

**CHAPTER ONE
MANAGEMENT OF POINT SOURCES OF POLLUTION**

CHAPTER OUTLINE

Regulatory Issues

- Municipal wastewater discharges
- Industrial wastewater discharges
- Uncontaminated stormwater runoff from industrial facilities
- Discharges from oil and gas drilling

Federal Legislation

- Federal Water Pollution Control Act
- Water Quality Act
- National Environmental Policy Act

Federal Regulatory Agencies

- Environmental Protection Agency

Texas Regulations

- Texas Water Code
- Texas Natural Resource Code

Texas Regulatory Agencies

- Texas Water Commission
- Texas Railroad Commission
- Texas Water Development Board

Local Regulations

- Industrial pretreatment requirements.

Local Regulatory Agencies

- Harris County
- City of Houston
- City of Pasadena

Other Local Agencies

- Municipal Utility Districts
- Clear Lake Water Authority
- Houston-Galveston Area Council

EXISTING AND POTENTIAL ENVIRONMENTAL IMPACTS

Point source pollution emanates from a single defined source. Examples include sewer treatment plant discharges and industrial storm water runoff. There are three municipal wastewater treatment plants (WWTP) within the study area, discharging a total of 6.2 million gallons per day (MGD) of treated wastewater into the Armand Bayou watershed. These facilities are shown on the map on page 15.

Two of the WWTP's are operated by the Clear Lake Water Authority (CLWA) and the third is the Pecan Plantation Mobile Home Park WWTP. The CLWA facilities receive pretreated industrial discharges from the National Aeronautic and Space Administration's (NASA) Johnson Space Center and from Ellington Field. The Metro Central WWTP is currently the subject of controversy over tentative plans to expand its capacity to 50 MGD, bringing in wastewater from far outside the watershed.

There are two significant point source dischargers of stormwater in the watershed. In Bayport, the Lyondell facility discharges large quantities of stormwater into Big Island Slough. OxyPetrochemical also discharges into Big Island Slough. Other intermittent dischargers include ICI Americas, Inc., in Bayport, Hughes Sand Pits, Inc., and NASA-Ellington Field (see map on page 15).

LEGISLATIVE SUMMARY

Federal Legislation

Federal Water Pollution Control Act (Clean Water Act)

The Federal Water Pollution Control Act of 1972 and its subsequent amendments form the legislative basis for regulating point source discharges. Commonly referred to as the Clean Water Act (CWA), this legislation established a combined federal/state system of water quality control. The CWA set forth criteria for developing water quality standards and effluent limitation guidelines under the National Pollution Discharge Elimination System (NPDES). Once a state has devised a program which meets federal minimum requirements, it can apply to the EPA for permission to administer its own program. The TWC has applied to the EPA for NPDES designation, however, the application is currently under review.

Section 403 of the CWA established a set of criteria for the discharge of point source pollutants into the oceans, territorial sea, or waters of the contiguous zone. The criteria determine the degradation of the waters of the territorial seas, the contiguous zone, and the oceans, including: the effect of disposal of pollutants on human health or welfare (including plankton, fish, shellfish, wildlife, shorelines, and beaches); marine life; and the effect on alternate uses of the oceans. If the information regarding any proposed discharge is insufficient, the permit will not be issued.

Financial Assistance

Financial assistance is authorized by Section 405, the Construction Grants and Loan Program. Monies are available for construction of new treatment facilities required under the CWA. The grant program was gradually phased out by amendments to the 1972 Act, shifting the financial burden to state and local governments.

Pretreatment Requirements

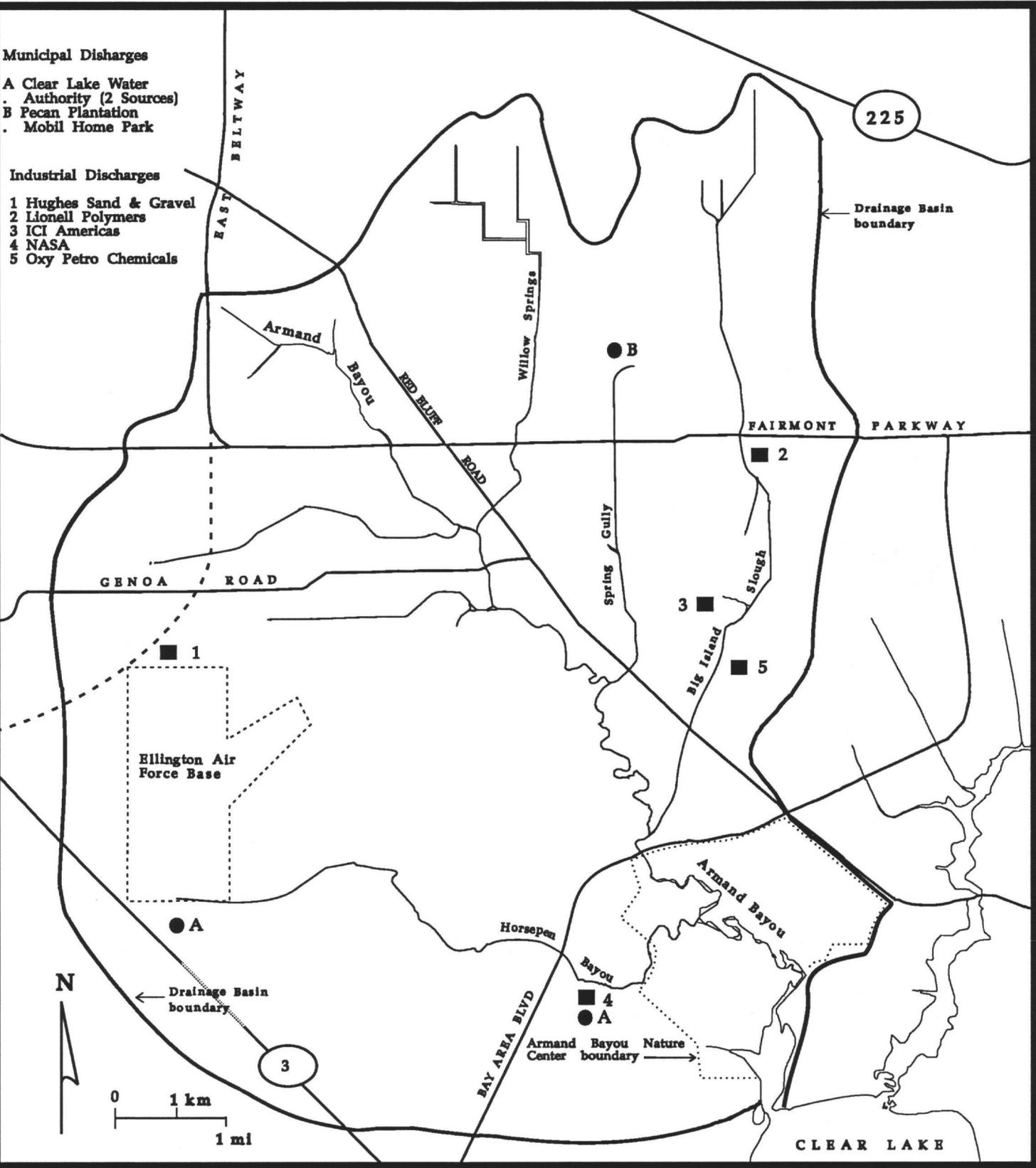
The CWA also established the National Pretreatment Program. Under Section 307, all publicly-owned treatment works (POTW's) enforce "General Pretreatment Regulations" and "National Categorical Standards." These regulations and standards require industries to treat the release of any pollutants that might interfere with the POTW process or cause harmful effects to effluent water quality. Treatment also can include installation of pollution abatement equipment.

Municipal Discharges

- A Clear Lake Water Authority (2 Sources)
- B Pecan Plantation
- Mobil Home Park

Industrial Discharges

- 1 Hughes Sand & Gravel
- 2 Lionell Polymers
- 3 ICI Americas
- 4 NASA
- 5 Oxy Petro Chemicals



Armand Bayou Watershed
Houston-Galveston Area Council

Point Discharge Locations

- Streets and Highways
- - - Proposed Highways

- Waterways
- Industrial Discharge
- Municipal Discharge

- 4 Industrial Discharge Number
- A Municipal Discharge Letter

Texas Legislation and Regulations

Texas Water Code

As enacted by the Texas Water Quality Act, the Texas Water Code provides for the conservation and development of Texas' water resources. These water resources include virtually all surface water, watercourses and groundwater inside the territorial limits of the state. The Code also provides for the "National Pollutant Discharge Elimination System" which may delegate to the state of Texas in accordance with sec. 402(b) of the Clean Water Act. As mentioned previously, the Texas Water Commission application for the NPDES permit program is currently under EPA review.

The Code authorizes the TWC to issue permits for the discharge of waste or pollutants into or adjacent to the waters of the state. The TWC may refuse to issue a permit if it violates the provisions of any state or federal law, rule, or regulation. At this time permit applications must be submitted to both the TWC and the EPA. The code also prohibits any person to discharge from a point source of any waste or pollutant. Any person who violates this provision is subject to a civil penalty not less than \$50 nor more than \$10,000 per violation.

Texas Natural Resources Code

The Texas Natural Resources Code, gives the Texas Railroad Commission (RRC) authority to regulate discharge from storage, handling, transportation, reclamation or disposal of waste materials resulting from activities associated with the exploration, development, or production of oil, gas, or geothermal resources. The RRC requires permitting of injection wells related to oil and gas activities.

FEDERAL REGULATORY AGENCIES

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency's (EPA) general charge is to protect and enhance the environment now and for the future to the fullest extent possible under federal law. The agency's mission is to control and abate pollution in the areas of air, water, solid waste, pesticides, radiation and toxic substances. Its mandate is for an integrated, coordinated attack on environmental pollution in cooperation with state and local governments. EPA's responsibilities and activities are broad and often conducted cooperatively with other agencies. The following is a breakdown of EPA's major point source-related program responsibilities in the Armand Bayou watershed.

Water Quality

Under the Clean Water Act, EPA has major responsibilities for management of water quality with the primary objective being to "restore and maintain the chemical, physical, and

biological integrity of the Nation's waters." The Clean Water Act provides EPA with a number of authorities, including: setting and enforcing water quality standards; administration of the National Pollutant Discharge Elimination System (NPDES) for municipal and industrial wastewater discharges; providing federal funds for construction of wastewater treatment systems (this role is being replaced by State Revolving Loan Fund); and State and areawide planning and management programs to coordinate broad-based pollution control decisions and to implement feasible methods to achieve clean water goals.

Under the NPDES program, EPA may delegate wastewater discharge permitting to a state. Texas has not, as yet, been delegated this authority, though this designation is currently pending. As a result, wastewater treatment facilities must currently be permitted both by EPA and the Texas Water Commission.

TEXAS REGULATORY AGENCIES

Texas Water Commission

The Texas Water Commission (TWC) is the lead agency in the management of point sources of water pollution in the Armand Bayou watershed. Supervision of water districts, the water quality programs (permits, enforcement and planning), and the certification program for wastewater treatment plant operators all lie within its jurisdiction.

The TWC is organized along programmatic lines with permitting, enforcement and planning responsibilities for each major program divided into several divisions. The divisions with responsibilities for point source activities in the Armand Bayou watershed are: Office of Hearings Examiners (conducts public hearings for wastewater treatment permit applications, enforcement); Office of Public Interest (represents the public interest in environmental quality and consumer protection issues under the Commission's jurisdiction); Legal (preparation/revision of agency rules, legal counseling concerning permit application processing, administrative enforcement actions, hearings and administrative lawsuits involving the agency); Water Utilities (water district supervision); Water Quality (prevention, control and abatement of water pollution, coordinating all water quality planning in the state in cooperation with regional agencies and local governments, processing wastewater permit applications, developing municipal and industrial NPDES permits for EPA, providing enforcement activities to identify violations of permits and bring them into compliance, and certification of wastewater treatment plant operators); and Field Operations (administration of the local field office and operation of a wet chemistry laboratory in Houston).

Water Quality Standards

The TWC sets surface water quality standards for Texas stream segments, as required by Section 303 of the Clean Water Act. The types of standards which the TWC may set are

somewhat open, but all must be approved by EPA. Water quality standards are subject to review at a minimum of once every three years. This review process includes public review and comment.

The Texas Surface Water Quality Standards contain general goals and criteria to prevent degradation of waters, as well as numerical criteria for toxic constituents, site-specific uses, application of standards and determination of standards attainment.

For Armand Bayou, segment 1113, the following standards apply:

Water Uses - contact recreation; high quality aquatic habitat.

Numerical Criteria - 4.0 milligrams per liter dissolved oxygen; 6.5-9.0 pH range; 200/100 milliliters fecal coliform; maximum temperature of 95 degrees Fahrenheit.

These standards are currently scheduled for public hearing in December 1990.

The "Clear Lake Rule"

There are also specific standards for the Clear Lake Watershed, which includes Armand Bayou, established under the Texas Water Code. The so-called "Clear Lake Rule" sets discharge effluent criteria for all municipal wastewater discharges that are more stringent than typical permit requirements in other watersheds. These criteria are:

<u>Item</u>	<u>Maximum Effluent Concentration (mg/l)</u>	
	<u>30-day Average</u>	<u>7-day Average</u>
Biochemical Oxygen Demand 5-Day (BOD5)	5	10
Total Suspended Solids (TSS)	12	20
Ammonia as nitrogen (NH3-N)	2	10

This rule also requires all industrial discharges to "... improve and upgrade waste treatment facilities and operations as needed to achieve, at a minimum, effluent limitations commensurate with the treatment efficiencies required of municipal waste discharges to the Clear Lake Watershed." Industrial discharges may be required to meet even more stringent effluent limitations if warranted by water quality considerations, as determined on a case-by-case basis.

Wastewater Discharge Permitting

At least partial implementation of EPA's point source program is carried out through the Texas Water Commission. The implementation tools include: the development of NPDES permit discharge limits, enforcement of NPDES permits; development of pretreatment and sludge management programs; management of state construction grant programs (sec. 106 grant); water quality planning (sec. 205 (j)(1) grant); and funding of state revolving loan fund (sec. 603(c)(2) grant).

The State of Texas is currently awaiting final approval from EPA on delegation of the NPDES Permit Program. If this delegation is made, the TWC will be the sole permitting agency for municipal and industrial wastewater discharge. It is anticipated that delegation will occur by the end of 1990.

The TWC's wastewater discharge permit evaluations include a technical review period, during which the applicant has an opportunity to provide information to assist staff in developing a site-specific assessment and a draft permit. All preliminary determinations by TWC staff--including instream uses, impact analysis, antidegradation, effluent limits and other specifications--are subject to additional review, comment and revision through a public hearing process.

TWC permits include requirements for biomonitoring to screen for toxic substances which have been listed by EPA in "Establishment of Ambient Criteria to Limit Human Exposure to Contaminants in Fish and Shellfish." Additional toxicants may be evaluated on a case-by-case basis. The frequency of biomonitoring is dependent upon the size of the discharge and associated potential problems.

Water Pollution Control and Abatement Program

The Municipal Water Pollution Control and Abatement Program is the vehicle through which the Texas Water Commission will regulate all municipalities with a population of 5,000 or more for activities having the potential for causing pollution of the groundwater or surface water. Cities within the Armand Bayou watershed subject to this program are Houston, Pasadena, Deer Park, and La Porte. TWC's development of regulations for the program is currently in a review and comment phase.

The activities which will be addressed by this program are those that pose direct threats to water quality within a municipality's boundaries and extraterritorial jurisdiction. The program addresses point sources of pollution by requiring wastewater treatment plants to be permitted and to be in compliance with all local, state, and federal permit and pretreatment requirements and construction standards. The program will require cities to: develop and maintain an inventory of all significant waste discharges to the water within the city and, if the city chooses, within its extraterritorial jurisdiction; monitor all significant waste discharges; collect and conduct periodic inspections and tests of the waste discharges being monitored; and have a cooperative procedure with TWC for obtaining compliance. Proposed regulations call for cities to collect an annual fee for operation of the Control and

Abatement Program and to remit, annually, five percent to the Water Commission for technical assistance and support. Currently no direction has been offered to cities as to the method of fee collection.

Texas Railroad Commission

Generally, the Texas Railroad Commission (RRC) has regulatory jurisdiction over the discharge and disposal of waste materials that result from activities associated with the exploration, development, and production of oil, gas or geothermal resources.

The Oil and Gas Division is the largest division within the agency and is responsible for administering the permit program (permits, enforcement) as it relates to the discharge of oil and gas wastes. Discharges permitted by the RRC may not cause a violation of the surface water quality standards established by the TWC.

Discharges of water produced from oil and gas facilities must be permitted by the RRC. Permit holders must submit quarterly reports to the RRC District Office in Houston. RRC staff monitor point source discharges on a random basis approximately once per month. Inspections of point source discharges are also made if a permit is transferred or complaints are filed. If RRC staff note an oil and/or grease concentration of greater than twenty-five milligrams per liter, the permit holder is notified and an inspection is conducted. Texas Parks and Wildlife Department game wardens assist the RRC in observing oil and gas facilities in the field and reporting apparent irregularities.

The RRC is currently developing an NPDES Permit Program and has adopted a new rule containing provisions necessary for the RRC to conduct the program for discharges of produced water and other oil and gas wastes. This rule will become effective upon delegation of the NPDES program by EPA.

Texas Water Development Board

The Texas Water Development Board (TWDB) has the primary responsibility for water supply and for administering water financing for the state. These programs have potential impact on the Armand Bayou watershed in that they can be used by local entities for the construction of wastewater treatment plants which discharge to the Bayou or its tributaries. TWDB is currently responsible for the administration of the Texas Water Development Fund, Water Assistance Fund and the Federal Construction Grants Program and the State Revolving Loan Fund Program (SRF). These programs are used to fund a political entity's new or expanded facilities. The TWDB approves and monitors the design, size, cost, construction, and financing of such projects. TWDB also approves planning grants for studying local water problems and needs.

The storage acquisition program, originally for water supply and flood control, was extended to apply to regional water and sewer facilities so they, like reservoirs, could be built with excess capacities.

Facilities and projects constructed with TWDB financial assistance must come under the guidelines of other agencies which regulate the particular type of project. For instance, a wastewater treatment facility would have to meet TWC design criteria and discharge requirements.

Construction Grants Program

This program makes grants available to local communities for up to 55% of the costs of certain components of public wastewater collection and treatment facilities to help meet water quality requirements of the Texas Water Code and Clean Water Act. As a result of the 1987 amendments to the Clean Water Act, this grant program has been gradually converted to a State Revolving Loan Fund (SRF). The Construction Grants Division administers this program.

State Revolving Loan Fund

The SRF is administered by the Construction Grants Division. The SRF is a perpetual revolving loan fund based on federal capitalization grants and a required 20% state match. The Water Development Board offers low-interest loans. The repayments of principal and interest on these loans will be used for new loans for other projects.

Water Development Fund

The Water Development Board also provides funding for regional wastewater treatment systems through the Water Development Fund. This program is also a low-interest loan program administered by the Development Fund Manager's Office. Financing is also available for regional water facilities, flood control projects, and projects designed to convert from the use of ground water to surface water.

LOCAL REGULATORY AGENCIES

Local Responsibilities under the National Pretreatment Program

The Clean Water Act established an industrial pretreatment program for discharges into municipal wastewater treatment systems. The 1977 Clean Water Act Amendments mandated additional regulation of pollutants in industrial discharges to municipal systems. In response to this mandate, the National Pretreatment Program was developed in 1981.

The National Pretreatment Program is designed to prevent interference with the biological treatment process in wastewater treatment facilities, prevent the pass-through of pollutants and to prevent the contamination of sewage sludge by limiting industrial discharges to municipal systems. Pretreatment reduces the strengths and quantities of toxic materials,

minimizing risk to treatment plant workers and reducing damage to sewers and treatment plant equipment. Municipalities are responsible for enforcing general Pretreatment Program regulations. There are approximately twenty-six types of industry which are required to meet National Categorical Standards for pretreatment prior to discharge to municipal systems.

The general pretreatment requirements outline the responsibilities of all entities involved in pretreatment program implementation. They also outline two sets of standards. The "general and specific prohibition" clause prohibits the release of any pollutants that may interfere with the treatment process or cause harmful effects. Said pollutants include those which could interfere with the treatment process, cause fire or explosion, flow obstruction, corrosion, or excess heating of wastewater. The National Categorical Standards are technology-based effluent standards requiring certain industries to install pollution abatement equipment that treats wastewater to the quality that would be permitted in a direct discharge to state waters.

City of Houston

The City of Houston Municipal Code requires any person drilling or operating a well for oil and gas to provide appropriately for the disposal of salt water or other impurities which may also be produced in the drilling process, and prevent the contamination of the water supply of the city. The Texas Railroad Commission issues permits for oil and gas wells and regulates the operation of these wells. The City of Houston building code authorizes where one can construct an oil or gas well.

Although Houston does not currently have a wastewater discharge in the Armand Bayou watershed, the City's Public Health Engineering section is authorized to work with the TWC to enforce water quality regulations that apply to wastewater discharges.

City of Pasadena

Pasadena also has the authority to require pretreatment of industrial discharges into its municipal system. However, the City's discharges are now all diverted to the Houston Ship Channel, as required by the TWC. Incinerators are the only other point source of pollution regulated by the City of Pasadena.

Harris County

The Harris County Pollution Control Department is a local entity enabled by state legislation to enforce regulations governing air and water quality. The HCPCD assists the TACB with the inspection of permitted stationary source air emissions. In the event of an emergency, the HCPCD assists with the compliance monitoring and with clean-up operations.

The HCPCD also inspects, monitors and enforces permitted municipal and industrial wastewater discharges and works with the TWC to locate and identify unpermitted discharges. HCPCD has also performed special studies for the TWC related to wastewater discharge permit applications.

OTHER LOCAL AGENCIES

Municipal Utility Districts

In the Armand Bayou Watershed there are currently three operating Municipal Utility Districts (MUD's). They are the Bayfield Public Utility District, Gulfway Utility District, and Harris County MUD #67. These MUD service areas are shown on the map on page 24. The Clear Lake Water Authority provides wastewater treatment for these MUD's and their flood control activities are maintained by the Harris County Flood Control District.

MUD's can be given many different responsibilities, including many common municipal services. These powers include wastewater treatment, solid waste disposal, fresh water supply, and park systems. MUD's are granted taxing authority to pay for bonds and various other stipulations placed in the deed by the developer. Some MUD's are granted even further taxing authority, by a general election, to pay for aspects not covered in the bond payment (i.e. park system and solid waste disposal). MUD's generally do not have any regulatory powers.

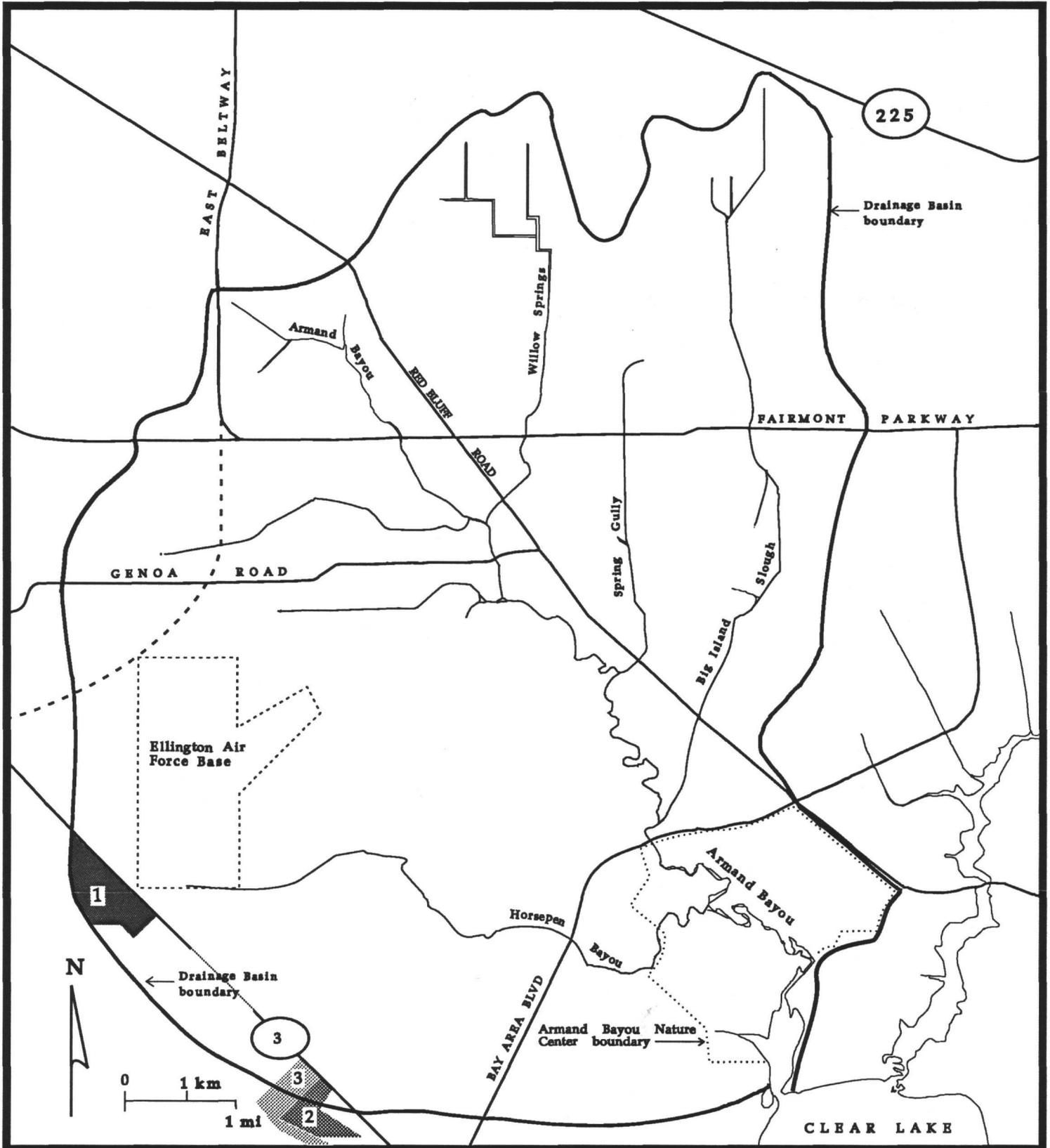
Clear Lake City Water Authority

The Clear Lake City Water Authority (CLCWA) manages the two municipal sewer treatment plants in the Armand Bayou. The CLCWA establishes locations of sewer lines, applicable fees and system-wide standards.

The CLCWA requires a pretreatment program for all of its commercial and industrial customers. A program must include provisions for grease traps, sampling and testing, prohibited discharges, and penalties. The CLCWA Policy Manual lists the standards for these requirements, including the list of unacceptable wastes.

Houston-Galveston Area Council

The Houston-Galveston Area Council (H-GAC) is a voluntary association of approximately 150 local governments in the Gulf Coast Area. H-GAC was certified by the Governor of Texas as the regional water quality planning agency in 1979. Since that time, H-GAC has been conducting areawide water quality management planning under Sections 205 and 208 of the Water Quality Act. H-GAC's planning has addressed a number of water quality management issues, but a primary focus has remained the forecasting of future wasteloads from municipal point source discharges. The TWC uses these forecasts in their water quality monitoring efforts and in evaluating discharge permits.



Armand Bayou Watershed
Houston-Galveston Area Council

Municipal Utility Districts

- Streets and Highways
- - - Proposed Highways
- ▨ MUD Service Area
- Waterways

- 1 MUD #67
- 2 Bayfield PUD
- 3 Gulfway MUD