Executive Summary

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Abbreviations used in the Report

Ac-ft/yr	Acre-feet per year
BRA	Brazos River Authority
CLCND	Chambers-Liberty Counties Navigation District
COH	City of Houston
GBEP	Galveston Bay Estuary Program
GBF	Galveston Bay Foundation
GBFIG	Galveston Bay Freshwater Inflows Group
GCWA	Gulf Coast Water Authority
MGD	Million gallons per day
MWP	Major Water Provider
RWPG	Regional Water Planning Group
RHWPG	Region H Water Planning Group
SB1	Senate Bill 1 from the 1997 State Legislature
SJRA	San Jacinto River Authority
TNRCC	Texas Natural Resource Conservation Commission
TPWD	Texas Parks and Wildlife Department
TRA	Trinity River Authority
TWDB	Texas Water Development Board
WUG	Water User Group

Water Measurements

Acre-foot (AF) = 43,560 cubic feet = 325,851 gallons
Acre-foot per year (ac-ft/yr) = 325,851 gallons per year = 893 gallons per day
Gallons per minute (gpm) = 1,440 gallons per day = 1.6 ac-ft/yr
Million gallons per day (mgd) = 1,000,000 gallons per day = 1120 ac-ft/yr

County Codes used in the Tables

8	Austin County
20	Brazoria County
36	Chambers County
79	Fort Bend County
84	Galveston County
101	Harris County
145	Leon County
146	Liberty County
157	Madison County
170	Montgomery County
187	Polk County
204	San Jacinto County
228	Trinity County
236	Walker County
237	Waller County

Basin Codes used in the Tables

6	Neches River Basin
7	Neches-Trinity Coastal Basin
8	Trinity River Basin
9	Trinity-San Jacinto Coastal Basin
10	San Jacinto River Basin
11	San Jacinto-Brazos Coastal Basin
12	Brazos River Basin
13	Brazos-Colorado Coastal Basin

Introduction

Under legislation passed in 1997, the State of Texas designated 16 regions to plan for future water supply. The Texas Water Development Board appointed a water planning group in each region to carry out that mission. The members of the Region H Water Planning Group (RHWPG) and the interests they represent are shown in Table ES-1. Region H encompasses all or part of fifteen counties in southeast Texas and includes the entire San Jacinto River basin as well as the lower reaches of the Brazos and Trinity River basins. A Location Map showing the regional boundaries is included in Figure ES-1 and a listing of counties in the Region is included in Table ES-2. Regional Water Planning is conducted under the oversight of the Texas Water Development Board. A listing of state points of contact is included in Table ES-3.

The RHWPG is charged with comparing the water needs and supplies in the region to determine if supplies are adequate through the 50-year planning period. If shortages are identified, the RHWPG must develop water management strategies to overcome the shortages. Management strategies to meet projected water shortages were divided into near-term (2030 and before) and long-term (post-2030). The water supply assessment and identification of recommended management strategies comprise the Region H Regional Water Plan. Information on Region H and Senate Bill 1 planning statewide can be found at the TWDB website, www.twdb.state.tx.us/.

Region H is an economic powerhouse crucial to the Texas and national economies. Adequate water supplies are essential to continued economic health and to the region's future growth. Two thirds of all U.S. petrochemical production and almost a third of the nation's petroleum industries are located in Region H. The area provides some of the state's most popular vacation spots that generate hundreds of millions of dollars in annual tourism revenues. The Port of Houston is the second busiest port in the nation. In 1995, the Houston area employed 1.75 million people or 22 percent of the state's total employment. Region H is generally characterized by urbanizing land uses and broad-based economic development. In areas outside of the urban core, agriculture dominates economic activities. Key contributors to each of six primary economic sectors are:

- Services--Medical (Texas Medical Center in Houston, University of Texas Medical Branch in Galveston), tourism, banking, construction and engineering.
- Manufacturing--Petroleum exploration, production and refining, petrochemicals, biotechnology, chemicals, computers and technology, and pulp and paper.
- Transportation--Port of Houston, rail and highway systems, Intracoastal Waterway, airlines, airports and air cargo facilities.
- Government--Federal, state and local including the Texas Department of Corrections, the Johnson Space Center, numerous law enforcement agencies, universities, colleges and school districts.
- Agriculture--Rice, soybeans, grain sorghum, peanuts, vegetables, hay, cattle, horses, swine, timber and pulp wood.
- Fishing--Commercial (oysters, shrimp, finfish) and recreational.

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Any large-scale water supply or conveyance projects will require the close cooperation of political entities in the affected areas. While municipal and county governments are most visible in Region H, there are numerous other governmental and regulatory agencies with jurisdiction over aspects of water supply development in the region. These include, but are not limited to:

- Fort Bend Subsidence District
- Harris-Galveston Coastal Subsidence District
- Texas Water Development Board (TWDB)
- Texas Natural Resource Conservation Commission (TNRCC)
- Texas Department of Parks and Wildlife (TPWD).
- Brazos River Authority
- San Jacinto River Authority
- Trinity River Authority
- Gulf Coast Water Authority
- Houston-Galveston Area Council of Governments
- Brazos Valley Council of Governments
- Deep East Texas Council of Governments
- Eleven soil and water conservation districts
- Numerous Utility Districts and Water Supply Corporations

Of particular note are the two subsidence districts since it is their regulations that compel many municipalities to seek new surface water sources to replace their current groundwater supplies. Finally, formation of public/private partnerships aligning the interests of the public with those of the manufacturing, agricultural, power generating and mining sectors will be essential in developing the water needed to support the population and economy of Region H.

For public review and comment, copies of the initially prepared Region H Draft Regional Water Plan are available at the County Clerks' offices in each of the 15 Region H counties and are available in one public library in each of the 15 counties. The Plan is comprised of separate memoranda and reports covering the following planning tasks:

- Task 1 Memorandum: Description of Region
- Task 2 Report: Presentation of Population and Water Demands
- Task 3 Report: Analysis of Current Water Supplies
- Task 4 Report: Identify Water Surpluses and Shortages and Resulting Potential Impacts
- Task 5 Report: Identification, Evaluation and Selection of Water Management Strategies
- Task 6 Report: Additional Recommendations
- Task 7 Report: Public Involvement

For an in-depth discussion of any of the topics addressed in this Executive Summary, the reader is referred to the complete set of reports located in any of the 30 repositories noted below. The full list of addresses of the 30 report holders is shown in Table ES-2.

Population Projections

Population in Region H is projected to grow from 4.8 million in 2000 to 9.7 million in 2050. The doubling of population over the fifty-year planning period represents an annual growth rate of slightly more than one percent. Population projections by county are shown in Table ES-4.

Population projections for the region are based on the "Most Likely Growth Scenario" from the "consensus" projections developed for the 1997 State Water Plan by the Texas Water Development Board (TWDB) with input from the Texas Parks and Wildlife Department, the Texas Natural Resources Conservation Commission (TNRCC) and a number of interested organizations. Using methods approved by the TWDB, the RHWPG reviewed the 1997 state projections and adjusted estimates when recent local information documented that near-term projections were outdated. Four public meetings and several workshops were held in the region to present the proposed projections for comment.

Revised projections were adopted by the RHWPG in June 1999, and subsequently submitted to the TWDB for approval at its October 1999 meeting. The approved projections are compiled in a report titled "Task 2 Report: Population and Water Demand Projections." Population data are presented for each of the fifteen counties in the region and for cities of more than 500 persons. The population projections serve as the basis for calculating municipal water demands.

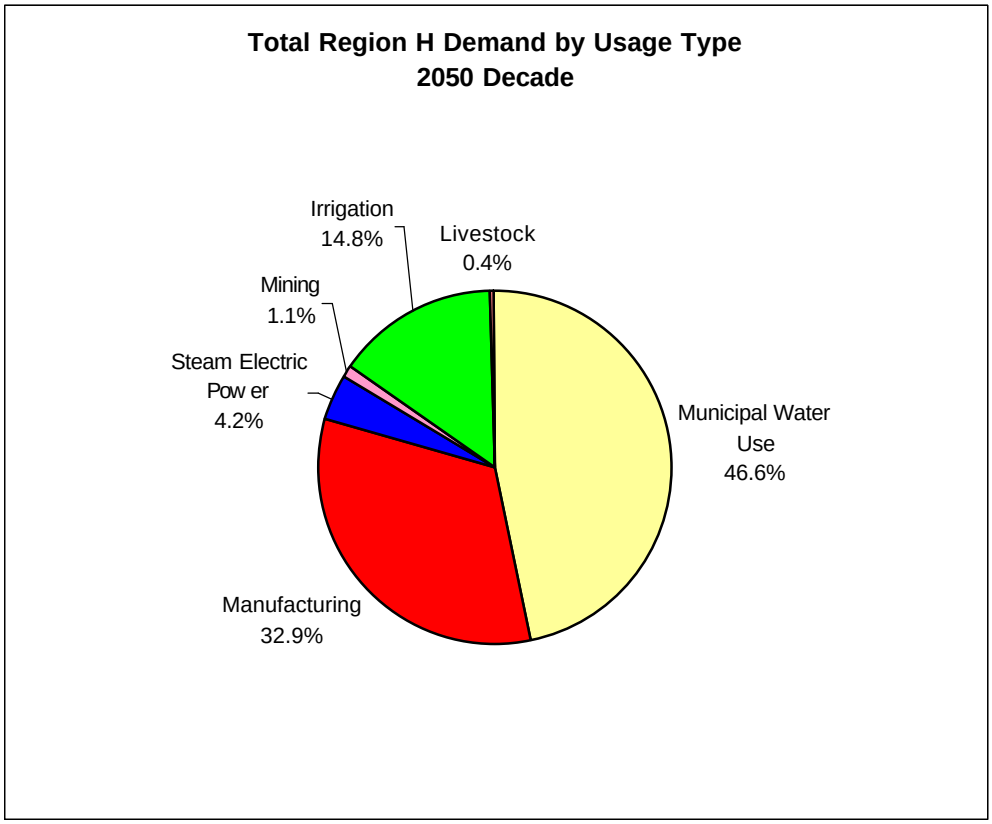
Water Demand Projections

Region H water demands are projected to increase from approximately 2.25 million acre-feet per year in year 2000 to over 3.18 million acre-feet per year by year 2050. In addition to municipal demand, water consumption for manufacturing, steam electric power generation and mining will increase throughout the planning period. Water demands for livestock production are projected to remain constant within Region H. Irrigation water demands are expected to decrease in Brazoria County and remain constant in the other counties in Region H, resulting in an overall reduction in irrigation water demands through the planning period. Table ES-5 presents the forecasts for water demands in Region H, summarized by county and totaled for Region H. Figure ES-2 shows that municipal water demands are projected to account for over 46 percent of the total regional water demands. Manufacturing demands are estimated to account for over 33 percent of the regional water demands. The projected water demands for municipal and manufacturing uses result from an application of water conservation practices. Within the region, conservation demand reductions vary by water user group, but range up to approximately 25 percent of demand. This expected level of conservation is projected to occur based on per capita demand reductions. Region H has the largest projection of manufacturing water use of any of the sixteen planning regions within the state. Harris County is projected to account for over 48 percent of the total regional water demand.

In addition to the above usage categories, the RHWPG considered the environmental water needs of streams and freshwater inflows into the Galveston Bay system. The Galveston Bay Freshwater Inflows Group (GBFIG) has been working to develop management strategies to

ensure freshwater inflows for Galveston Bay. Texas Parks and Wildlife Department has recommended 5.2 million acre-feet per year as the freshwater inflow needed to achieve maximum productivity of the bay. GBFIG has recommended a schedule of target flows shown in Table ES-6, which includes meeting the maximum productivity target in at least 50% of future years. The RHWPG has endorsed GBFIG's recommendation, and supports further efforts to develop strategies for meeting the freshwater needs of both humans and the bay.

Figure ES-2: Water Demand Allocation



Water Supplies

The total amount of water supply currently available to Region H from existing water sources is 3,687,500 acre-feet per year (ac-ft/yr). Of that amount, about two-thirds is surface water. By the years 2030 and 2050, the available supply will be 3,460,000 ac-ft/yr. The reduction in supply between 2000 and 2030 reflects a decrease in availability of groundwater as restrictions on use of groundwater are instituted to combat subsidence in a large part of the region. Groundwater supply is based on the projected sustainable yield of each aquifer, which limits extraction to the annual rate of recharge. The predominant sources of surface water supply are derived from three reservoirs: Lakes Conroe and Houston within the San Jacinto river basin and Lake Livingston within the lower Trinity River basin.

The RHWPG has defined surface water supplies as dependable supplies that should be available in a "drought of record." For most of Region H, that means a drought comparable to the drought from the early to mid-1950s. Some activities, such as livestock watering and mining, use surface waters that are not available during drought. These undependable supplies are considered "local sources" and are not calculated in available supplies for Region H.

A detailed analysis of Region H supplies is found in the full Task 3 Report, "Analysis of Current Water Supplies." A summary of available water supply by source is provided in Table ES-7.

Water Demand versus Supplies

Water supplies were compared to water demands to determine if any areas in the region are expected to experience water shortages during the planning period. Despite adequate overall water supplies for Region H in the year 2050, the RHWPG has identified communities that will experience water shortages during the planning period without action to increase their supplies. Most of these communities will be able to meet their demands simply by extending or increasing existing water supply contracts.

Of the total 215 Water User Groups (WUGs) in Region H, 122 of them, primarily those reliant on wells in areas with abundant groundwater, will experience no shortages during the planning period. All of the counties within the region north of Montgomery County are projected to have sufficient long-term water supplies. A detailed comparison of available supplies versus demands revealed 93 other WUGs that will develop water supply shortages by 2050. These areas of need all exist within the southern portion of the region. Future water supply planning therefore focused on the southern and western portions of Region H. Of the Major Water Providers (MWPs)--Brazos River Authority, City of Houston, San Jacinto River Authority, Gulf Coast Water Authority, and Trinity River Authority--all but the TRA will face projected supply shortages by 2050. Both the identification of shortages and surpluses and the socioeconomic impact of not meeting projected water demands are addressed in detail in the full Task 4 Report, "Identify Water Surpluses and Shortages and Resulting Potential Impacts."

Socioeconomic Impact of Not Addressing Shortages

Water supply is critical to public health, and failure to provide water would severely constrain economic and population growth in Region H. The TWDB has calculated the potential impacts of not meeting projected water demands. Their calculations are based on the following assumptions:

- A drought of record occurs during each decade modeled
- No changes in the structural economic relationships within the regional economy
- No technological advances occur
- No change in human behavior occurs

These are clearly severe and unrealistic assumptions, but they do allow creation of a worst-case scenario. In addition, the TWDB looked at impacts with and without extension of existing water supply contracts. The RHWPG is of the opinion that the impacts should be presented assuming current supply contracts are extended through the planning period. Figure ES-3 shows that, even with extension of current supply contracts, significant negative impacts on employment, population and income would occur if water needs are not met.

Water Management Strategies

The RHWPG considered a variety of strategies for meeting the projected shortages and solicited input from the public before adopting a management plan. A detailed analysis process was developed to define potential water management strategies. The process addressed the specific shortages of the 93 WUGs discussed above and then developed associated specific strategies assuming the MWPs would be the vehicle to solve WUG shortages. The process generally consisted of the following:

1. Contract Extension - For all WUGs currently served by a MWP, first extend the existing contracts throughout the planning period for the current contracted amount of water.

2. Contract Extension and Increase - If the current contracted amount of water is insufficient for a Municipal WUG now served by a MWP, then increase the contracted supply from the MWP to meet future water needs of those Municipal WUGs. This could not be applied to collective WUGs, such as manufacturing.

Steps 1 and 2 solved the supply needs for 42 of the 93 WUGs with shortages. The remainder of the WUGs with shortages required additional actions:

3. MWP Association - For the Municipal WUGs not now served by a MWP, for the Municipal County-Other WUGs and for the Non-Municipal WUGs with shortages, associate each of these WUGs with a MWP.

4. Allocation of Uncommitted Supplies - Determine the total supply required to meet shortages of the WUGs defined in Steps 1 through 3 for each MWP. Allocate uncommitted supplies of each MWP to these WUGs until the existing MWP supplies are fully allocated.

5. Define Strategies - Determine the remaining water supplies needed to satisfy the water shortages remaining for each MWP. Define potential water management strategies for each MWP based on its identified water shortages.

Management strategies that involved adjoining regions were coordinated with the appropriate water planning group. This allowed the consideration of larger projects.

The water management strategies selected to meet the MWPs' shortages are as follows:

- **Municipal Conservation**--The concervation strategy is applied at the WUG level and decreases WUG demands on the associated MWP, allowing the MWP to allocate its supplies elsewhere. Projected water savings total 30,383 ac-ft/yr in year 2030 and 30,563 ac-ft/yr in year 2050.
- **Irrigation Conservation**--Also applied at the WUG level, this strategy allows allocation of MWP supplies to other users. Projected water savings are 24,312 ac-ft/yr in Brazoria County, 14,259 ac-ft/yr in Fort Bend County, and 5,010 ac-ft/yr in Waller County.
- **Contractual Transfer**--This strategy involves the transfer of 28,500 ac-ft/yr of manufacturing water rights to irrigation water rights within the boundaries of the Brazos River Authority service area.
- **Allen's Creek Reservoir**--This proposed reservoir creates 99,650 ac-ft/yr of supplies for the City of Houston and for the Brazos River Authority.
- **Little River Reservoir**--This proposed reservoir creates 101,000 ac-ft/yr for the Brazos River Authority (of which 30,000 ac-ft/yr are consumed outside Region H) and 28,000 ac-ft/yr for the Gulf Coast Water Authority.
- **Bedias Reservoir**--This proposed reservoir creates 90,700 ac-ft/yr for the San Jacinto River Authority and the Trinity River Authority.
- **Wastewater Reclamation**--This strategy proposes that 90,700 ac-ft/yr of Houston's municipal wastewater be treated and reused by industries along the Houston Ship Channel.
- **Luce Bayou**--This conveyance project enables the City of Houston to transfer water it owns in the Trinity basin to Lake Houston to meet projected growth in north and northwest Harris County.
- **Houston/Trinity River Authority Contract**--Under this strategy, the City of Houston will purchase up to 200,000 ac-ft/yr of uncommitted supplies from the Trinity River Authority.
- **Brazos River Authority Voluntary Redistribution**--The Brazos River Authority is in the process of re-purchasing unused supplies from current customers in the upper Brazos basin and will then be able to sell up to 75,000 ac-ft/yr of this water to customers in Region H.
- **Bedias Reservoir to San Jacinto River Authority Transfer**--In conjunction with the Bedias Reservoir construction, this strategy is the conveyance system to facilitate the interbasin transfer of 75,000 ac-ft/yr to the San Jacinto River Authority service area.
- **Houston to Gulf Coast Water Authority Transfer**--To meet 2050 demands of the Gulf Coast Water Authority, this strategy calls for the sale of 23,000 ac-ft/yr of Houston's raw water supplies. Included is a pumping station and pipeline to convey the water to the GCWA's Texas City reservoir.
- **San Jacinto River Authority/Chambers-Liberty Counties Navigation District Contract**--Under this strategy, the San Jacinto River Authority will purchase 30,000 ac-ft/yr of uncommitted supplies from the Chambers-Liberty Counties Navigation District.

A summary of the selected strategies, their yields and their costs is shown in Table ES-8. Table ES-9 shows the combination of strategies required for each MWP to meet its projected water shortages. Table ES-10 details the approach used for each WUG. An in-depth discussion of the recommended plan is contained in the Task 5 Report, “Identification, Evaluation and Selection of Water Management Strategies.”

Proposed Unique Stream Segments

The Texas Water Code offers the opportunity to identify river and stream segments of unique ecological value. The selection criteria established within the Texas Water Code are as follows:

- Biological Function
- Hydrologic Function
- Riparian Conservation Area
- High Water Quality/Exceptional Aquatic Life/High Aesthetic Value
- Threatened or Endangered Species/Unique Natural Communities

After consideration of the above factors, the following six streams were designated as Streams of Unique Ecological Value in Region H:

Stream Segments (Not in priority order)	County
Armand Bayou	Harris
Bastrop Bayou	Brazoria
Big Creek	Fort Bend
Big Creek	San Jacinto
Cedar Lake Creek	Brazoria
Menard Creek	Liberty, Hardin*, Polk

*Hardin County portion is in Region I.

The entire stream segment length was designated for Armand Bayou and Menard Creek (segment within Region H). For the remaining four streams, only those portions adjacent to or within riparian conservation areas were designated as unique streams.

Unique Reservoir Sites

The Texas Water Code offers an opportunity to designate sites of unique value for use as surface water supply reservoirs. Through use of a decision-based water management strategy analysis and selection process, the RHWPG selected three surface water reservoir projects for inclusion within the Regional Water Plan. The RHWPG has decided to designate the site locations of each of these projects as unique sites.

The three sites are:

Name	County	General Location
Allen's Creek	Austin	1 Mile N. of the City of Wallis
Bedias	Madison (Principally)	Bedias Creek, 3.5 Miles W. of State Hwy 75
Little River	Milam	Main Stem of Little River, Immediately Upstream of its Confluence with the Brazos River

Regulatory, Administrative and Legislative Recommendations

Section 357.7(a)(9) of the Texas Water Development Board regional water planning guidelines requires that a regional water plan include recommendations for regulatory, administrative, and legislative changes. These recommendations are addressed to each governmental agency that has the appropriate jurisdiction over each subject. It is generally assumed that regulatory recommendations are directed towards the Texas Natural Resources Conservation Commission (TNRCC), that administrative recommendations are directed towards the Texas Water Development Board (TWDB), and that legislative recommendations are directed towards the State of Texas Legislature.

The Region H Water Planning Group has currently adopted the following regulatory, administrative, and legislative recommendations:

- **Regulatory and Administrative Recommendations**

– Review the population estimates immediately following determination of the 2000 census and make revisions to WUG population estimates as necessary.
– Allow more flexibility in the allocation of multiple water management strategies to defined water shortages.
– Base water planning on renewal of current water supply contracts when they expire.
– Modify the notification procedures for amendments to a regional water plan to limit notification requirements.
– Direct the TNRCC to utilize more realistic assumptions in the development of the surface water Water Availability Models that will serve as the basis of future regional water planning efforts.
– Maintain the current definition of each of the sixteen regional water-planning areas.

- **Legislative Recommendations**

– Revise Chapter 297.73 of the Texas Water Code to exempt from cancellation certain water rights that have not been used in whole or in part for 10 years.
– Adopt regulations to exempt from cancellation any water rights of project sponsors, whose water rights have been developed as a result of project sponsor financing of a water supply project.
– Remove barriers to interbasin transfers of water.
– Maintain the current rule of capture basis of groundwater law within Texas in all areas not subject to defined groundwater conservation districts.
– Support development of Groundwater Conservation Districts to protect current groundwater users.
– Develop a structure and funding method to support ongoing activities of the RWPG following development of the regional water management plan.
– Establish funding for continuing the Bays and Estuaries programs of state resource agencies and for additional monitoring and research to develop strategies to meet freshwater inflow needs.

- Establish financing mechanisms for development of new water supply projects identified within the adopted regional water plans.
- Clarify the definition of and intent of designating unique stream segments and unique reservoirs.
- Continue and expand funding of the State of Texas Groundwater Availability Modeling effort.
- Establish funding for agricultural research into the area of use of efficient irrigation practices.
- Establish a research and development program for desalination with appropriate financial incentives for desalination project implementation.
- Address and improve water conservation activities in the state.

Table ES-1: Member Information for the Region H Water Planning Group

Executive Committee	
Office	**Officer**
Chair	Jim Adams, P.E. San Jacinto River Authority P.O. Box 329 Conroe, TX 77305-0329 Phone: (936) 588-1111 Fax: (936) 588-3043
Vice-Chair	Judge Mark Evans
Secretary	Ron Neighbors
At-Large	Michael Sullivan
At-Large	C. Harold Wallace
Offices	
Office	**Entity**
Administrative	Harris-Galveston Coastal Subsidence District
Political Subdivision	San Jacinto River Authority P.O. Box 329 Conroe, TX 77305-0329

Note:
Administrative Office manages records.
Political Subdivision is the entity eligible to apply for State grant funds.

Table ES-1 (continued)

Voting Membership			
Interest	**Name Dates Served**	**Entity**	**County (Location of Interest)**
Public	Roosevelt Alexander March 1998 - Present	Retired	Waller
Counties	Judge Mark Evans March 1998-Present	Trinity County	Trinity
	Commissioner Jack Harris March 1998 - Present	Brazoria County Commissioners Court	Brazoria
	Gary Stobb, P.E. June 2000 - Present	Harris County	Harris
	Judge Robert Eckels March 1998 - June 2000	Harris County	Harris
Municipalities	Larry Taylor December 2000 - Present	City of Friendswood	Galveston
	Tom Manison March 1998 - Sept. 2000	City of Friendswood	Galveston
	Gary Oradat, P.E. November 1999 - Present	City of Houston	Harris, Ft Bend & Montgomery
	Fred A. Perrenot, P.E. April 1998 - Nov. 1999	City of Houston	Harris, Ft Bend & Montgomery
Industries	James Murray March 1998 - Present	Exxon-Mobil	Harris
	Carolyn Johnson March 1998 - Present	Dow Chemical	Brazoria
Agricultural	Robert Bruner March 1998 - Present	Rancher	Walker
	David Jenkins July 1998 - Present	Rice Farmer	Chambers
Environmental	John Bartos March 1998 - Present	Galveston Bay Foundation	Harris

Table ES-1 (continued)

Voting Membership (Continued)			
Interest	**Name Dates Served**	**Entity**	**County (Location of Interest)**
Small Businesses	Steve Tyler March 1998 - Present	Steve Tyler Creative Services	Trinity
	Mary Alice Gonzalez March 1998 - Present	Stewart Title - Fort Bend Div.	Fort Bend
	Michael Sullivan March 1998 - Present	Sea-Master Marine Coatings, Inc.	Harris
Electric Generating Utilities	Kerry Whelan April 1999 - Present	Reliant Energy	Harris
	Cynthia Schmidt March 1998 - April 1999	Houston Lighting & Power	Harris
River Authorities	Jim Adams, P.E. March 1998 - Present	San Jacinto River Authority	Montgomery (service in central part of Region H)
	Tom Ray March 1998 - Present	Brazos River Authority	McLennan (service in west and southwest part of Region H)
	Danny F. Vance March 1998 - Present	Trinity River Authority	Tarrant (service in east and southeast part of Region H)
Water Districts	J.C. Searcy, Jr. March 1998 - Present	Spirit of North Harris County Coalition	Harris
	Marvin Marcell July 1998 - Present	Fort Bend Subsidence District	Fort Bend
	Ron Neighbors March 1998 - Present	Harris-Galveston Coastal Subsidence District	Harris and Galveston
Water Utilities	James Morrison March 1998 - Present	Walker County WSC	Walker
	William Teer March 1998 - Present	Retired	Leon
	C. Harold Wallace March 1998 - Present	West Harris County Surface WSC	Harris

Table ES-1 (continued)

Non-Voting Members	
Name **Dates Served**	**Entity**
David Alders July 1998 - Present	East Texas RWPG (I)
Sterling Cornelius January 1999 - Dec. 2000	Texas Association of Nurserymen
Rick Gangluff July 1998 - Present	Lower Colorado RWPG (K)
Lacy Fryer April 1999 - Present	Texas Department of Agriculture
Tommy Hebert July 1998 - Present	Representative for extra-regional holder of 1,000+ acre-feet of water rights.
Larry Jacobs July 1998 - Present	Montgomery County Soil and Water Conservation District
Tony Jones July 1998 - Present	Brazos G RWPG
Phil Kaiser December 2000 - Present	Just Trees
Gordon Myers July 1998 - Present	Gulf Coast Water Authority
Ernest Rebuck March 1998 - Present	Texas Water Development Board
Danny Vance July 1998 - Present	Region C RWPG (also a voting member)
Woody Woodrow July 1998 - Present	Texas Parks and Wildlife Department

Table ES-2: Public Repositories of the Region H Regional Water Plan

AUSTIN COUNTY
County Clerk
County Courthouse
1 East Main
Bellville, TX 77418

AUSTIN COUNTY
Gordon Library
917 Circle Drive
Sealy, TX 77474

BRAZORIA COUNTY
County Clerk
County Courthouse
111 East Locust
Angleton, TX 77511

BRAZORIA COUNTY
Angleton Public Library
401 East Cedar
Angleton, TX 77515

CHAMBERS COUNTY
County Clerk
County Courthouse
Anahuac, TX 77514

CHAMBERS COUNTY
Chambers County Library
– Main Branch
202 Cummings
Anahuac, TX 77514

FORT BEND COUNTY
County Clerk
301 Jackson
Richmond, TX 77469

FORT BEND COUNTY
George Memorial Library
1001 Golfview
Richmond, TX 77469

GALVESTON COUNTY
County Clerk
County Courthouse
722 Moody
Galveston, TX 77550

GALVESTON COUNTY
Rosenberg Library
2310 Sealy
Galveston, TX 77550

HARRIS COUNTY
County Clerk
Harris County Administration Building
1001 Preston Avenue
Houston, TX 77002

HARRIS COUNTY
Houston Public Library
1st Floor, Bibliographic Information Center
500 McKinney
Houston, TX 77002

LEON COUNTY
County Clerk
Leon County Courthouse
Centerville, TX 75833

LEON COUNTY
Leon County Library
129 East Main
Centerville, TX 75833

Table ES-2 (continued)

LIBERTY COUNTY County Clerk County Courthouse 1923 Sam Houston Liberty, TX 77575	**LIBERTY COUNTY** Sam Houston Regional Library And Research Center FM1011 Liberty, TX 77575
MADISON COUNTY County Clerk 101 West Main, Room 102 Madisonville, TX 77864	**MADISON COUNTY** Madison County Library 605 South May Madisonville, TX 77864
MONTGOMERY COUNTY County Clerk County Courthouse 301 N. Thompson Conroe, TX 77301	**MONTGOMERY COUNTY** Montgomery County Central Library 104 Interstate 45 North Conroe, TX 77301
POLK COUNTY County Clerk County Courthouse, 1st Floor 101 West Church Livingston, TX 77351	**POLK COUNTY** Murphy Memorial Library 601 West Church Livingston, TX 77351
SAN JACINTO COUNTY County Clerk County Courthouse #1 Highway 150 Coldspring, TX 77331	**SAN JACINTO COUNTY** Coldspring Library 220 South Bonham Coldspring, TX 77331
TRINITY COUNTY County Clerk County Courthouse 1st and Main Groveton, TX 75845	**TRINITY COUNTY** Blanche K. Werner Library Highway 19 Trinity, TX 75862
WALKER COUNTY County Clerk County Courthouse 1100 University Avenue Huntsville, TX 77340	**WALKER COUNTY** Huntsville Public Library 1216 – 14th Street Huntsville, TX 77340
WALLER COUNTY County Clerk County Courthouse 836 Austin Street Hempstead, TX 77445	**WALLER COUNTY** Waller County Library - Brookshire/Pattison 3815 Sixth Street Brookshire, TX 77423

Table ES-3: State Agencies with Oversight of Water Planning

Texas Water Development Board

William Mullican
Director, Water Resource Planning
PO Box 13231, 1700 N. Congress Ave., Austin, TX 78711-3231
(512) 936-0813

Ernest Rebuck, P.E.
Assistant Director, Water Resources Planning
PO Box 13231, 1700 N. Congress Ave., Austin, TX 78711-3231
(512) 936-2317

Texas Natural Resource Conservation Commission (plan review)

Jeffrey Saitas
Executive Director
12500 Park 35 Circle, Austin, TX 78753
(512) 239-3900

Texas Parks and Wildlife Department (plan review)

Andrew Sansom
Executive Director
4200 Smith School Road, Austin, TX 78744-3291
(512) 389-4800

Table ES-4: Region H Water Planning Group Population Projections

County	1990	2000	2010	2020	2030	2040	2050
Austin	19,832	23,571	26,639	30,362	34,161	38,200	42,980
Brazoria	191,707	241,233	279,519	322,819	378,774	424,518	489,838
Chambers	20,088	27,943	35,180	44,395	50,154	54,561	57,719
Fort Bend	225,421	372,666	505,935	683,080	914,290	1,147,629	1,399,774
Galveston	217,399	259,656	300,009	349,260	399,936	434,319	456,631
Harris	2,818,199	3,303,757	3,809,510	4,434,344	4,796,682	5,249,691	5,543,482
Leon	12,665	14,879	16,737	18,664	20,423	22,308	24,108
Liberty	52,726	69,124	77,625	104,156	141,589	153,963	167,415
Madison	10,931	12,673	13,048	13,203	13,049	12,612	11,914
Montgomery	182,201	295,403	439,173	602,374	818,084	989,264	1,162,046
Polk (part)	22,369	33,196	37,057	41,706	46,952	51,040	54,731
San Jacinto	16,372	21,806	27,018	32,118	36,637	41,012	45,872
Trinity (part)	7,666	10,673	11,174	11,550	11,949	12,504	13,304
Walker	50,917	62,592	71,217	78,895	89,676	96,974	101,675
Waller	23,389	30,912	42,606	63,870	94,028	109,453	128,788
Region H	3,871,882	4,780,084	5,692,447	6,830,796	7,846,384	8,838,048	9,700,277

Table ES-5: Water Demand Forecasts for Region

(Water use in acre-feet per year)						
Austin County	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**
Municipal Water Use	3549	3754	4039	4401	4793	5379
Manufacturing	120	147	176	207	249	296
S.E. Power Cooling	0	0	0	0	0	0
Mining	97	74	53	35	28	27
Irrigation	12291	12291	12291	12291	12291	12291
Livestock	1993	1993	1993	1993	1993	1993
Total Water Use	18050	18259	18552	18927	19354	19986
Brazoria County	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**
Municipal Water Use	34698	37647	41145	46751	51167	58556
Manufacturing	228424	257569	274057	288204	316451	344404
S.E. Power Cooling	0	0	0	0	0	0
Mining	1511	1305	1169	1114	1043	1063
Irrigation	131207	118758	108276	104256	101833	101833
Livestock	1066	1066	1066	1066	1066	1066
Total Water Use	396906	416345	425713	441391	471560	506922
Chambers County	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**
Municipal Water Use	3937	4509	5262	5762	6124	6420
Manufacturing	4675	5052	5229	5383	5792	6207
S.E. Power Cooling	1100	1100	1100	1100	1500	5000
Mining	13233	9379	8155	7707	7388	7344
Irrigation	128452	128452	128452	128452	128452	128452
Livestock	768	768	768	768	768	768
Total Water Use	152165	149260	148966	149172	150024	154191
Fort Bend County	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**
Municipal Water Use	69084	88351	113748	149905	185273	225200
Manufacturing	21139	23616	25556	27401	30592	33639
S.E. Power Cooling	70000	70000	70000	70000	70000	70000
Mining	258	250	235	219	220	228
Irrigation	62045	62045	62045	62045	62045	62045
Livestock	1134	1134	1134	1134	1134	1134
Total Water Use	223660	245396	272718	310704	349264	392246
Galveston County	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**
Municipal Water Use	42675	46149	50632	56247	60130	63522
Manufacturing	64614	70905	75743	80269	88858	97460
S.E. Power Cooling	1500	1500	1500	1500	1500	1500
Mining	84	63	55	44	42	44
Irrigation	10334	10334	10334	10334	10334	10334
Livestock	182	182	182	182	182	182
Total Water Use	119389	129133	138446	148576	161046	173042

Table ES-5 (continued)

Harris County	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**
Municipal Water Use	656756	720323	800122	848390	884519	925140
Manufacturing	386430	419816	446155	468909	515487	561743
S.E. Power Cooling	16500	17500	20000	22500	22500	22500
Mining	702	574	392	316	255	240
Irrigation	17995	17995	17995	17995	17995	17995
Livestock	1147	1147	1147	1147	1147	1147
Total Water Use	1079530	1177355	1285811	1359257	1441903	1528765
Leon County	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**
Municipal Water Use	2320	2447	2573	2746	2921	3129
Manufacturing	178	191	192	193	194	195
S.E. Power Cooling	0	0	0	0	0	0
Mining	1459	1045	508	384	327	335
Irrigation	0	0	0	0	0	0
Livestock	2105	2105	2105	2105	2105	2105
Total Water Use	6062	5788	5378	5428	5547	5764
Liberty County	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**
Municipal Water Use	9605	10145	12587	16376	17279	18580
Manufacturing	486	551	615	681	753	826
S.E. Power Cooling	0	0	0	0	0	0
Mining	15430	16852	19021	21193	23389	25827
Irrigation	109905	109905	109905	109905	109905	109905
Livestock	432	432	432	432	432	432
Total Water Use	135858	137885	142560	148587	151758	155570
Madison County	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**
Municipal Water Use	2773	2720	2629	2541	2393	2262
Manufacturing	78	82	85	87	94	99
S.E. Power Cooling	0	0	0	0	0	0
Mining	42	36	33	28	27	28
Irrigation	50	50	50	50	50	50
Livestock	1379	1379	1379	1379	1379	1379
Total Water Use	4322	4267	4176	4085	3943	3818
Montgomery County	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**
Municipal Water Use	45944	61942	73824	92270	110886	131839
Manufacturing	1670	1935	2128	2317	2604	2897
S.E. Power Cooling	6000	6000	6000	6000	6000	6000
Mining	196	98	53	30	19	15
Irrigation	20	20	20	20	20	20
Livestock	420	420	420	420	420	420
Total Water Use	54250	70415	82445	101057	119949	141191

Table ES-5 (continued)

Polk County	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**
Municipal Water Use	4684	4890	5174	5639	5936	6288
Manufacturing	0	0	0	0	0	0
S.E. Power Cooling	0	0	0	0	0	0
Mining	26	26	27	27	28	29
Irrigation	0	0	0	0	0	0
Livestock	136	136	136	136	136	136
Total Water Use	4846	5052	5337	5802	6100	6453
San Jacinto County	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**
Municipal Water Use	2586	2926	3234	3547	3855	4244
Manufacturing	24	27	31	34	38	41
S.E. Power Cooling	0	0	0	0	0	0
Mining	76	52	30	10	2	0
Irrigation	0	0	0	0	0	0
Livestock	170	170	170	170	170	170
Total Water Use	2856	3175	3465	3761	4065	4455
Trinity County	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**
Municipal Water Use	1683	1664	1624	1634	1652	1737
Manufacturing	3	4	4	5	5	6
S.E. Power Cooling	0	0	0	0	0	0
Mining	10	10	10	10	10	10
Irrigation	4	4	4	4	4	4
Livestock	303	303	303	303	303	303
Total Water Use	2003	1985	1945	1956	1974	2060
Walker County	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**
Municipal Water Use	10521	11095	11569	12627	13285	13576
Manufacturing	228	245	260	276	290	306
S.E. Power Cooling	0	10000	15000	15000	20000	30000
Mining	15	16	18	19	21	23
Irrigation	345	345	345	345	345	345
Livestock	565	565	565	565	565	565
Total Water Use	11674	22266	27757	28832	34506	44815
Waller County	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**
Municipal Water Use	6394	7958	10930	15103	17129	19767
Manufacturing	44	49	56	62	68	75
S.E. Power Cooling	0	0	0	0	0	0
Mining	687	351	192	106	53	30
Irrigation	28405	28405	28405	28405	28405	28405
Livestock	1238	1238	1238	1238	1238	1238
Total Water Use	36768	38001	40821	44914	46893	49515

Table ES-5 (continued)

Total Region H	2000	2010	2020	2030	2040	2050
Municipal Water Use	897209	1006520	1139092	1263939	1367342	1485639
Manufacturing	708113	780189	830287	874028	961475	1048194
S.E. Power Cooling	95100	106100	113600	116100	121500	135000
Mining	33826	30131	29951	31242	32852	35243
Irrigation	501053	488604	478122	474102	471679	471679
Livestock	13038	13038	13038	13038	13038	13038
Total Water Use	**2248339**	**2424582**	**2604090**	**2772449**	**2967886**	**3188793**

Table ES-6: Environmental Water Needs for Galveston Bay

The frequency of annual Galveston Bay system freshwater inflows recommended by the Galveston Bay Freshwater Inflows Group.

Inflow Scenario	Quantity Needed (acre-feet/year)	Historical Frequency	Target Minimum Frequency
Max H	5.2 million	66%	50%
Min Q	4.2 million	70%	60%
Min Q-Sal	2.5 million	82%	75%
Min Historic	1.8 million	98%	90%

Note: The health and productivity of Galveston Bay must consider the quantity, quality, seasonality (monthly inflows), and location of inflows. It is anticipated that the inflow needs projections will continue to be refined over time. The use of improved data focused on the fisheries production solely from the Galveston Bay system is one example of an anticipated means of refinement.

Scenario Descriptions:

Max H: Modeled inflows recommended for maximum bay and estuary fisheries harvest by Texas Parks & Wildlife Department.

Min Q: Minimum modeled inflow recommended to maintain the bay and estuary fisheries harvest.

Min Q-Sal: Estimated minimum acceptable inflow recommended to maintain the salinity needed for bay and estuary fisheries viability.

Min Historic: Minimum annual inflow calculated for Galveston Bay over the period of record (1941-1990).

Table ES-7: Summary of Water Supplies Available to Region H For Years 2000, 2030, and 2050

Supply Source	Supply Available (1,000 Acre-Feet per year) 2000	2030	2050
Groundwater			
Gulf Coast Aquifer	816.2	588.3	588.3
Carrizo-Wilcox Aquifer	168.5	168.5	168.5
Queen City & Sparta Aquifer	25.3	25.3	25.3
Brazos River Alluvium	41.3	41.3	41.3
Subtotal Groundwater	**1,051.3**	**823.4**	**823.4**
Surface Water			
Trinity River Basin	1,567.5	1,567.5	1,567.5
San Jacinto River Basin	330.6	330.7	330.7
Brazos River Basin	642.6	642.7	642.8
Coastal Basins	89.3	89.2	89.5
Lower Neches Basin	6.2	6.4	6.4
Subtotal Surface Water	**2,636.2**	**2,636.5**	**2,636.9**
Total Water Supplies	**3,687.5**	**3,459.9**	**3,460.3**

Table ES-8: Region H Selected Management Strategies

Management Strategy	Yield (ac-ft/yr)	Strategy Cost ($)
Municipal Conservation	30,563	$3,667,600
Irrigation Conservation		
Brazoria County	24,312	$1,876,000
Fort Bend County	14,259	$1,085,000
Waller County	5,010	$391,000
Contractual Transfers	28,500	None
Reservoirs		
Allens Creek	99,650	$157,300,000
Little River	129,000	$361,000,000
Bedias	90,700	$132,000,000
Wastewater Reclamation	90,700	$175,498,000
Luce Bayou	None	$84,000,000
Houston/TRA Contract	200,000	Unknown
BRA Voluntary Redistribution	75,000	None
Bedias/SJRA Transfer	None	$62,340,000
Houston/GCWA Transfer	23,000	$63,270,000
SJRA/CLCND Contract	30,000	$8,250,000

Table ES-9: Management Strategies for Major Water Providers

Major Water Provider Management Strategy	2000 af/y	2010 af/y	2020 af/y	2030 af/y	2040 af/y	2050 af/y
Brazos River Authority						
Balance Without Strategies *	-48,573	-89,544	-107,392	-135,860	-173,649	-216,704
Voluntary Redistribution	50,000	50,000	50,000	75000	75000	75000
GCWA	-18,000	-18,000	-18,000	-33,000	-33,000	-33,000
Brazosport Water Authority ***	0	0	0	0	0	-1,200
Municipal Conservation	0	762	3008	4101	4302	5207
Irrigation Conservation	0	29,332	43,581	43,581	43,581	43,581
Needville's shortage ***			-123	-282	-462	-711
Allens Creek Reservoir	0	0	29,900	29,900	29,900	29,900
Little River Reservoir **	0	0	0	0	71,000	71,000
Contractual Transfer - MFR to IRR	28,500	28,500	28,500	28,500	28,500	28,500
Balance	11,927	1,050	29,474	11,940	45,172	1,573
City of Houston						
Balance Without Strategies *	515,639	394,117	174,907	88,414	9,728	-76,380
Municipal Conservation	98	7,763	17,055	16,783	13,652	13,366
Allens Creek Reservoir	0	0	69,750	69,750	69,750	69,750
Luce Bayou	0	0	0	0	0	0
Wastewater Reclamation	0	90,700	90,700	90,700	90,700	90,700
Houston / GCWA Transfer	0	0	0	0	0	-23,000
Houston / TRA Contract	0	200,000	200,000	200,000	200,000	200,000
Balance	515,737	692,580	552,412	465,647	383,830	274,436
Gulf Coast Water Authority						
Balance Without Strategies *	-11,393	-11,919	-18,767	-34,631	-59,087	-85,440
Municipal Conservation	92	840	1,676	2,676	2,858	3,682
Little River Reservoir	0	0	0	0	28,000	28,000
New BRA Contract	18,000	18,000	18,000	33,000	33,000	33,000
Houston / GCWA Transfer	0	0	0	0	0	23,000
Balance	6,699	6,921	909	1,045	4,771	2,242
San Jacinto River Authority						
Balance Without Strategies *	56,495	34,876	5,045	-19,222	-47,003	-74,602
Municipal Conservation	0	2,632	5,080	6,175	6,586	7,707
SJRA / CLCND Contract	30,000	30,000	30,000	30,000	30,000	30,000
Bedias Reservoir / Interbasin Transfer	0	0	0	75,000	75,000	75,000
Balance	86,495	67,509	40,125	91,953	64,583	38,105
Trinity River Authority						
Balance Without Strategies *	278,220	273,421	271,891	260,925	259,129	255,392
Municipal Conservation	0	0	0	579	451	531
Bedias Reservoir	0	0	0	15,700	15,700	15,700
Houston / TRA Contract	0	-200,000	-200,000	-200,000	-200,000	-200,000
Balance	278,220	73,421	71,891	77,204	75,280	71,623

* Starting balance reflects extensions of current contracts
** Little River Reservoir total yield is 129,000 afy. 30,000 afy will go to BRA in Region G, 71,000 afy will go to BRA in Region H, and 28,000 afy will go to the GCWA
*** Entities previously designated for self-supply

Table ES-10: Recommended Water Management Strategies by City and Category*

WUG Name	County #	Basin#	Strategy Description	Source Name	Capital Cost **	Supply 2030	Supply 2050
ALVIN	20	11	Municipal conservation, new contracts	BRA/COE System	$6,390,000	0	1,201
ANGLETON	20	11	Renew and increase existing contract with BWA	Brazos ROR, BRA/COE System	$20,353,000	1,622	4,683
BRAZORIA	20	12, 13	Renew and increase existing contract with BWA	Brazos ROR		127	515
CLUTE	20	11	Renew and increase existing contract with BWA	Brazos ROR	$6,618,000	643	1957
FREEPORT	20	11, 12, 13	Renew and increase existing contract with BWA	Brazos ROR	$8,694,000	723	3,036
LAKE JACKSON	20	11, 12	Renew and increase existing contract with BWA	Brazos ROR	$872,000	1,145	4,200
OYSTER CREEK	20	11	Renew and increase existing contract with BWA	Brazos ROR		46	168
PEARLAND (P)	20	11	Renew existing contract (split between Brazoria & Harris Co)	Brazos ROR	$2,320,000	5,599	5,599
RICHWOOD	20	11	Renew and increase existing contract with BWA	Brazos ROR	$4,333,000	266	664
BRAZORIA COUNTY-OTHER	20	11, 12, 13	Municipal conservation, Renew and increase current contracts, Little River Reservoir	Brazos ROR, BRA/COE System, Little River Reservoir		1,996	6,876
MANUFACTURING	20	11, 12, 13	Renew and increase existing contracts, new reservoirs	Brazos ROR, BRA/COE System, Allens Creek Reservoir, Little River Reservoir	$157.3 MM (ACR) $361 MM (LRR)	67,240	114,058
MINING	20	11, 12, 13	New contracts	BRA/COE System		213	1,012
IRRIGATION	20	11, 12, 13	Renew and increase existing contracts, irrigation conservation, Contractual transfer of manufacturing supply for irrigation	Brazos ROR, BRA/COE System, Chocolate Bayou	$203,000	40,393	39,750
ANAHUAC	36	7, 8	Extend existing contract	Lake Anahuac	$882,000	1,049	1,049
BAYTOWN (P)	36	9	Renew and increase existing contract	Lake Livingston		729	831
CHAMBERS COUNTY-OTHER	36	7, 8, 9	Municipal conservation, renew existing contracts	Lake Anahuac		663	669
MANUFACTURING	36	9	Extend existing contracts	Lake Livingston		7,796	7,796
FULSHEAR	79	11, 12	Municipal conservation, New contracts	BRA/COE System	$4,394,000	59	180
KATY (P)	79	10	Municipal conservation, New contracts	BRA/COE System		225	543
MEADOWS	79	10	Municipal conservation, New contract with Houston	Lake Livingston	$1,181,000	693	1,582

Table ES-10 (continued)

WUG Name	County #	Basin#	Strategy Description	Source Name	Capital Cost	Supply 2030	Supply 2050
MISSION BEND (P)	79	11	Municipal conservation, New contract with Houston	Lake Livingston		553	914
MISSOURI CITY (P)	79	10, 11	Renew and increase existing contracts	Brazos ROR, BRA/COE System	$8,386,000	8,805	19,001
NEEDVILLE	79	12, 13	Municipal conservation, Supply realized through irrigation conservation			282	711
RICHMOND	79	12	Municipal conservation, New contracts, Allens Creek Reservoir, Little River Reservoir	BRA/COE System, Allens Creek Reservoir, Little River Reservoir	$15,232,000	1,757	4,224
ROSENBERG	79	12	Municipal conservation, New contracts, Allens Creek Reservoir, Little River Reservoir	BRA/COE System, Allens Creek Reservoir, Little River Reservoir	$14,705,000	1,872	4,995
STAFFORD (P)	79	10, 11	Extend existing contract through 2050 -for both Fort Bend and Harris Co	Brazos ROR		10,903	10,903
SUGAR LAND	79	11, 12	Renew existing contracts	Brazos ROR	$4,071,000	22,441	22,441
TOWN WEST (CDP)	79	11	Municipal conservation, New contract with Houston	Lake Livingston	$917,000	205	478
FORT BEND COUNTY-OTHER	79	10, 11, 12	Municipal conservation, renew existing contracts, Little River Reservoir, Allens Creek Reservoir	Brazos ROR, BRA/COE System, Little River Reservoir, Allens Creek Reservoir		45893	77,648
MANUFACTURING	79	10, 11, 12	New contracts, Little River Reservoir, Allens Creek Reservoir, Supply realized through irrigation conservation	BRA/COE System, Little River Reservoir, Allens Creek Reservoir		21,373	26,238
STEAM ELECTRIC POWER	79	12	Extend existing contract through 2050	BRA/COE System		0	83,000
IRRIGATION	79	10, 12	Irrigation conservation		$269,000	14,259	14,259
BAYOU VISTA	84	11	Bayou Vista will switch from SE plant to GCWA in 2001 and will need to increase the GCWA contract	BRA/COE System	$912,000	222	332
DICKINSON	84	11	Increase existing contract	BRA/COE System	$1,962,000	2,643	3,315
FRIENDSWOOD (P)	84	11	Increase existing contract for both Galveston & Harris Co	Lake Livingston		3,815	3,815
GALVESTON	84	11	Little River Reservoir contract with GCWA	Little River Reservoir	$34,682,000	0	1,391
HITCHCOCK	84	11	Hitchcock will switch from SE plant to GCWA in 2001 and will need to increase the GCWA contract	BRA/COE System	$5,326,000	332	471

Table ES-10 (continued)

WUG Name	County #	Basin#	Strategy Description	Source Name	Capital Cost	Supply 2030	Supply 2050
LA MARQUE	84	11	Increase existing contract	BRA/COE System	$1,173,000	120	275
SANTA FE	84	11	Santa Fe will switch from SE plant to GCWA in 2001 and will need to increase the GCWA contract	BRA/COE System	$8,828,000	1,457	1,700
GALVESTON COUNTY-OTHER	84	7, 11	Municipal conservation, New contracts	BRA/COE System		1,531	283
MANUFACTURING	84	11	Renew and increase existing contracts, Little River Reservoir, transfer from Houston	BRA/COE System, Little River Reservoir, Houston/CWA system		10,243	27,434
ALDINE (CDP)	101	10	Municipal conservation, New contract with Houston	Lake Livingston	$1,274,000	1,503	1,475
BARRETT	101	9, 10	Municipal conservation, New contract with SJRA	San Jacinto ROR	$3,199,000	626	662
BAYTOWN (P)	101	9,10	Renew and increase existing contracts	Lake Livingston	$4,083,000	14,318	16,661
BELLAIRE	101	10	Municipal conservation, Wastewater reuse, New contract with Houston	Lake Livingston	$7,187,000	3,567	3,632
BUNKER HILL VILLAGE	101	10	Municipal conservation, New contract with Houston	Lake Livingston	$1,194,000	1,016	1,075
CHANNELVIEW (CDP)	101	10	Renew and increase existing contract	Lake Livingston	$1,734,000	3,770	3,711
CROSBY	101	9, 10	Renew existing contract	San Jacinto ROR	$1,437,000	1,050	1,050
DEER PARK	101	10, 11	Renew and increase existing contracts	Lake Livingston	$982,000	6,295	6,933
EL LAGO	101	11	Increase existing contract	Lake Livingston	$933,000	239	295
FRIENDSWOOD (P)	101	11	Renew and increase existing contract for both Galveston Co & Harris Co	Lake Livingston	$4,584,000	5,049	5,049
GALENA PARK	101	10	Renew and increase existing contracts	Lake Livingston		1,512	1,521
HEDWIG VILLAGE	101	10	Renew and increase existing contracts	Lake Livingston		977	1,124
HIGHLANDS	101	9, 10	Renew and increase existing contracts	Lake Livingston	$1,271,000	1,277	1,343
HUMBLE	101	10	Municipal conservation, New contract with Houston	Lake Livingston	$3,288,000	5,490	6,456
HUNTERS CREEK VIL.	101	10	Renew and increase existing contracts	Lake Livingston		1,631	1,750
JACINTO CITY	101	10	Renew and increase existing contracts	Lake Livingston	$876,000	1,549	1,655
JERSEY VILLAGE	101	10	Municipal conservation, New Contract with Houston	Lake Livingston	$1,445,000	1,465	1,685
KATY	101	10	Municipal conservation, New contracts, Allens Creek Reservoir	BRA/COE System, Allens Creek Reservoir	$25,396,000	2,181	2,692

Table ES-10 (continued)

WUG Name	County #	Basin#	Strategy Description	Source Name	Capital Cost	Supply 2030	Supply 2050
LA PORTE	101	11	Renew existing contract	Lake Livingston	$856,000	7,391	7,391
MCNAIR	101	9	Renew and increase existing contracts	Lake Livingston	$859,000	263	263
MISSION BEND (P)	101	10	Municipal conservation, New contract with Houston	Lake Livingston	$1,685,000	1,666	1,749
MISSOURI CITY (P)	101	10	Renew existing contract	Brazos ROR		8,399	8,399
NASSAU BAY	101	11	Renew existing contract	Lake Livingston		728	728
PASADENA	101	10, 11	Contract increases due to facility expansion. Renew contract through 2050	Lake Livingston	$5,578,000	21,672	21,672
PEARLAND (P)	101	11	Renew existing contract (split between Brazoria & Harris Co)	Brazos ROR		5,599	5,599
PINEY POINT VILLAGE	101	10	Renew and increase existing contracts	Lake Livingston		1,569	1,769
SEABROOK	101	11	Renew and increase existing contracts	Lake Livingston		1,727	1,879
SHELDON	101	10	Municipal conservation, New contract with Houston	Lake Livingston	$6,373,000	353	408
SOUTH HOUSTON	101	10	Contract increases due to facility expansion. Renew contract through 2050	Lake Livingston		1,399	1,399
SOUTHSIDE PLACE	101	10	Renew and increase existing contracts	Lake Livingston		452	499
SPRING (CDP)	101	10	Municipal conservation, New contract with Houston	Lake Livingston	$21,565,000	5,416	5,899
SPRING VALLEY	101	10	Municipal conservation, New contract with Houston	Lake Livingston	$976,000	538	571
STAFFORD (P)	101	10	Renew existing contract for both Fort Bend and Harris Co	Brazos ROR		545	545
TOMBALL	101	10	Municipal conservation, New contract with Houston	Lake Livingston	$19,491,000	2,203	2,669
WEST UNIVERSITY PL.	101	10	Renew and increase existing contracts	Lake Livingston		2,209	2,246
HARRIS COUNTY-OTHER	101	9, 10, 11	Municipal conservation, Renew and increase existing contracts, Bedias Reservoir	Lake Livingston, Brazos ROR, San Jacinto ROR, Bedias Reservoir		192,278	209,959
MANUFACTURING	101	9, 10, 11	Renew and increase existing contracts, Wastewater reclamation, Bedias Reservoir	Lake Livingston, Trinity ROR, San Jacinto ROR, Bedias Reservoir	$120.4 MM	525,267	612,261
STEAM ELECTRIC POWER	101	10, 11	Renew existing contracts, new contracts	Lake Livingston		44,870	44,870
MINING	101	10, 11	Renew existing contracts, new contracts	Lake Livingston		639	639
LIBERTY COUNTY-OTHER	146	6, 7, 8, 9, 10	Municipal conservation, New contracts with TRA	Lake Livingston		2,081	4,229
MINING	146	8, 9	New Contract with TRA	Lake Livingston		3,113	6,952

Table ES-10 (continued)

WUG Name	County #	Basin#	Strategy Description	Source Name	Capital Cost	Supply 2030	Supply 2050
CONROE	170	10	Municipal conservation, New contracts with SJRA, Bedias Reservoir	Lake Conroe, Bedias Reservoir	$48,101,000	10,632	21,940
OAK RIDGE NORTH	170	10	Municipal conservation, New contracts with SJRA	Lake Conroe	$1,680,000	371	504
PANORAMA VILLAGE	170	10	Municipal conservation, New contracts with SJRA	Lake Conroe	$6,883,000	421	993
SHENANDOAH	170	10	Municipal conservation, New contracts with SJRA	Lake Conroe	$1,486,000	0	386
THE WOODLANDS	170	10	Renew and increase existing contracts	Lake Conroe	$30,805,000	3,514	2,846
WILLIS	170	10	Municipal conservation, New well fields	Gulf Coast Aquifer	$10,905,000	202	597
MONTGOMERY COUNTY-OTHER	170	10	Municipal conservation, New contracts with SJRA, Bedias Reservoir	Lake Conroe, Bedias Reservoir	$176.1 MM	24,999	53,346
MANUFACTURING	170	10	New contracts with SJRA	Lake Conroe		647	1,227
MINING	170	10	New contracts with SJRA	Lake Conroe		30	15
LIVINGSTON	187	8	Renew existing contracts	Lake Livingston		5,601	5,601
POLK COUNTY-OTHER	187	8	Renew existing contract	Lake Livingston		672	672
SAN JACINTO COUNTY-OTHER	204	8	Renew existing contract	Lake Livingston		1,118	1,114
HUNTSVILLE	236	8, 10	Renew existing contract	Lake Livingston	$940,000	9,209	9,209
WALKER COUNTY-OTHER	236	8, 10	Renew existing contracts	Lake Livingston		1,993	1,993
BROOKSHIRE	237	12	Municipal conservation, New contracts	BRA/COE System	$14,545,000	493	1,047
HEMPSTEAD	237	12	Municipal conservation, Allens Creek Reservoir, Little River Reservoir	Allens Creek Reservoir, Little River Reservoir	$7,041,000	82	381
KATY (P)	237	10	Municipal conservation, New contract	BRA/COE System		454	642
PRAIRIE VIEW	237	12	Municipal conservation, Allens Creek Reservoir, Little River Reservoir	Allens Creek Reservoir, Little River Reservoir	$10,754,000	290	1,181
WALLER COUNTY-OTHER	237	10	Municipal conservation, New Contracts, Allens Creek Reservoir, Little River Reservoir	BRA/COE System, Allens Creek Reservoir, Little River Reservoir		4,735	5,595
IRRIGATION	237	10	Irrigation conservation, New contracts, Little River Reservoir	BRA/COE System, Little River Reservoir		5,010	5,640

Table ES-10 (continued)

County Legend		Basin Legend
8 - Austin	157 - Madison	7 - Trinity-Neches Coastal Basin
20 - Brazoria	170 - Montgomery	8 - Trinity River Basin
36 - Chambers	187 - Polk	9 - Trinity-San Jacinto Coastal Basin
79 - Fort Bend	204 - San Jacinto	10 - San Jacinto River Basin
84 - Galveston	228 - Trinity	11 - San Jacinto-Brazos Coastal Basin
101 - Harris	236 - Walker	12 - Brazos River Basin
145 - Leon	237 - Waller	13 - Brazos-Colorado Coastal Basin
146 - Liberty		

(CDP) is an unincorporated, census-defined place
(P) is a partial municipality, split between counties

* This table is extracted from the Task 5 report, TWDB Table 12

** Capital Costs for municipalities reflect new or additional conveyance, storage and treatment facilities. Capital costs for major water supply strategies appear as follows:

Allens Creek Reservoir - Brazoria County Manufacturing
Bedias Reservoir and SJRA Transfer Pipeline- Montgomery County-Other
Little River Reservoir - Brazoria County Manufacturing
Wastewater Reuse - Harris County Manufacturing
Houston to GCWA Transfer - Galveston Manufacturing

Figure ES-1: Location Map

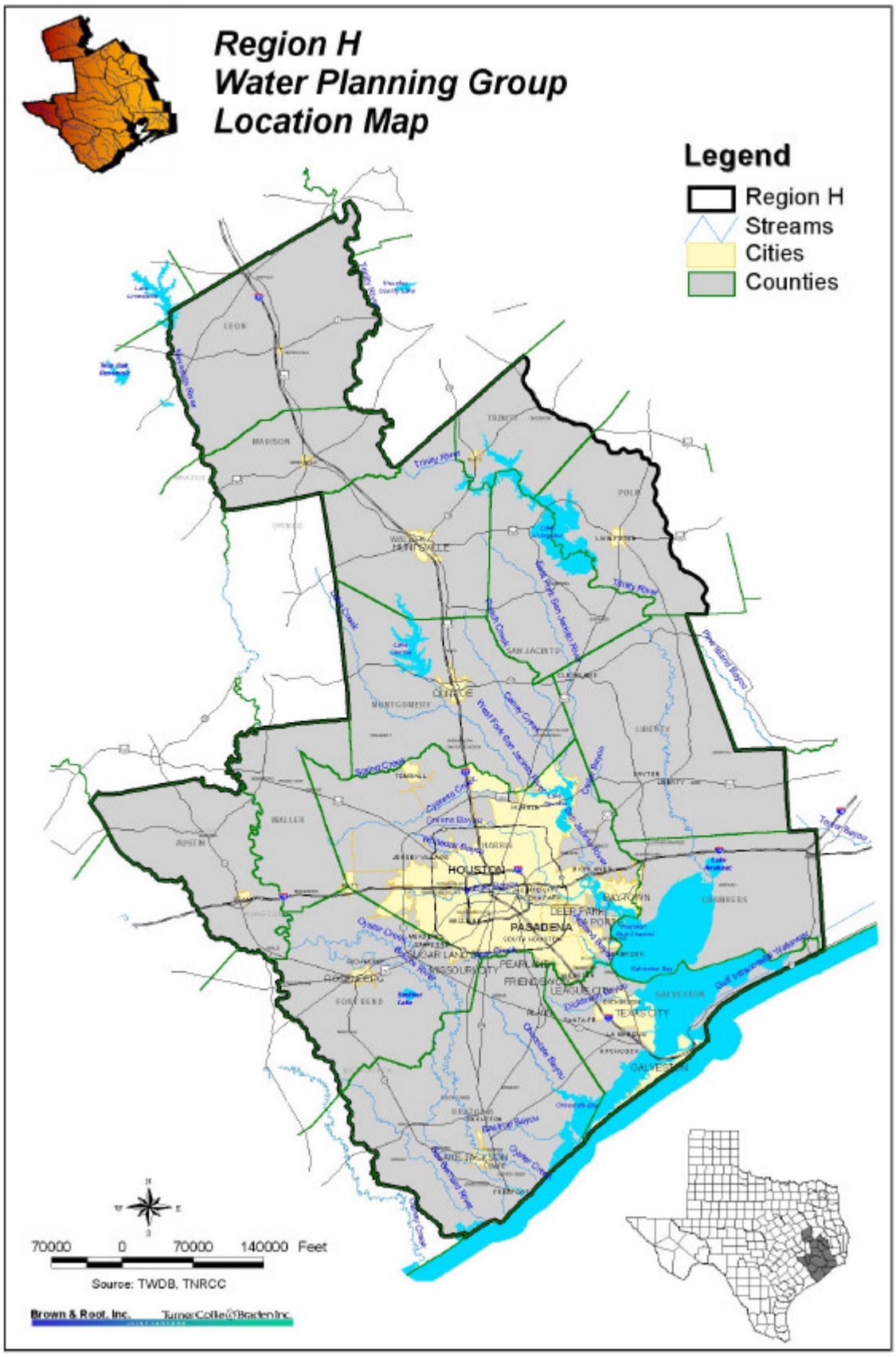


FIGURE ES-3. SUMMARY OF SOCIO-ECONOMIC IMPACTS OF NOT MEETING WATER NEEDS, REGION H, 2000 - 2050