292
Oyster	2007*	768,792	\$2,697,787.	17,734

\*Preliminary Data Subject to Change

Alabama Processed Oyster Products

PRODUCT	YEAR	LBS PRODUCT	VALUES
Oyster-Shucked Meat	2001	5,501,400	\$24,568,600.
Oyster-Shucked Meat	2002	3,384,568	\$14,367,900.
Oyster-Shucked Meat	2003	4,673,208	\$20,333,889.
Oyster-Shucked Meat	2004	5,897,976	\$28,518,200.
Oyster-Shucked Meat	2005	3,807,200	\$20,712,000.
Oyster-Shucked Meat	2006	3,793,680	\$24,220,100.
Oyster-Shucked Meat	2007*	4,048,800	\$24,200,000

\*Preliminary Data Subject to Change

Table I-1

OYSTER CLEANSING PROCESS  
TABLE II-1

(Table II-1)

## SUMMARY OF SHELLFISH CLEANSING DATA

DATE by Month	RIVER STAGE	STATION/STATUS O=Open C=Closed	BAY WATER FEC	SHELLSTOCK FEC	SHELLSTOCK E COLI	SHELLSTOCK SPC
<b>August 2007</b>						
8/29/2007	2.2 feet	118 / O	1.8	18.0	18.0	
<b>July 2007</b>						
7/10/2007	1.7 feet	118 / O	2.0	45.0	45.0	
<b>June 2007</b>						
6/11/2007	2.0 feet	118 / O	1.8	18.0	18.0	
<b>January 2007</b>						
closed on 1/12/07 Riv 7.81' - 8.12' opened on 1/19/07						
1/15/2007	7.5 feet	118 / C	2.0	18.0	18.0	
<b>November 2006</b>						
11/1/2006	3.1 feet	118 / O	1.8	18.0	18.0	
<b>August 2006</b>						
8/15/2006	1.9 feet	118 / O	1.8	18.0	18.0	
<b>July 2006</b>						
7/25/2006	3.7 feet	118 / O	1.8	18.0	18.0	

DATE by Month	RIVER STAGE	STATION/STATUS O=Open C=Closed	BAY WATER FEC	SHELLSTOCK FEC	SHELLSTOCK E COLI	SHELLSTOCK SPC
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**June 2006**

6/27/2006	3.7 feet	118 / O	13.0	20.0	18.0	
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**May 2006**

5/23/2006	3.4 feet	118 / O	1.8	18.0	18.0	
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**March 2006**

closed on 3/28/06 Riv 8.02' - 8.19' opened on 4/2/06

3/30/2006	7.8 feet	118 / C	1.8	18.0	18.0	43,000.0
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closed on 3/2/06 Riv 8.24' - 8.74' opened on 3/11/06

3/8/2006	7.1 feet	118 / C	1.8	20.0	18.0	3,000.0
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**February 2006**

closed on 2/15/06 Riv 8.09' - 8.21' opened on 2/21/06

2/18/2006	7.7 feet	118 / C	7.8	18.0	18.0	3,000.0
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closed on 1/30/06 Riv 8.25' - 8.25' opened on 2/6/06

2/3/2006	7.8 feet	118 / C	2.0	20.0	20.0	30,000.0
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**October 2005**

10/17/2006	3.1 feet	118 / O	1.8	18.0	18.0	3,000.0
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**September 2005**

closed on 8/29/05 emergency closure (Katrina) opened on 9/22/05

9/14/2005	2.8 feet	153A / C	4.0	18.0	18.0	3,000.0
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9/13/2005	2.6 feet	123A / C	2.0	18.0	18.0	3,000.0
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9/13/2005	2.6 feet	118 / C	1.8	18.0	18.0	4,800.0
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DATE by Month	RIVER STAGE	STATION/STATUS O=Open C=Closed	BAY WATER FEC	SHELLSTOCK FEC	SHELLSTOCK E COLI	SHELLSTOCK SPC
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***July 2005***

closed on 7/10/05 emergency closure (Dennis) opened on 7/29/05

7/26/2005	6.7 feet	118 / C	1.8	18.0	18.0	14,000.0
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***May 2005***

5/18/2005	3.7 feet	118 / O	1.8	18.0	18.0	620.0
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***April 2005***

closed on 4/1/05 Riv 8.16' - 8.78' opened on 4/24/05

4/22/2005	7.3 feet	118 / C	2.0	20.0	20.0	240,000.0
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***March 2005***

3/29/2005	6.7 feet	118 / O	1.8	20.0	20.0	300.0
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***January 2005***

1/4/2005	4.5 feet	118 / O	6.8	18.0	18.0	3,000.0
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***December 2004***

closed on 11/28/04 Riv 7.82' - 8.30' opened on 12/30/04

12/26/2004	7.3 feet	118 / C	2.0	18.0	18.0	15,000.0
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***October 2004***

10/5/2004	2.6 feet	118 / O	1.8	18.0	18.0	370.0
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***July 2004***

7/28/2004	1.7 feet	118 / O	14.0	18.0	18.0	910.0
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DATE by Month	RIVER STAGE	STATION/STATUS O=Open C=Closed	BAY WATER FEC	SHELLSTOCK FEC	SHELLSTOCK E COLI	SHELLSTOCK SPC
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***May 2004***

5/25/2004	4.0 feet	118 / O	1.8	18.0	18.0	1,100.0
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***March 2004***

still closed from 2/12/04

3/5/2004	7.4 feet	118 / C	13.0	20.0	20.0	6,300.0
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***February 2004***

closed on 2/12/04 Riv 7.73' - 8.46' opened on 3/9/04

2/26/2004	7.9 feet	118 / C	17.0	18.0	18.0	2,500.0
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***January 2004***

1/14/2004	4.3 feet	118 / O	2.0	18.0	18.0	460.0
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***November 2003***

11/12/2003	3.8 feet	118 / O	1.8	18.0	18.0	500.0
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***September 2003***

9/24/2003	3.7 feet	118 / O	2.0	18.0	18.0	580.0
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***June 2003***

closed on 5/1/03 Riv 8.30' - 8.81' opened on 5/9/03

6/4/2003	7.4 feet	118 / C	2.0	18.0	18.0	24,000.0
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***May 2003***

closed on 5/1/03 Riv 8.30' - 8.81' opened on 5/9/03

5/6/2003	7.5 feet	118 / C	1.8	1.8	1.8	3,000.0
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DATE by Month	RIVER STAGE	STATION/STATUS O=Open C=Closed	BAY WATER FEC	SHELLSTOCK FEC	SHELLSTOCK E COLI	SHELLSTOCK SPC
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***April 2003***

closed on 4/14/03 Riv 9.15' - 9.51' opened on 4/22/03

4/19/2003	7.3 feet	118 / C	2.0	18.0	18.0	13,000.0
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***March 2003***

closed on 2/26/03 Riv 7.97' - 8.60' opened on 3/28/03

3/25/2003	7.9 feet	118 / C	7.8	18.0	18.0	13,000.0
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***January 2003***

closed on 12/27/02 Riv > 8.00' opened on 1/14/03

1/9/2003	6.9 feet	118 / C	1.8	20.0	20.0	760.0
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***December 2002***

12/17/2002	6.9 feet	118 / O	4.5	20.0	20.0	780.0
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***October 2002***

10/1/2002	5.8 feet	118 / O	1.8	18.0	18.0	1,700.0
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***August 2002***

8/27/2002	2.5 feet	118 / O	1.8	18.0	18.0	300.0
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***June 2002***

6/12/2002	2.2 feet	118 / O	1.8	18.0	18.0	600.0
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***May 2002***

5/23/2002	2.5 feet	118 / O	1.8	18.0	18.0	1,500.0
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DATE by Month	RIVER STAGE	STATION/STATUS O=Open C=Closed	BAY WATER FEC	SHELLSTOCK FEC	SHELLSTOCK E COLI	SHELLSTOCK SPC
<b><i>April 2002</i></b>						
4/16/2002	3.8 feet	118 / O	1.8	18.0	18.0	360.0
<b><i>February 2002</i></b>						
closed on 1/29/02 Riv 8.04' - 8.43' opened on 2/12/02						
2/9/2002	7.7 feet	118 / C	4.5	78.0	45.0	3,400.0
<b><i>December 2001</i></b>						
closed on 12/23/01 Riv 8.18' - 8.36' opened on 12/31/01						
12/27/2001	7.7 feet	118 / C	1.8	18.0	18.0	300.0
<b><i>November 2001</i></b>						
11/27/2001	3.3 feet	118 / O	1.8	20.0	20.0	230.0
<b><i>September 2001</i></b>						
9/18/2001	2.4 feet	118 / O	1.8	18.0	18.0	350.0
<b><i>July 2001</i></b>						
7/17/2001	2.7 feet	118 / O	1.8	18.0	18.0	300.0
<b><i>June 2001</i></b>						
6/27/2001	1.8 feet	118 / O	1.8	18.0	18.0	1,000.0
<b><i>May 2001</i></b>						
5/16/2001	2.1 feet	118 / O	1.8	18.0	18.0	900.0



DATE by Month	RIVER STAGE	STATION/STATUS O=Open C=Closed	BAY WATER FEC	SHELLSTOCK FEC	SHELLSTOCK E COLI	SHELLSTOCK SPC
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***April 2001***

closed on 4/9/01 Riv 8.36' - 9.03' opened on 4/21/01

4/19/2001	6.2 feet	118 / C	4.5	18.0	18.0	7,600.0
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closed on 3/4/01 Riv 8.48' - 8.86' opened on 4/6/01

4/4/2001	7.2 feet	118 / C	1.8	20.0	18.0	6,600.0
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***January 2001***

1/17/2001	2.4 feet	118 / O	2.0	18.0	18.0	530.0
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## CLOSURE/REOPENING DETAILS

### TABLE II-2

**Shellfish Harvesting Area Openings and Closings  
2007**

**Areas I & II**

**Opened:** January 1 - January 12 (3 PM)

**Notice date:** January 12

**Closed:** January 12 (3 PM) - January 19 (6 AM) = 4 Working Days  
(possible bacteriological contamination  
of oyster beds due to recent rainfall)

**Notice date:** January 18

**Opened:** January 19 (6 AM) - October 23 (3 PM)

**Notice dates:** October 22 & 23

**Still Opened:** October 23 (3 PM) - December 31

**Total Closed Working Days = 4**

**Shellfish Harvesting Area Openings and Closings  
2007  
Area III**

**Opened:** January 1 - January 12 (3 PM)

**Notice date:** January 12

**Closed:** January 12 (3 PM) - January 19 (6 AM) = 4 Working Days  
(possible bacteriological contamination  
of oyster beds due to recent rainfall)

**Notice date:** January 18

**Opened:** January 19 (6 AM) - October 23 (3 PM)

**Notice dates:** October 22 & 23

**Closed:** October 23 (3 PM) - December 31 = 49 Working Days  
(the presence of red tide cells, *Karenia  
brevis*, exceeding standards)

**Total Closed Working Days = 53**

# **Shellfish Harvesting Area Openings and Closings 2006 Area II**

<b>Opened:</b>	January 1 - January 30 (3 PM)		
<b>Notice date:</b>	January 30		
<b>Closed:</b>	January 30 (3 PM) - February 6 (6 AM) (possible bacteriological contamination of the oyster beds due to recent rainfall)	=	4 Working Days
<b>Notice date:</b>	February 5		
<b>Still Closed:</b>	February 6 (6 AM) - February 15 (3 PM) (continued monitoring of bay waters and shellfish to ensure bacteriological safety)	=	8 Working Days
<b>Notice date:</b>	February 15		
<b>Still Closed:</b>	February 15 (3 PM) - February 21 (6 AM) (possible bacteriological contamination of the oyster beds due to recent rainfall)	=	3 Working Days
<b>Notice date:</b>	February 20		
<b>Opened:</b>	February 21 (6 AM) - March 2 (3 PM)		
<b>Notice date:</b>	March 2		
<b>Closed:</b>	March 2 (3 PM) - March 11 (6 AM) (possible bacteriological contamination of the oyster beds due to recent rainfall)	=	6 Working Days
<b>Notice date:</b>	March 10		
<b>Opened:</b>	March 11 (6 AM) - March 28 (3 PM)		
<b>Notice date:</b>	March 28		
<b>Closed:</b>	March 28 (3 PM) - April 2 (6 AM) (possible bacteriological contamination of the oyster beds due to recent rainfall)	=	3 Working Days
<b>Notice date:</b>	April 1		
<b>Opened:</b>	April 2 (6 AM) - December 31		

**Total Closed Working Days = 24**

# **Shellfish Harvesting Area Openings and Closings 2006 Areas I & III**

<b>Opened:</b>	January 1 - January 30 (3 PM)		
<b>Notice date:</b>	January 30		
<b>Closed:</b>	January 30 (3 PM) - February 6 (6 AM) (possible bacteriological contamination of the oyster beds due to recent rainfall)	=	4 Working Days
<b>Notice date:</b>	February 5		
<b>Opened:</b>	February 6 (6 AM) - February 15 (3 PM)		
<b>Notice date:</b>	February 15		
<b>Closed:</b>	February 15 (3 PM) - February 21 (6 AM) (possible bacteriological contamination of the oyster beds due to recent rainfall)	=	3 Working Days
<b>Notice date:</b>	February 20		
<b>Opened:</b>	February 21 (6 AM) - March 2 (3 PM)		
<b>Notice date:</b>	March 2		
<b>Closed:</b>	March 2 (3 PM) - March 11 (6 AM) (possible bacteriological contamination of the oyster beds due to recent rainfall)	=	6 Working Days
<b>Notice date:</b>	March 10		
<b>Opened:</b>	March 11 (6 AM) - March 28 (3 PM)		
<b>Notice date:</b>	March 28		
<b>Closed:</b>	March 28 (3 PM) - April 2 (6 AM) (possible bacteriological contamination of the oyster beds due to recent rainfall)	=	3 Working Days
<b>Notice date:</b>	April 1		
<b>Opened:</b>	April 2 (6 AM) - December 31		

**Total Closed Working Days = 16**

# **Shellfish Harvesting Area Openings and Closings 2005 Areas I, II, III**

<b>Opened:</b>	January 1 - April 1 (4 PM)	
<b>Notice date:</b>	April 1	
<b>Closed:</b>	April 1 (4 PM) - April 25 (6 AM) (possible bacteriological contamination of the oyster beds due to recent rainfall)	= 15 Working Days
<b>Notice date:</b>	April 24	
<b>Opened:</b>	April 25 (6 AM) - July 10 (4 PM)	
<b>Notice date:</b>	July 10	
<b>Closed:</b>	July 10 (4 PM) - July 29 (6 AM) (possible bacteriological contamination of the oyster beds due to expected heavy rainfall associated with Hurricane Dennis)	= 14 Working Days
<b>Notice date:</b>	July 28	
<b>Opened:</b>	July 29 (6 AM) - August 29 (4 PM)	
<b>Notice date:</b>	August 29	
<b>Closed:</b>	August 29 (4 PM) - September 22 (6 AM) (possible bacteriological contamination of the oyster beds due to expected heavy rainfall associated with Hurricane Katrina)	= 17 Working Days
<b>Notice date:</b>	September 21	
<b>Opened:</b>	September 22 (6 AM) - October 18 (4 PM)	
<b>Notice date:</b>	October 18	
<b>Closed:</b>	October 18 (4 PM) - October 21 (6 AM) (the presence of red tide cells, <i>Karenia brevis</i> , possibly exceeding standards)	= 2 Working Days Areas I & III only
<b>Closed:</b>	October 18 (4 PM) - October 27 (6 AM) (the presence of red tide cells, <i>Karenia brevis</i> , exceeding standards)	= 6 Working Days Area II only
<b>Notice date:</b>	October 20	
<b>Opened:</b>	October 21 (6 AM) - December 31	Areas I & III only
<b>Notice date:</b>	October 26	
<b>Opened:</b>	October 27 (6 AM) - December 31	Area II only

**Total Closed Working Days = 52**

**Shellfish Harvesting Area Openings and Closings  
2004  
Areas I, II, III**

**Opened:** January 1 - February 12 (4 PM)

**Notice date:** February 12

**Closed:** February 12 (4 PM) - March 9 (6 AM) = 17 Working Days  
(possible bacteriological contamination  
of the oyster beds due to recent rainfall)

**Notice date:** March 8

**Opened:** March 9 (6 AM) - November 28 (4 PM)

**Notice date:** November 28, 2004

**Closed:** November 28 (4 PM) - December 30 (6 AM) = 23 Working Days  
(possible bacteriological contamination  
of the oyster beds due to recent rainfall)

**Notice date:** December 29, 2004

**Opened:** December 30 (6 AM) - December 31

**Total Closed Working Days = 40**



**Shellfish Harvesting Area Openings and Closings  
2003  
Areas I, II, III**

<b>Closed:</b>	January 1 - January 13 (possible bacteriological contamination of the oyster beds due to recent rainfall)	= 9 Working Days
<b>Notice date:</b>	January 13	
<b>Opened:</b>	January 14 (6 AM) - February 25	
<b>Notice date:</b>	February 26	
<b>Closed:</b>	February 26 (4 PM) - March 27 (possible bacteriological contamination of the oyster beds due to recent rainfall)	= 21 Working Days
<b>Notice date:</b>	March 27	
<b>Opened:</b>	March 28 (6 AM) - April 13	
<b>Notice date:</b>	April 14	
<b>Closed:</b>	April 14 (4 PM) - April 21 (possible bacteriological contamination of the oyster beds due to recent rainfall)	= 5 Working Days
<b>Notice date:</b>	April 21	
<b>Opened:</b>	April 22 (6 AM) - April 30	
<b>Notice date:</b>	May 1	
<b>Closed:</b>	May 1 (4 PM) - May 8 (possible bacteriological contamination of the oyster beds due to recent rainfall)	= 5 Working Days
<b>Notice date:</b>	May 8	
<b>Opened:</b>	May 9 (6 AM) - May 13	

**Shellfish Harvesting Area Openings and Closings  
2003  
Areas I, II, III**

**Notice date:** May 14

**Closed:** May 14 (4 PM) - June 6 = 17 Working Days  
(possible bacteriological contamination  
of the oyster beds due to recent rainfall)

**Notice date:** June 6

**Opened:** June 7 (6 AM) - June 23

**Notice date:** June 24

**Closed:** June 24 (4 PM) - June 27 = 3 Working Days  
(possible bacteriological contamination  
of the oyster beds due to recent rainfall)

**Notice date:** June 27

**Opened:** June 28 (6 AM) - July 5

**Notice date:** July 6

**Closed:** July 6 (4 PM) - July 16 = 8 Working Days  
(possible bacteriological contamination  
of the oyster beds due to recent rainfall)

**Notice date:** July 16

**Opened:** July 17 (6 AM) - December 31

**Total Closed Working Days = 68**

# **Shellfish Harvesting Area Openings and Closings 2002 Areas I, II, III**

<b>Opened:</b>	January 1 - January 29 (4 PM)	
<b>Notice date:</b>	January 29	
<b>Closed:</b>	January 29 (4 PM) - February 11 (possible bacteriological contamination of the oyster beds due to recent rainfall)	= 9 Working Days
<b>Notice date:</b>	February 11	
<b>Opened:</b>	February 12 (6 AM) - September 26 (4 PM)	
<b>Notice date:</b>	September 26	
<b>Closed:</b>	September 26 (4 PM) - October 2 (possible bacteriological contamination of the oyster beds due to recent rainfall)	= 4 Working Days
<b>Notice date:</b>	October 2	
<b>Opened:</b>	October 3 (6 AM) - December 27 (4 PM)	
<b>Notice date:</b>	December 27	
<b>Closed:</b>	December 27 (4 PM) - December 31 (possible bacteriological contamination of the oyster beds due to recent rainfall)	= 2 Working Days

**Total Closed Working Days = 15**

# **Shellfish Harvesting Area Openings and Closings 2001 Areas I, II, III**

<b>Opened:</b>	January 1 - March 4 (4 PM)	
<b>Notice date:</b>	March 4	
<b>Closed:</b>	March 4 (4 PM) - April 6 (4 PM) (possible bacteriological contamination of the oyster beds due to recent rainfall)	= 25 Working Days
<b>Notice date:</b>	April 5	
<b>Opened:</b>	April 6 (4 PM) - April 9 (4 PM)	
<b>Notice date:</b>	April 9	
<b>Closed:</b>	April 9 (4 PM) - April 21 (4 PM) (possible bacteriological contamination of the oyster beds due to recent rainfall)	= 9 Working Days
<b>Notice date:</b>	April 20	
<b>Opened:</b>	April 21 (4 PM) - December 23 (4 PM)	
<b>Notice date:</b>	December 23	
<b>Closed:</b>	December 23 (4 PM) - December 30 (possible bacteriological contamination of the oyster beds due to recent rainfall)	= 5 Working Days
<b>Notice date:</b>	December 30	
<b>Opened:</b>	December 31 (6 AM) - December 31 (4 PM)	

**Total Closed Working Days = 39**

**Shellfish Harvesting Area Openings and Closings  
2000  
Areas I, II, III**

**Opened:**

January 1 - April 9

**Notice date:**

April 9

**Closed:**

April 10 (6 AM) - April 23

= 10 Working Days

(possible bacteriological contamination  
of the oyster beds due to recent rainfall)

**Notice date:**

April 23

**Opened:**

April 24 (6 AM) - December 31 (4 PM)

**Total Closed Working Days = 10**

# 2005 RED TIDE EVENT

## TABLE III-1

Seafood Branch  
 4168 Commander's Drive  
 Mobile, AL 36615  
 (251) 432-7618

## ADPH DINOFLAGELLATE SAMPLING 2005 RED TIDE EVENT

Between: 10/03/05 And: 10/26/05

DATE	TIME	AREA	STA / SITE	LOCATION	TEMP °F	SAL	TIDE	WIND	RIVER	STATUS	KARENIA B. >5000
10/25/2005	2:45 AM	I	118	Cedar Point	62	25	F	NW 10	0.4	O	0
10/25/2005	2:18 AM	II	153A	Upper Portersville Bay	62	28	F	NW 10	0.4	C	410
10/25/2005	2:00 AM	II	178	Grand Bay	63	26	F	NW 10-15	0.4	C	0
10/25/2005	3:07 AM	I	123A	D. I. Bay North End	62	25	F	NW 10	0.4	O	0
10/20/2005	11:15 AM		* ell	East Little Lagoon (gulf)					2.4		68,000
10/20/2005	10:35 AM		* gspb	Gulf Shores Public Beach					2.4		24,000
10/20/2005	10:00 AM		* pp	Perdido Pass					2.4		69,000
10/12/2005	11:20 AM		* pp	Perdido Pass				SE	2.3		130,000
10/12/2005	11:00 AM		* ell	East Little Lagoon (gulf)				SE	2.3		87,000
10/12/2005	12:00 PM		* gspb	Gulf Shores Public Beach				SE	2.3		54,000
10/10/2005	9:53 AM	I	119A	North of Intercoastal Waterway	75	16	F	NE 5	2.3	O	0
10/10/2005	9:59 AM	I	118	Cedar Point	74	13	F	NE 5	2.3	O	0
10/10/2005	10:43 AM	I	123A	D. I. Bay North End	74	17	F		2.3	O	0
10/10/2005	10:23 AM	II	154	Lower Portersville Bay	74	26	F	NE 5	2.3	O	
10/10/2005	10:10 AM	I	128	Heron Bay	74	16	F	NE 5	2.3	O	0
10/7/2005	10:05 AM	I	119A	North of Intercoastal Waterway	77	13	H-F	NW 10-15	2.0	O	0
10/7/2005	10:12 AM	I	118	Cedar Point	77	10	H-F	NE 10-15	2.0	O	0

Seafood Branch  
 4168 Commander's Drive  
 Mobile, AL 36615  
 (251) 432-7618

## ADPH DINOFLAGELLATE SAMPLING 2005 RED TIDE EVENT

Between: 10/03/05 And: 10/26/05

DATE	TIME	AREA	STA / SITE	LOCATION	TEMP °F	SAL	TIDE	WIND	RIVER	STATUS	KARENIA B. >5000
10/7/2005	10:55 AM	I	123A	D. I. Bay North End	76	18	H-F	NE 10-15	2.0	O	0
10/7/2005	10:33 AM	II	154	Lower Portersville Bay	85	21	H-F	NW 10-15	2.0	O	220
10/7/2005	10:20 AM	I	128	Heron Bay	76	9	H-F	NW 10-15	2.0	O	0
10/5/2005	3:25 PM	I	128	Heron Bay	82	7	H	NE 10	3.5	O	0
10/5/2005	3:50 PM	II	154	Lower Portersville Bay	82	19	H	N 15	3.5	O	0
10/5/2005	4:10 PM	I	123A	D. I. Bay North End	81	21	H-F	NE 10	3.5	O	1,100
10/5/2005	3:25 PM	I	118	Cedar Point	82	10	H	NE 10	3.5	O	0
10/5/2005	3:00 AM	I	119A	North of Intercoastal Waterway	82	15	H	NE 11	3.5	O	0
10/4/2005	2:00 PM	I	123A	D. I. Bay North End	82	22	H	E 10	4.3	O	0
10/3/2005		I	128	Heron Bay					4.9	O	64,000



# 2007 RED TIDE EVENT

## TABLE III-2

Seafood Branch  
 4168 Commander's Drive  
 Mobile, AL 36615  
 (251) 432-7618

## ADPH DINOFLAGELLATE SAMPLING RED TIDE EVENT 2007

Between: 10/16/07 And: 12/31/07

DATE	TIME	AREA	STA / SITE	LOCATION	TEMP °F	SAL	TIDE	WIND	RIVER	STATUS	KARENIA B. >5000
12/31/2007	10:10 AM	I	123A	D. I. Bay North End	56	24	low	10 E	2.5	O	210
12/31/2007	10:50 AM	I	118	Cedar Point	56	20	low	5E	2.5	O	0
12/31/2007	11:32 AM	II	153A	Upper Portersville Bay	59	28	low	6 E	2.5	O	0
12/27/2007	12:14 PM	II	153A	Upper Portersville Bay	63	27	neap	calm	2.5	O	0
12/27/2007	11:02 AM	I	118	Cedar Point	56	27	low-falling	N 10-12	2.5	O	410
12/27/2007	10:15 AM	I	123A	D. I. Bay North End	57	29	low-falling	N 5-10	2.5	O	100
12/20/2007	10:25 AM	I	118	Cedar Point	60	25	rising	SE 10-15	3.2	O	0
12/20/2007	9:35 AM	I	123A	D. I. Bay North End	61	28	rising	SE 2-7	3.2	O	0
12/20/2007	11:02 AM	II	153A	Upper Portersville Bay	62	25	rising	SE 10-15	3.2	O	0
12/17/2007	9:28 AM	III	112A	The Pines Ft. Morgan Boat Launch	43	27	low-falling	N 18-20	1.1	C	0
12/17/2007	8:45 AM	I	118	Cedar Point	56	26	low	NE 20+	1.1	O	0
12/17/2007	10:15 AM	II	153A	Upper Portersville Bay	53	30	low	NE 10	1.1	O	0
12/17/2007	10:28 AM	III	107B	Ft. Morgan Ferry Landing	49	33	low-falling	N 15-20	1.1	C	720
12/17/2007	9:25 AM	I	123A	D. I. Bay North End	73	30	low	NE 20+	1.1	O	0
12/12/2007	10:30 AM	II	153A	Upper Portersville Bay	75	28	low	SE 10	3.7	O	0
12/12/2007	11:00 AM	I	118	Cedar Point	65	23	low	SE 10	3.7	O	100
12/12/2007	11:45 AM	I	123A	D. I. Bay North End	67	27	low	SE 10	3.7	O	520

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## ADPH DINOFLAGELLATE SAMPLING RED TIDE EVENT 2007

Between: 10/16/07 And: 12/31/07

DATE	TIME	AREA	STA / SITE	LOCATION	TEMP °F	SAL	TIDE	WIND	RIVER	STATUS	KARENIA B. >5000
12/10/2007	9:25 AM	I	118	Cedar Point	62	24	falling	SE 5	2.7	O	210
12/10/2007	10:00 AM	I	123A	D. I. Bay North End	64	27	falling	SE 10	2.7	O	100
12/10/2007	8:45 AM	II	153A	Upper Portersville Bay	69	27	low, falling	SE 10	2.7	O	0
11/29/2007	11:20 AM	I	118	Cedar Point	59	25	low	NE 10	1.6	O	0
11/29/2007	10:20 AM	II	153A	Upper Portersville Bay	65	28	low	N 5	1.6	O	0
11/29/2007	10:25 AM	III	107B	Ft. Morgan Ferry Landing	64	32	falling	9.2 NNE	1.6	C	310
11/29/2007	9:32 AM	III	112A	The Pines Ft. Morgan Boat Launch	61	25	falling	3.2 NNE	1.6	C	0
11/29/2007	11:45 AM	I	123A	D. I. Bay North End	60	28	low	NE 10	1.6	O	0
11/26/2007	11:00 AM	I	123A	D. I. Bay North End	63	31	low	SW 5	3.1	O	210
11/26/2007	10:30 AM	I	118	Cedar Point	61	29	low	SW 15-20	3.1	O	310
11/26/2007	11:30 AM	II	153A	Upper Portersville Bay	63	23	low	SW 15-20	3.1	O	0
11/14/2007	11:15 AM	III	106	Intercoastal Waterway	69	24	falling	SW 3	2.8	C	0
11/14/2007	11:27 AM	III	104A	Bon Secour Bay	69	23	falling	SW 3	2.8	C	0
11/14/2007	12:00 PM	III	82	Weeks Bay	71	19	falling	SW 3	2.8	C	0
11/14/2007	12:50 PM	I	123A	D. I. Bay North End	71	28	falling	SW 3	2.8	O	0
11/14/2007	10:25 AM	III	107B	Ft. Morgan Ferry Landing	70	31	falling	SW 3	2.8	C	34,000
11/13/2007	11:58 AM	I	118	Cedar Point	68	24	low	SE 1.3	2.6	C	0

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## ADPH DINOFLAGELLATE SAMPLING RED TIDE EVENT 2007

Between: 10/16/07 And: 12/31/07

DATE	TIME	AREA	STA / SITE	LOCATION	TEMP °F	SAL	TIDE	WIND	RIVER	STATUS	KARENIA B. >5000
11/13/2007	12:38 PM	II	153A	Upper Portersville Bay	74	30	low-rising	3.9 SE	2.6	C	0
11/7/2007	11:00 AM	I	118	Cedar Point	61	25	low	NE 20+	2.0	O	0
11/7/2007	2:20 PM	II	153A	Upper Portersville Bay	65	30	low	NE 10	2.0	O	0
11/5/2007	12:00 PM	I	123A	D. I. Bay North End	68	23	neap	calm	2.4	O	0
11/5/2007	11:50 AM	I	120	South Side Ship Channel/East of Cedar Point	69	25	neap	calm	2.4	O	410
11/5/2007	11:40 AM	I	118	Cedar Point	69	27	neap	calm	2.4	O	410
11/5/2007	9:32 AM	III	112A	The Pines Ft. Morgan Boat Launch	68	10	neap	2-4 NNW	2.4	C	310
11/5/2007	11:05 AM	II	153A	Upper Portersville Bay	68	29	neap	calm	2.4	O	100
10/31/2007	9:37 AM	III	107B	Ft. Morgan Ferry Landing	66	29	falling	11.6 NE	2.1	C	1,500
10/31/2007	10:40 AM	III	112A	The Pines Ft. Morgan Boat Launch	68	17	falling	6.1 NE	2.1	C	0
10/25/2007	11:30 AM	III	112A	The Pines Ft. Morgan Boat Launch	60	30		NW	2.6	C	210
10/25/2007	1:19 PM	I	123A	D. I. Bay North End	64	30	rising	4.6 NW	2.6	O	0
10/25/2007	1:04 PM	I	120	South Side Ship Channel/East of Cedar Point	64	29	rising	9.0 NW	2.6	O	0
10/25/2007	12:18 PM	I	118	Cedar Point	62	24	rising	15.1NW	2.6	O	0
10/25/2007	11:41 AM	II	153A	Upper Portersville Bay	63	22	rising	14.3NW	2.6	O	0
10/25/2007	11:14 AM	II	178	Grand Bay	64	25	rising	11.2NW	2.6	O	0
10/25/2007	12:20 PM	III	107B	Ft. Morgan Ferry Landing	75	31		NW	2.6	C	210

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**ADPH  
 DINOFLAGELLATE SAMPLING  
 RED TIDE EVENT 2007**

Between: 10/16/07 And: 12/31/07

DATE	TIME	AREA	STA / SITE	LOCATION	TEMP °F	SAL	TIDE	WIND	RIVER	STATUS	KARENIA B. >5000
10/22/2007	12:40 PM	I	118	Cedar Point	75	26	high/falling	SE20	2.3	O	0
10/22/2007	1:30 PM	II	153A	Upper Portersville Bay	76	22	high/falling	SE 20	2.3	O	0
10/19/2007	10:58 AM	I	118	Cedar Point	77	29	falling	7.4 NW	3.0	O	0
10/19/2007	8:15 AM	III	107B	Ft. Morgan Ferry Landing				NW	3.0	O	2,400
10/17/2007	9:30 AM	III	107B	Ft. Morgan Ferry Landing	78	0		SSE windy	3.5	O	100
10/17/2007	10:30 AM	I	118	Cedar Point	77	30	rising	SE 20.4	3.5	O	0

2001-2007 DINO SAMPLING

TABLE III-3

Seafood Branch  
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RESULTS OF ADPH  
 DINOFLAGELLATE SAMPLING  
 AREA II

Between: 01/01/01/ And: 12/31/07

DATE	TIME	STA	LOCATION	TEMP °F	SAL	TIDE	WIND	RIVER	STATUS	ALEX	DINO	GONY	GYMN	GYRO	KARE	PROR	PROT
12/31/2007	11:32 AM	153A	Upper Portersville Bay	59	28	L	6 E	2.5	O	0	0	0	0	0	0	100	310
12/27/2007	12:14 PM	153A	Upper Portersville Bay	63	27	neap	calm	2.5	O	0	0	0	0	0	0	820	410
12/20/2007	11:02 AM	153A	Upper Portersville Bay	62	25	R	SE 10-15	3.2	O	0	0	0	0	0	0	10,000	210
12/17/2007	10:15 AM	153A	Upper Portersville Bay	53	30	L	NE 10	1.1	O	0	0	0	0	0	0	100,000	930
12/12/2007	10:30 AM	153A	Upper Portersville Bay	75	28	L	SE 10	3.7	O	0	0	0	0	0	0	520	5,000
12/10/2007	8:45 AM	153A	Upper Portersville Bay	69	27	L-F	SE 10	2.7	O	0	0	0	0	0	0	410	4,200
11/29/2007	10:20 AM	153A	Upper Portersville Bay	65	28	L	N 5	1.6	O	0	0	0	0	0	0	20,000	1,400
11/26/2007	11:30 AM	153A	Upper Portersville Bay	63	23	L	SW 15-20	3.1	O	0	0	0	0	0	0	620	210
11/13/2007	12:38 PM	153A	Upper Portersville Bay	74	30	L-R	3.9 SE	2.6	C	0	0	0	0	0	0	310	14,000
11/7/2007	2:20 PM	153A	Upper Portersville Bay	65	30	L	NE 10	2.0	O	0	0	0	0	3,400	0		20,000
11/5/2007	11:05 AM	153A	Upper Portersville Bay	68	29	neap	calm	2.4	O	0	0	0	0	1,300	100	410	310
10/25/2007	11:41 AM	153A	Upper Portersville Bay	63	22	R	14.3NW	2.6	O	0	100	0	0	100	0	410	210
10/25/2007	11:14 AM	178	Grand Bay	64	25	R	11.2NW	2.6	O	0	0	0	0	100	0	5,900	0
10/22/2007	1:30 PM	153A	Upper Portersville Bay	76	22	H-F	SE 20	2.3	O	0	0	0	0	820	0	100	5,300
8/29/2007	9:20 AM	153A	Upper Portersville Bay	85	28	H	SE 1-3	2.2	O	0	0	0	0	2,400	0	210	520
8/28/2007	11:25 AM	178	Grand Bay	87	30	H	NE 1-3	2.0	O	0	0	0	0	2,500	0	1,900	720
7/10/2007	12:42 PM	153A	Upper Portersville Bay	89	28	H-F	SW 10	1.7	O	1,200	0	0	0	620	0	210	1,800
7/10/2007	12:16 PM	178	Grand Bay	87	28	H-F	SW 10	1.7	O	0	720	0	0	0	0	14,000	210

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RESULTS OF ADPH  
 DINOFLAGELLATE SAMPLING  
 AREA II

Between: 01/01/01/ And: 12/31/07

DATE	TIME	STA	LOCATION	TEMP °F	SAL	TIDE	WIND	RIVER	STATUS	ALEX	DINO	GONY	GYMN	GYRO	KARE	PROR	PROT
6/11/2007	11:15 AM	178	Grand Bay	87	29	R	calm	2.0	O	0	100	0	0	930	0	3,200	100
6/11/2007	11:52 AM	153A	Upper Portersville Bay	88	29	R	3 S	2.0	O	0	0	930	0	14,000	0	820	1,200
4/17/2007	11:50 AM	153A	Upper Portersville Bay	67	27	H	NE 5	2.1	O	0	0	100	0	0	0	1,800	2,500
4/17/2007	11:15 AM	178	Grand Bay	67	29	R	SW 3	2.1	O	0	0	0	0	0	0	1,400	310
11/1/2006	11:04 AM	178	Grand Bay	72	26	F	SE-5	3.1	O	0	0	0	0	310	0	720	930
11/1/2006	11:37 AM	153A	Upper Portersville Bay	72	25	F	SE 5	3.1	O	0	0	0	0	100	0	5,600	100
8/15/2006	10:16 AM	153A	Upper Portersville Bay	88	28	H	NW 5	1.9	O	210	0	0	0	100	0	100	0
8/15/2006	9:45 AM	178	Grand Bay	87	28	H	<5	1.9	O	100	0	0	0	100	0	620	210
7/25/2006	10:09 AM	178	Grand Bay	84	27	R	calm	3.7	O	620	0	620	0	100	0	100	310
7/25/2006	10:38 AM	153A	Upper Portersville Bay	83	26	R	calm	3.7	O	0	0	210	0	100	0	0	410
6/27/2006	10:07 AM	178	Grand Bay	83	28	R	N 5	3.7	O	0	0	0	0	2,800	0	930	0
6/27/2006	10:38 AM	153A	Upper Portersville Bay	82	26	R	N 3	3.7	O	0	0	100	0	3,800	0	410	410
5/23/2006	10:45 AM	153A	Upper Portersville Bay	81	25	R	NW 3-5	3.4	O	0	0	410	0	0	0	5,000	720
5/23/2006	10:20 AM	178	Grand Bay	80	26	R	NW 3-5	3.4	O	0	210	310	0	0	0	2,600	520
3/30/2006	11:25 AM	153A	Upper Portersville Bay	68	15	H	SE 15	7.8	C	0	0	0	0	0	0	310	7,200
3/30/2006	10:55 AM	178	Grand Bay	67	18	H	SE 5	7.8	C	0	0	0	0	0	0	1,900	620
2/3/2006	10:15 AM	153A	Upper Portersville Bay	62	9	R	SSE 5	7.8	C	0	0	210,000	0	0	0	410	520
2/3/2006	9:35 AM	178	Grand Bay	61	18	R	SSE 5-7	7.8	C	0	0	6,300	0	0	0	0	3,100



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RESULTS OF ADPH  
 DINOFLAGELLATE SAMPLING  
 AREA II

Between: 01/01/01/ And: 12/31/07

DATE	TIME	STA	LOCATION	TEMP °F	SAL	TIDE	WIND	RIVER	STATUS	ALEX	DINO	GONY	GYMN	GYRO	KARE	PROR	PROT
1/19/2006	10:45 AM	153A	Upper Portersville Bay	55	24	neap	SE 10	3.5	O	0	0	210	0	0	0	520	310
1/19/2006	10:10 AM	178	Grand Bay	55	29	neap	SE 10	3.5	O	0	0	0	0	0	0	4,900	100
12/13/2005	10:10 AM	178	Grand Bay	52	29	L-R	ENE 5	2.8	O	0	0	100	0	100	0	1,300	820
12/13/2005	10:50 AM	153A	Upper Portersville Bay	52	29	L-R	ENE 5	2.8	O	0	0	2,300	0	0	0	10,000	0
10/25/2005	2:18 AM	153A	Upper Portersville Bay	62	28	F	NW 10	0.4	C	0	0	0	0	100	410	310	410
10/25/2005	2:00 AM	178	Grand Bay	63	26	F	NW 10-15	0.4	C	0	0	0	0	0	0	720	100
10/10/2005	10:23 AM	154	Lower Portersville Bay	74	26	F	NE 5	2.3	O	0	0	0	0	0	0	460	0
10/7/2005	10:33 AM	154	Lower Portersville Bay	85	21	H-F	NW 10-15	2.0	O	0	0	0	0	0	220	4,600	0
10/5/2005	3:50 PM	154	Lower Portersville Bay	82	19	H	N 15	3.5	O	0	0	0	0	0	0	2,300	0
7/26/2005	9:30 AM	178	Grand Bay	89	12	H-F	0	6.7	C	0	0	0	0	0	0	620	0
7/26/2005	9:52 AM	153A	Upper Portersville Bay	89	7	H-F	0	6.7	C	0	0	0	0	0	0	240	240
5/18/2005	10:30 AM	153A	Upper Portersville Bay	75	16	R	ESE 5	3.7	O	0	0	0	0	660	0	880	880
5/18/2005	10:05 AM	178	Grand Bay	73	19	R	ESE 5	3.7	O	0	0	0	620	0	0	31,000	1,200
3/29/2005	11:52 AM	153A	Upper Portersville Bay	69	11	R	SE 2.5	6.7	O	0	0	1,100	0	0	0	20,000	0
3/29/2005	11:17 AM	178	Grand Bay	70	18	R	SE 7.2	6.7	O	0	0	0	0	0	0	170,000	0
1/4/2005	10:56 AM	178	Grand Bay	64	10	L-R	SE 5	4.5	O	0	0	1,100	2,300,000	0	0	1,300	4,300
1/4/2005	12:26 PM	153A	Upper Portersville Bay	66	8	L-R	SE 5	4.5	O	0	0	0	0	0	0	20,000	2,900
10/5/2004	11:00 AM	153A	Upper Portersville Bay	82	22	H	N NE 0-4	2.6	O	0	180	0	0	0	0	27,000	360

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RESULTS OF ADPH  
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 AREA II

Between: 01/01/01/ And: 12/31/07

DATE	TIME	STA	LOCATION	TEMP °F	SAL	TIDE	WIND	RIVER	STATUS	ALEX	DINO	GONY	GYMN	GYRO	KARE	PROR	PROT
10/5/2004	10:30 AM	178	Grand Bay	82	22	H	calm	2.6	O	0	0	0	0	0	0	3,200	140
7/28/2004	9:55 AM	178	Grand Bay	88	25	H-F	calm	1.7	O	0	0	0	0	0	0	170,000	0
7/28/2004	10:31 AM	153A	Upper Portersville Bay	88	18	H-F	S 2-5	1.7	O	0	150	300	0	1,400	0	12,000	4,700
5/25/2004	10:34 AM	153A	Upper Portersville Bay	83	17	R	SW 5.4	4.0	O	0	0	430	0	210	0	2,100	6,000
5/25/2004	10:00 AM	178	Grand Bay	82	15	R	calm	4.0	O	0	0	660	0	170	0	12,000	830
2/26/2004	10:54 AM	153A	Upper Portersville Bay	50	14	R	NE 6.6	7.9	C	0	0	650	6,500	4,300	0	1,800,000	5,400
1/14/2004	11:15 AM	153A	Upper Portersville Bay	51	22	L-R	S 5	4.3	O	0	0	0	0	0	0	3,900,000	590
1/14/2004	10:40 AM	178	Grand Bay	50	24	L-R	SE 5-10	4.3	O	0	0	0	140	140	0	120,000	3,600
11/12/2003	11:47 AM	153A	Upper Portersville Bay	71	18	L	2.0 S	3.8	O	0	220	0	0	0	0	7,500	900
11/12/2003	11:17 AM	178	Grand Bay	70	23	L	1.1 S	3.8	O	0	0	0	490	160	0	3,400	1,100
9/24/2003	10:12 AM	178	Grand Bay	78	24	H	3.7 NE	3.7	O	0	150	1,400	310	150	0	20,000	460
9/24/2003	10:42 AM	153A	Upper Portersville Bay	78	20	H	8.3 NE	3.7	O	0	0	0	0	160	0	220	310
6/4/2003	10:39 AM	178	Grand Bay	83	15	R	2.4 N NE	7.4	C	0	0	580	770	0	0	7,100	1,500
6/4/2003	11:06 AM	153A	Upper Portersville Bay	84	13	R	2.2 NE	7.4	C	0	0	1,500	0	0	0	0	2,000
5/6/2003	10:35 AM	178	Grand Bay	82	10	R	10.5 SW	7.8	C	0	0	0	1,600	0	0	2,100	0
5/6/2003	10:55 AM	153A	Upper Portersville Bay	81	5	R	8.1 SW	7.8	C	0	0	0	0	0	0	840	0
4/19/2003	10:45 AM	178	Grand Bay	76	14	R	9.9 SE	7.3	C	0	0	0	390	0	0	12,000	990
4/19/2003	11:25 AM	153A	Upper Portersville Bay	76	8	R	10.9	7.3	C	0	0	0	20,000	0	0	170,000	4,000

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RESULTS OF ADPH  
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 AREA II

Between: 01/01/01/ And: 12/31/07

DATE	TIME	STA	LOCATION	TEMP °F	SAL	TIDE	WIND	RIVER	STATUS	ALEX	DINO	GONY	GYMN	GYRO	KARE	PROR	PROT
/25/2003	9:15 AM	178	Grand Bay	68	12	R	6.1 SE	7.9	C	0	0	770	1,100	0	0	2,900	1,900
3/25/2003	9:40 AM	153A	Upper Portersville Bay	69	7	L-R	7.1 SE	7.9	C	0	0	0	0	70,000	0	740	560
1/9/2003	10:45 AM	178	Grand Bay	56	23	L	11.2 SW	7.3	C	0	0	0	1,000	0	0	59,000	23,000
1/9/2003	11:23 AM	153A	Upper Portersville Bay	58	12	L	4 SW	7.3	C	0	0	380	12,000	300,000	0	1,100,000	750
12/17/2002	11:05 AM	153A	Upper Portersville Bay	56	17	L	5.4 SE	6.9	O	0	0	4,900	140	0	0	11,000	1,600
12/17/2002		178	Grand Bay	56	18	L	5.4 SE	6.9	O	0	0	1,700	150	0	0	23,000	9,400
10/1/2002	9:50 AM	178	Grand Bay	82	25	F	6.2 E	5.8	O	350	0	180	0	710	0	900	0
10/1/2002	10:20 AM	153A	Upper Portersville Bay	83	23	F	9.1 E	5.8	O	0	0	150	0	0	0	910	2,000
8/27/2002	11:07 AM	178	Grand Bay	88	28	H	4.2 NE	2.5	O	0	640	0	0	430	0	4,100	0
8/27/2002	11:40 AM	153A	Upper Portersville Bay	87	25	H	2.5 N	2.5	O	280	0	280	140	0	0	560	420
6/12/2002		178	Grand Bay	85	20	F	calm	2.2	O	0	94	1,300	850	380	0	3,700	740
6/12/2002	12:07 PM	153A	Upper Portersville Bay	88	18	H-F	4	2.2	O	0	0	0	440	980	0	1,100	2,400
5/23/2002	10:14 AM	178	Grand Bay		23	R	14 NE	22.5	O	0	350	180	350	0	0	6,200	360
5/23/2002	10:50 AM	153A	Upper Portersville Bay	70	27	R	15 E	2.5	O	0	0	0	0	0	0	870	0
4/16/2002		153A	Upper Portersville Bay	78	6	H	5-8 SE	3.8	O	0	0	0	3,800	0	0	1,500	680
4/16/2002	11:33 AM	178	Grand Bay	76	12	H	SE 14	3.8	O	0	0	0	940	0	0	2,000	330
11/27/2001	11:00 AM	153A	Upper Portersville Bay	75	25	R	SE 5-10	3.3	O	0	0	0	0	160	0	0	0
11/27/2001		178	Grand Bay	72	26	R	SE 5-10	3.3	O	0	0	0	0	2,200	0	510	0

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**RESULTS OF ADPH  
 DINOFLAGELLATE SAMPLING  
 AREA II**

Between: 01/01/01/ And: 12/31/07

DATE	TIME	STA	LOCATION	TEMP °F	SAL	TIDE	WIND	RIVER	STATUS	ALEX	DINO	GONY	GYMN	GYRO	KARE	PROR	PROT
9/18/2001	10:50 AM	178	Grand Bay	84	22	H	SE 0-5	2.5	O	1,000	0	0	150	0	0	3,100	300
9/18/2001	11:15 AM	153A	Upper Portersville Bay	84	13	H	SE 0-5	2.5	O	320	0	0	640	160	0	160	160
7/17/2001	11:30 AM	178	Grand Bay	85	22	H	NE 5	2.7	O	0	1,400	260	1,400	1,000	0	2,200	720
7/17/2001	12:05 PM	153A	Upper Portersville Bay	86	20	H	NE 10	2.7	O	0	0	1,600	3,000	2,600	0	180	1,200
6/27/2001	9:45 AM	178	Grand Bay	83	14	R	E 10-15	1.8	O	1,900	0	1,800	1,400	1,100	0	2,100	480
6/27/2001	10:18 AM	153A	Upper Portersville Bay	83	15	R	E 10-15	1.8	O	0	0	5,900	49,000	1,300	0	0	1,700
4/4/2001	10:10 AM	178	Grand Bay	72	8	R	SW 10	7.2	C	0	0	0	1,200	300	0	300	3,400
4/4/2001	10:40 AM	153A	Upper Portersville Bay	72	6	R	SW 10	7.2	C	0	0	0	470	0	0	3,900	4,700

## 2006 DATA ANALYSIS

### TABLE IV-1

Table IV-1

## AREA II – Data Analysis

Station	LogFc	Date	WTemp	River	Rain0	Acum1	Acum2	Acum3	Acum4	Acum5
178	0.25527	02/09/02	54	7.7	0	0	0.03	0.72	1.19	1.19
176	0.25527	02/09/02	54	7.7	0	0	0.03	0.72	1.19	1.19
170	0.25527	02/09/02	51	7.7	0	0	0.03	0.72	1.19	1.19
153A	0.30103	02/09/02	51	7.7	0	0	0.03	0.72	1.19	1.19
139A	1.8451	02/09/02	52	7.7	0	0	0.03	0.72	1.19	1.19
154	0.65321	02/09/02	50	7.7	0	0	0.03	0.72	1.19	1.19
170	0.25527	04/16/02	76	3.8	0	0	0.33	0.331	0.571	0.631
176	0.25527	04/16/02	76	3.8	0	0	0.33	0.331	0.571	0.631
153A	0.25527	04/16/02	78	3.8	0	0	0.33	0.331	0.571	0.631
139A	0.25527	04/16/02	78	3.8	0	0	0.33	0.331	0.571	0.631
154	0.25527	04/16/02	78	3.8	0	0	0.33	0.331	0.571	0.631
178	0.25527	04/16/02	76	3.8	0	0	0.33	0.331	0.571	0.631
154	0.25527	05/23/02	72	2.5	0	0	0	0	0.12	0.85
178	0.25527	05/23/02	70	2.5	0	0	0	0	0.12	0.85
176	0.25527	05/23/02	70	2.5	0	0	0	0	0.12	0.85
170	0.30103	05/23/02	72	2.5	0	0	0	0	0.12	0.85
139A	0.25527	05/23/02	72	2.5	0	0	0	0	0.12	0.85
153A	0.25527	05/23/02	70	2.5	0	0	0	0	0.12	0.85
154	0.25527	06/12/02	86	2.2	0	0.13	0.13	0.131	0.131	0.132
139A	0.25527	06/12/02	88	2.2	0	0.13	0.13	0.131	0.131	0.132
153A	0.25527	06/12/02	88	2.2	0	0.13	0.13	0.131	0.131	0.132
170	0.25527	06/12/02	86	2.2	0	0.13	0.13	0.131	0.131	0.132
176	0.25527	06/12/02	88	2.2	0	0.13	0.13	0.131	0.131	0.132
178	0.25527	06/12/02	85	2.2	0	0.13	0.13	0.131	0.131	0.132
170	0.25527	08/27/02	88	2.5	0	0.15	0.32	0.32	0.32	0.46
154	0.25527	08/27/02	87	2.5	0	0.15	0.32	0.32	0.32	0.46
153A	0.25527	08/27/02	87	2.5	0	0.15	0.32	0.32	0.32	0.46
178	0.25527	08/27/02	88	2.5	0	0.15	0.32	0.32	0.32	0.46
176	0.25527	08/27/02	88	2.5	0	0.15	0.32	0.32	0.32	0.46
139A	0.25527	08/27/02	87	2.5	0	0.15	0.32	0.32	0.32	0.46
178	0.25527	10/01/02	82	5.8	0	0	0	0	0	1
176	0.25527	10/01/02	82	5.8	0	0	0	0	0	1
170	0.25527	10/01/02	83	5.8	0	0	0	0	0	1
153A	0.25527	10/01/02	83	5.8	0	0	0	0	0	1
139A	0.30103	10/01/02	82	5.8	0	0	0	0	0	1
154	0.25527	10/01/02	82	5.8	0	0	0	0	0	1
154	0.25527	12/17/02	57	1.8	0	0	0	0.001	0.002	0.922
139A	0.25527	12/17/02	57	1.8	0	0	0	0.001	0.002	0.922
176	0.25527	12/17/02	56	1.8	0	0	0	0.001	0.002	0.922
178	0.25527	12/17/02	56	1.8	0	0	0	0.001	0.002	0.922
153A	0.65321	12/17/02	56	1.8	0	0	0	0.001	0.002	0.922
170	0.65321	12/17/02	57	1.8	0	0	0	0.001	0.002	0.922
154	0.25527	01/09/03	54	6.9	0	0	0	0	0	0
178	0.25527	01/09/03	56	6.9	0	0	0	0	0	0
176	0.25527	01/09/03	56	6.9	0	0	0	0	0	0
170	0.25527	01/09/03	57	6.9	0	0	0	0	0	0
153A	0.30103	01/09/03	58	6.9	0	0	0	0	0	0
139A	0.30103	01/09/03	55	6.9	0	0	0	0	0	0
139A	0.30103	03/25/03	67	7.9	0	0	0.001	0.001	0.001	0.001

153A	0.25527	03/25/03	69	7.9	0	0	0.001	0.001	0.001	0.001
170	0.30103	03/25/03	68	7.9	0	0	0.001	0.001	0.001	0.001
178	0.25527	03/25/03	68	7.9	0	0	0.001	0.001	0.001	0.001
154	0.30103	03/25/03	68	7.9	0	0	0.001	0.001	0.001	0.001
176	0.25527	03/25/03	68	7.9	0	0	0.001	0.001	0.001	0.001
139A	0.65321	04/19/03	76	7.3	0	0	0	0	0	0
154	0.83251	04/19/03	76	7.3	0	0	0	0	0	0
153A	0.30103	04/19/03	76	7.3	0	0	0	0	0	0
170	0.30103	04/19/03	76	7.3	0	0	0	0	0	0
178	0.25527	04/19/03	76	7.3	0	0	0	0	0	0
176	0.30103	04/19/03	76	7.3	0	0	0	0	0	0
178	0.30103	05/06/03	82	7.5	0.001	0.051	0.051	0.061	0.061	0.061
176	0.25527	05/06/03	82	7.5	0.001	0.051	0.051	0.061	0.061	0.061
170	0.30103	05/06/03	82	7.5	0.001	0.051	0.051	0.061	0.061	0.061
153A	0.25527	05/06/03	81	7.5	0.001	0.051	0.051	0.061	0.061	0.061
139A	0.25527	05/06/03	81	7.5	0.001	0.051	0.051	0.061	0.061	0.061
154	0.30103	05/06/03	81	7.5	0.001	0.051	0.051	0.061	0.061	0.061
139A	0.25527	06/04/03	83	7.4	0	0.35	0.351	0.351	0.351	0.351
154	0.25527	06/04/03	83	7.4	0	0.35	0.351	0.351	0.351	0.351
170	0.25527	06/04/03	83	7.4	0	0.35	0.351	0.351	0.351	0.351
176	0.25527	06/04/03	83	7.4	0	0.35	0.351	0.351	0.351	0.351
153A	0.65321	06/04/03	84	7.4	0	0.35	0.351	0.351	0.351	0.351
178	0.25527	06/04/03	83	7.4	0	0.35	0.351	0.351	0.351	0.351
154	0.30103	06/26/03	83	8	0	0	0.02	0.07	1.47	2.95
178	0.25527	06/26/03	83	8	0	0	0.02	0.07	1.47	2.95
176	0.25527	06/26/03	83	8	0	0	0.02	0.07	1.47	2.95
170	0.89209	06/26/03	82	8	0	0	0.02	0.07	1.47	2.95
153A	0.25527	06/26/03	83	8	0	0	0.02	0.07	1.47	2.95
139A	0.60206	06/26/03	83	8	0	0	0.02	0.07	1.47	2.95
139A	0.30103	07/14/03	80	7.7	0.001	0.001	0.002	0.002	0.002	0.003
153A	1.36173	07/14/03	83	7.7	0.001	0.001	0.002	0.002	0.002	0.003
170	0.30103	07/14/03	83	7.7	0.001	0.001	0.002	0.002	0.002	0.003
178	0.25527	07/14/03	83	7.7	0.001	0.001	0.002	0.002	0.002	0.003
154	1.11394	07/14/03	78	7.7	0.001	0.001	0.002	0.002	0.002	0.003
176	0.25527	07/14/03	83	7.7	0.001	0.001	0.002	0.002	0.002	0.003
139A	0.25527	09/24/03	75	3.7	0	0	0.21	0.84	0.84	0.84
154	0.65321	09/24/03	75	3.7	0	0	0.21	0.84	0.84	0.84
153A	1.36173	09/24/03	78	3.7	0	0	0.21	0.84	0.84	0.84
170	0.65321	09/24/03	77	3.7	0	0	0.21	0.84	0.84	0.84
178	0.25527	09/24/03	78	3.7	0	0	0.21	0.84	0.84	0.84
176	0.25527	09/24/03	78	3.7	0	0	0.21	0.84	0.84	0.84
178	0.30103	11/12/03	70	3.8	0	0	0	0	0	0
176	0.25527	11/12/03	70	3.8	0	0	0	0	0	0
139A	0.65321	11/12/03	72	3.8	0	0	0	0	0	0
170	0.25527	11/12/03	72	3.8	0	0	0	0	0	0
153A	0.25527	11/12/03	71	3.8	0	0	0	0	0	0
154	0.30103	11/12/03	72	3.8	0	0	0	0	0	0
139A	0.25527	01/14/04	51	4.3	0	0	0	0	0	0.09
153A	0.25527	01/14/04	51	4.3	0	0	0	0	0	0.09
176	0.25527	01/14/04	50	4.3	0	0	0	0	0	0.09
178	0.25527	01/14/04	50	4.3	0	0	0	0	0	0.09

154	0.25527	01/14/04	50	4.3	0	0	0	0	0	0.09
170	0.25527	01/14/04	50	4.3	0	0	0	0	0	0.09
170	2.73239	02/26/04	50	7.9	0.03	4.43	4.62	6.33	6.33	6.33
153A	1.51851	02/26/04	50	7.9	0.03	4.43	4.62	6.33	6.33	6.33
139A	2.73239	02/26/04	50	7.9	0.03	4.43	4.62	6.33	6.33	6.33
154	1.6902	02/26/04	50	7.9	0.03	4.43	4.62	6.33	6.33	6.33
178	0.89209	03/05/04	63	7.4	0.001	0.001	0.001	0.011	0.012	0.013
176	0.65321	03/05/04	64	7.4	0.001	0.001	0.001	0.011	0.012	0.013
170	1.51851	03/05/04	63	7.4	0.001	0.001	0.001	0.011	0.012	0.013
153A	1.23045	03/05/04	63	7.4	0.001	0.001	0.001	0.011	0.012	0.013
139A	1.04139	03/05/04	63	7.4	0.001	0.001	0.001	0.011	0.012	0.013
154	0.60206	03/05/04	63	7.4	0.001	0.001	0.001	0.011	0.012	0.013
153A	0.25527	05/25/04	83	4	0	0	0	0	0	0
178	0.25527	05/25/04	82	4	0	0	0	0	0	0
170	0.25527	05/25/04	82	4	0	0	0	0	0	0
139A	0.25527	05/25/04	79	4	0	0	0	0	0	0
154	0.25527	05/25/04	80	4	0	0	0	0	0	0
176	0.25527	05/25/04	82	4	0	0	0	0	0	0
178	0.65321	07/28/04	88	1.7	0	0.01	0.011	0.341	0.341	0.341
176	1.11394	07/28/04	88	1.7	0	0.01	0.011	0.341	0.341	0.341
170	0.30103	07/28/04	88	1.7	0	0.01	0.011	0.341	0.341	0.341
153A	0.65321	07/28/04	88	1.7	0	0.01	0.011	0.341	0.341	0.341
139A	1.23045	07/28/04	88	1.7	0	0.01	0.011	0.341	0.341	0.341
154	0.89209	07/28/04	89	1.7	0	0.01	0.011	0.341	0.341	0.341
153A	0.30103	10/05/04	82	2.6	0.05	0.05	0.05	0.05	0.05	0.05
178	0.25527	10/05/04	82	2.6	0.05	0.05	0.05	0.05	0.05	0.05
170	0.25527	10/05/04	82	2.6	0.05	0.05	0.05	0.05	0.05	0.05
139A	0.30103	10/05/04	82	2.6	0.05	0.05	0.05	0.05	0.05	0.05
154	0.30103	10/05/04	82	2.6	0.05	0.05	0.05	0.05	0.05	0.05
176	0.25527	10/05/04	82	2.6	0.05	0.05	0.05	0.05	0.05	0.05
139A	0.65321	12/26/04	50	7.3	0	0.17	0.17	0.171	1.121	1.141
176	0.65321	12/26/04	50	7.3	0	0.17	0.17	0.171	1.121	1.141
153A	1.11394	12/26/04	50	7.3	0	0.17	0.17	0.171	1.121	1.141
154	1.36173	12/26/04	50	7.3	0	0.17	0.17	0.171	1.121	1.141
170	0.30103	12/26/04	50	7.3	0	0.17	0.17	0.171	1.121	1.141
178	0.65321	12/26/04	50	7.3	0	0.17	0.17	0.171	1.121	1.141
178	0.25527	01/04/05	64	4.5	0	0	0	0.001	0.001	0.001
176	0.30103	01/04/05	64	4.5	0	0	0	0.001	0.001	0.001
170	0.25527	01/04/05	66	4.5	0	0	0	0.001	0.001	0.001
153A	0.25527	01/04/05	66	4.5	0	0	0	0.001	0.001	0.001
139A	0.30103	01/04/05	66	4.5	0	0	0	0.001	0.001	0.001
154	0.30103	01/04/05	66	4.5	0	0	0	0.001	0.001	0.001
176	0.30103	03/29/05	70	6.7	0	0	0.27	0.72	0.74	0.74
154	0.25527	03/29/05	67	6.7	0	0	0.27	0.72	0.74	0.74
139A	0.65321	03/29/05	66	6.7	0	0	0.27	0.72	0.74	0.74
170	1.04139	03/29/05	66	6.7	0	0	0.27	0.72	0.74	0.74
178	0.25527	03/29/05	70	6.7	0	0	0.27	0.72	0.74	0.74
153A	1.11394	03/29/05	69	6.7	0	0	0.27	0.72	0.74	0.74
178	0.25527	04/22/05	75	7.3	0	0	0	0.001	0.001	0.001
176	0.25527	04/22/05	75	7.3	0	0	0	0.001	0.001	0.001
170	0.25527	04/22/05	74	7.3	0	0	0	0.001	0.001	0.001



153A	0.65321	04/22/05	75	7.3	0	0	0	0.001	0.001	0.001
139A	0.25527	04/22/05	74	7.3	0	0	0	0.001	0.001	0.001
154	0.65321	04/22/05	74	7.3	0	0	0	0.001	0.001	0.001
153A	0.65321	05/18/05	75	3.7	0	0	0	0.01	0.01	0.01
139A	0.30103	05/18/05	75	3.7	0	0	0	0.01	0.01	0.01
176	0.25527	05/18/05	73	3.7	0	0	0	0.01	0.01	0.01
178	0.25527	05/18/05	73	3.7	0	0	0	0.01	0.01	0.01
154	0.25527	05/18/05	75	3.7	0	0	0	0.01	0.01	0.01
170	0.65321	05/18/05	77	3.7	0	0	0	0.01	0.01	0.01
178	0.25527	07/26/05	89	6.7	0.04	0.04	0.041	0.101	0.101	1.171
176	0.25527	07/26/05	89	6.7	0.04	0.04	0.041	0.101	0.101	1.171
170	2.73239	07/26/05	89	6.7	0.04	0.04	0.041	0.101	0.101	1.171
153A	0.25527	07/26/05	89	6.7	0.04	0.04	0.041	0.101	0.101	1.171
139A	0.25527	07/26/05	88	6.7	0.04	0.04	0.041	0.101	0.101	1.171
154	0.25527	07/26/05	88	6.7	0.04	0.04	0.041	0.101	0.101	1.171
139A	0.25527	09/14/05	84	2.8	0	0	0	0	0	0
154	0.25527	09/14/05	84	2.8	0	0	0	0	0	0
170	0.25527	09/14/05	83	2.8	0	0	0	0	0	0
176	0.25527	09/14/05	82	2.8	0	0	0	0	0	0
178	0.25527	09/14/05	82	2.8	0	0	0	0	0	0
153A	0.60206	09/14/05	84	2.8	0	0	0	0	0	0
139A	0.25527	10/17/05	72	3.1	0	0	0	0	0	0
178	0.25527	10/17/05	75	3.1	0	0	0	0	0	0
154	0.25527	10/17/05	73	3.1	0	0	0	0	0	0
153A	0.25527	10/17/05	73	3.1	0	0	0	0	0	0
170	0.25527	10/17/05	72	3.1	0	0	0	0	0	0
176	0.25527	10/17/05	75	3.1	0	0	0	0	0	0

	<i>LogFc</i>	<i>Date</i>	<i>WTemp</i>	<i>River</i>	<i>Rain0</i>	<i>Acum1</i>	<i>Acum2</i>	<i>Acum3</i>	<i>Acum4</i>	<i>Acum5</i>
LogFc	1									
Date	<b>0.13211</b>	1								
WTemp	<b>-0.2424</b>	0.0552994	1							
River	<a href="#">0.25041</a>	-0.033236	-0.256	1						
Acum0	<a href="#">0.22163</a>	0.2861611	0.1459	-0.01	1					
Acum1	<a href="#">0.59057</a>	0.0191726	-0.269	0.195	0.3334	1				
Acum2	<a href="#">0.58755</a>	-0.002495	-0.259	0.18	0.3175	0.99204	1			
Acum3	<a href="#">0.61407</a>	-0.008183	-0.289	0.19	0.2998	0.967177	0.981535	1		
Acum4	<a href="#">0.60984</a>	-0.038564	-0.326	0.282	0.2526	0.913177	0.92755	0.950234	1	
Acum5	<a href="#">0.54145</a>	-0.100535	-0.238	0.271	0.2891	0.807559	0.815548	0.830334	0.928619	1

n 178  
CV 0.14714