

US EPA ARCHIVE DOCUMENT

**CATALOG DOCUMENTATION  
REGIONAL ENVIRONMENTAL MONITORING AND ASSESSMENT PROGRAM - REGION 6  
1993-1994 TEXAS COAST RIVERS AND ESTUARIES STUDY  
STATION LOCATION AND INFORMATION DATA**

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1. DATA SET IDENTIFICATION

1.1 Title of Catalog document

Regional Environmental Monitoring and Assessment Program - Region 6  
1993-1994 Texas Coast Rivers and Estuaries Study  
Station Location and Information Data

1.2 Authors of the Catalog entry

Melissa M Hughes, OAO Corp.

1.3 Catalog Revision Date

March 30, 1998

#### 1.4 Data Set Name

STATIONS

#### 1.5 Task Group

Region 6

#### 1.6 Data set identification codes

00001

#### 1.7 Version

001

#### 1.8 Requested Acknowledgment

If you plan to publish these data in any way, EPA requires a standard statement for work it has supported:

"Although the data described in this article have been funded wholly or in part by the U. S. Environmental Protection Agency through its Regional EMAP Program, it has not been subjected to Agency review, and therefore does not necessarily reflect the views of the Agency and no official endorsement should be inferred."

### 2. INVESTIGATOR INFORMATION

#### 2.1 Principal Investigator

Charles Howell  
US Environmental Protection Agency - Region 6  
Environmental Services Division

#### 2.2 Investigation Participant-Sample Collection

Texas A & M University  
College Station, TX

### 3. DATA SET ABSTRACT

#### 3.1 Abstract of the Data Set

The R-EMAP Region 6 STATIONS data file contains geographic and statistical information on stations in Galveston Bay, the East Bay Bayou of Galveston Bay, the Arroyo Colorado River and the Rio Grande River area. Sampling stations were randomly selected as locations to conduct a specific suite of monitoring activities and sample gathering.

#### 3.2 Keywords for the Data Set

Sampling Sites, water body system, latitude, longitude, station location, EPA region

#### 4. OBJECTIVES AND INTRODUCTION

##### 4.1 Program Objective

The R-EMAP Texas Coast project will:

1. Determine the extent and magnitude of tri-butyl tin (TBT) contamination in Galveston Bay sediment and water column.
2. Determine the extent and magnitude of contaminant levels in the fish and sediment of the East Bay Bayou of Galveston Bay and whether the incidence of fish pathologies is correlated with sediment contamination.
3. Determine the levels of chlorinated hydrocarbons in fish tissue, conduct chemical and toxicity tests of sediments and determine benthic community structure in the tidal reaches of the Arroyo Colorado and the Rio Grande Rivers.
4. Determine the extent and magnitude of anoxia and high concentrations of agriculture-related contaminants found in the tidal reaches of the Arroyo Colorado and Rio Grande Rivers.

##### 4.2 Data Set Objective

The STATIONS data set provides statistical and geographical characterization of the Sampling Sites sampled in Galveston Bay, the East Bay Bayou of Galveston Bay and the Arroyo Colorado and Rio Grande Rivers.

##### 4.3 Data Set Background Information

An unbiased sampling design has been used in Region 6 so that estuarine resources and characteristics were sampled in proportion to their areal distribution. This sampling design makes it possible to estimate, with known confidence, the proportion or amount of area having defined environmental characteristics.

##### 4.4 Summary of Data Set Parameters

STATIONS data set values were based on the geographic location of the station, independent of the station visit.

##### 4.5 Year-Specific Information about Data

Not applicable.

#### 5. DATA ACQUISITION AND PROCESSING METHODS

##### 5.1 Data Acquisition

###### 5.1.1 Sampling Objective

The primary goal was to be within 100 m of the assigned latitude and longitude of a sampling site. This objective was set forth so the sample would be collected as true to the exact location selected during the random selection process.

### 5. 1. 2 Sample Collection Methods Summary

The R-EMAP-TX sampling strategy uses an extension of the EMAP-E sampling design.

In Galveston Bay, sample site selection is based on a randomly placed hexagonal grid. The sampling scale for this project calls for a grid of 31 hexagons of 70 square kilometers each (four times the density of the sampling conducted in the 1991 EMAP-E survey). Sampling sites are chosen randomly within each hexagon.

For the three small tidal rivers-the East Bay Bayou, the Arroyo Colorado, and the Rio Grande-a systematic linear grid is used to select sampling sites. The linear grid defines the spine of the rivers, starting at the mouth and extending upstream to designated points. Sampling segments are placed every 2.5 km along the spine (four times the density used in the 1991 EMAP-E project). Sampling sites are chosen randomly within each segment.

The sampling design results in 6 segments in the East Bay Bayou, 10 in the Arroyo Colorado, and 3 in the Rio Grande.

### 5. 1. 3 Beginning Sampling Dates

24 September 1993  
10 August 1994

### 5. 1. 4 Ending Sampling Date

10 October 1993  
16 August 1994

### 5. 1. 5 Platform

Each team was supplied with a 25-foot SeaArk work boat equipped with a 7.5 L gas engine fitted with a Bravo outdrive, an "A" frame boom assembly and hydraulic winch. On-board electronics consist of: a Loran C unit, GPS radar unit, 2 VHF radios, cellular phone, compass, a depth finder, a tool kit, and all required and suggested safety equipment.

### 5. 1. 6 Sampling Equipment

The LORAN-C system and Raytheon GPS (Global Positioning System) unit were used to navigate to the proposed sampling site using the predetermined latitude and longitude coordinates associated with a station location. The LORAN was the primary method of navigation. The GPS unit was used as on board backup equipment, in place of LORAN in areas of high interference, and as a data integrity tool to further validate the actual latitude/longitude where the samples were collected.

#### 5.1.7 Manufacturer of Sampling Equipment

NA

#### 5.1.8 Key Variables

Latitude and longitude were recorded in the field.

#### 5.1.9 Sample Collection Method Calibration

No formal calibration check required. However, the crew Captains were expected to periodically validate navigational readings by using a fixed point with a known latitude and longitude and comparing that against the instrument reading of the same point.

#### 5.1.10 Sample Collection Quality Control

Field data were entered into field computers and uploaded nightly to a centralized computer system at the Region 6 field operations center. The station locations were both electronically and manually verified against control data (i.e. proposed sampling station latitudes and longitudes, sampling schedule). A suspect problem could be corrected or explained the next day and a resampling for the questionable stations could be rescheduled.

#### 5.1.11 Sample Collection Method References

Macaulley, J.M. 1992. Environmental Monitoring and Assessment Program: Louisiana Province: 1992 Sampling: Field Operations Manual. EPA/ERL-GB No. SR-119. U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

Macaulley, J.M. 1993. Environmental Monitoring and Assessment Program: Louisiana Province: 1993 Sampling: Field Operations Manual. EPA/ERL-GB No. SR-XXX. U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

#### 5.2 Data Preparation and Sample Processing

Not applicable.

### 6. DATA MANIPULATIONS

Most values in the Stations data set were assigned, based on geographic location. The areas for stations in tidal rivers and small estuaries were calculated.

#### 6.1 Name of new or modified values

Station Area

6.2 Data Manipulation Description

STA\_AREA represents the statistical area of a station. Stations located in large estuaries and large tidal rivers are representative of the area of the hexagon (70 km<sup>2</sup>) or segment in which they are located. Stations selected in small estuaries are representative of the actual area of the estuary. All areas are measured in km<sup>2</sup>.

6.3 Data Manipulation Examples

Not applicable.

7. DATA DESCRIPTION

7.1 Description of Parameters

Data Set Name: STATIONS  
 Observations: 109  
 Variables: 12

Field Name	Type	Len	Format	Label
STA_NAME	Char	8	\$8.	The Station Identifier
SYS_CODE	Char	3	\$3.	Large Water Body Code of Sta. Location
ESTUARY	Char	40	\$40.	Small Water Body Where Station Located
SITE	Char	30	\$30.	Site Name
STRATA	Char	3	\$3.	Design Strata: Large/Small/Tidal River
CLASCODE	Char	6	\$6.	Station Class-Determines Sampling Regime
STA_AREA	Num	8	5.2	Statistical Area (sq km) of Station
DEPTH	Num	8	5.1	Station Depth
LATITUDE	Num	8	9.4	Latitude (decimal degrees)
LNGITUDE	Num	8	9.4	Longitude (-decimal degrees)

7.1.6 Precision to which values are reported

Latitude and longitude were measured to within 100 m of the predetermined coordinates.

7.1.7 Minimum value in data set

Variable	Minimum
STA_AREA	0.37
DEPTH	3.2

7.1.8 Maximum value in data set

Variable	Maximum
STA_AREA	45.00
DEPTH	46.0

7.2 Data Record Example

7.2.1 Column Names for Example Records

STA\_NAME SYS\_CODE ESTUARY SITE  
 CLASCODE STRATA STA\_AREA DEPTH LATITUDE LONGITUDE

7.2.2 Example Data Records

LA93AC1	Laguna Madre	ARROYO COLORADO	Arroyo Col orado
LA93AC10	Laguna Madre	ARROYO COLORADO	Arroyo Col orado
LA93AC2	Laguna Madre	ARROYO COLORADO	Arroyo Col orado
LA93AC3	Laguna Madre	ARROYO COLORADO	Arroyo Col orado
LA93AC4	Laguna Madre	ARROYO COLORADO	Arroyo Col orado
BASE	L	2.50 . 26.3503	-97.3553
BASE	L	2.50 . 26.1927	-97.6027
BASE	L	2.50 . 26.3450	-97.3880
BASE	L	2.50 . 26.3208	-97.4578
BASE	L	2.50 . 26.3308	-97.4822

8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude

-97 Degrees 36 Minutes 16.20 Decimal Seconds

8.2 Maximum Longitude

-94 Degrees 24 Minutes 33.00 Decimal Seconds

8.3 Minimum Latitude

25 Degrees 57 Minutes 28.80 Decimal Seconds

8.4 Maximum Latitude

29 Degrees 43 Minutes 49.80 Decimal Seconds

8.5 Name of area or region

Coastal distribution of sampling is in Galveston Bay, the East Bay Bayou of Galveston Bay and the Arroyo Colorado and the Rio Grande River systems in Texas.

9. QUALITY CONTROL/QUALITY ASSURANCE

9.1 Measurement Quality Objectives

The primary quality objective for collecting data for the STATIONS file was to provide an accurate chronology of events that took place at a sampling station. Additionally, a 0.05 nautical mile proximity standard was established to ensure that the samples were collected as close as possible to the randomly generated station location thus following the model agenda without compromise.



## 9.2 Quality Assurance/Control Methods

Field site audits were conducted during the sampling seasons by the Quality Assurance Officer and the Logistics Coordinator to determine compliance with the Quality Assurance plan and Field Operations manual. Corrective action was initiated if discrepancies were noted. Computer equipment was regularly checked and/or serviced to maintain operation readiness.

## 9.3 Actual Measurement Quality

NA

## 9.4 Sources of Error

# 10. DATA ACCESS

## 10.1 Data Access Procedures

Data can be downloaded from the WWW site.

## 10.2 Data Access Restrictions

Data can only be accessed from the WWW site.

## 10.3 Data Access Contact Persons

Charles Howell  
U. S. EPA - Region 6  
Environmental Services Division  
(214) 655-8354

## 10.4 Data file Format

Data can be downloaded as ASCII fixed format files.

## 10.5 Information Concerning Anonymous FTP

Not accessible.

## 10.6 Information Concerning WWW

Data can be downloaded from the WWW.

## 10.7 EMAP CD-ROM Containing the Data file

Data not available on CD-ROM

# 11. REFERENCES

Heitmuller, P. T. and R. Valente. 1991. Environmental Monitoring and Assessment Program: EMAP-Estuaries Louisiana Province: 1991 quality assurance project plan. EPA/ERL-GB No. SR-120. U. S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

Macauley, J. M. 1991. Environmental Monitoring and Assessment Program-Near Coastal Louisiana Province: 1991 Monitoring Demonstration. Field Operations Manual. EPA/600/X-91/XXX. U. S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

Macauley, J. M. 1992. Environmental Monitoring and Assessment Program Louisiana Province: 1992 Sampling: Field Operations Manual. EPA/ERL-GB No. SR-119. U. S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory, Gulf Breeze, FL 32561.

U. S. EPA. 1995. Environmental Monitoring and Assessment Program (EMAP): Laboratory Methods Manual - Estuaries, Volume 1: Biological and Physical Analyses. United States Environmental Protection Agency, Office of Research and Development, Narragansett, RI. EPA/620/R-95/008.

## 12. TABLE OF ACRONYMS

ACRONYM	DESCRIPTION
EMAP	Environmental Monitoring and Assessment Program
EPA	Environmental Protection Agency
FTP	File Transfer Protocol
GPS	Global Positioning System
REMAP	Regional Environmental Monitoring and Assessment Program
TBT	Tri-butyl tin
WWW	World Wide Web

## 13. PERSONNEL INFORMATION

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