TASK 6 REPORT

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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

Chapters 31 TAC 357.7 (a)(9), 31 TAC 357.8 and 31 TAC 357.9 of the Texas Water Code specifies that each regional water planning group throughout Texas shall make recommendations that are necessary to effect and/or implement the adopted regional water plan. This report presents the Additional Recommendations of the Region H Water Planning Area. This area includes all or part of fifteen counties including Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Leon, Liberty, Madison, Montgomery, Polk, San Jacinto, Trinity, Walker and Waller.

The Region H Water Planning Group (RHWPG) has drafted a set of Additional Recommendations in accordance with the above provisions. This report outlines these recommendations in three areas of interest:

- Unique Stream Segments
- Unique Reservoir Sites
- Regulatory, Administrative and Legislative Recommendations

The RHWPG believes that stewardship of the environment can be coupled with water supply development. Successful planning and implementation of these three subject areas will serve to enhance the quality of life and sustain the local economy throughout the Region H water planning area.

6.1 UNIQUE STREAM SEGMENTS

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

31 TAC § 357.8 Ecologically Unique River and Stream Segments

(a) Regional water planning groups may include in adopted regional water plans recommendations for all or parts of river and stream segments of unique ecological value located within the regional water planning area by preparing a recommendation package consisting of a physical description giving the location of the stream segment, maps, and photographs of the stream segment and a site characterization of the stream segment documented by supporting literature and data. The recommendation package shall address each of the criteria for designation of river and stream segments of ecological value found in subsection (b) of this section. The regional water planning group shall forward the recommendation package to the Texas Parks and Wildlife Department and allow the Texas Parks and Wildlife Department 30 days for its written evaluation of the recommendation. The adopted regional water plan shall include, if available, Texas Parks and Wildlife Department's written evaluation of each river and stream segment recommended as a river or stream segment of unique ecological value.

(b) A regional water planning group may recommend a river or stream segment as being of unique ecological value based upon the following criteria:

*(1) **biological function**--stream segments which display significant overall habitat value including both quantity and quality considering the degree of biodiversity, age, and uniqueness observed and including terrestrial, wetland, aquatic, or estuarine habitats;*

*(2) **hydrologic function**--stream segments which are fringed by habitats that perform valuable hydrologic functions relating to water quality, flood attenuation, flow stabilization, or groundwater recharge and discharge;*

*(3) **riparian conservation areas**--stream segments which are fringed by significant areas in public ownership including state and federal refuges, wildlife management areas, preserves, parks, mitigation areas, or other areas held by governmental organizations for conservation purposes, or stream segments which are fringed by other areas managed for conservation purposes under a governmentally approved conservation plan;*

*(4) **high water quality/exceptional aquatic life/high aesthetic value**--stream segments and spring resources that are significant due to unique or critical habitats and exceptional aquatic life uses dependent on or associated with high water quality; or*

(5) ***threatened or endangered species/unique communities****--sites along streams where water development projects would have significant detrimental effects on state or federally listed threatened and endangered species, and sites along streams significant due to the presence of unique, exemplary, or unusually extensive natural communities.*

Texas Parks and Wildlife Department (TPWD) provided the Region H Water Planning Group with the document "Ecologically Significant River and Stream Segments of Region H Regional Water Planning Area" (Norris and Linam, October 1999) that detailed information on streams in the region that meet the Senate Bill One criteria. Two hundred fifty-nine (259) streams were identified that exist within Region H. TPWD selected twenty-seven (27) for inclusion as "ecologically significant" streams. This analysis served as the basis for further consideration of which streams might be of "unique ecological value." The RHWPG then used the additional following described methodology to make a final selection.

Methodology:

(1) Screened initial selection of 27 streams presented by Texas Parks and Wildlife Department (TPWD, October 1999; see Table 1) using a decision rule of selecting those streams with seven or more criteria factors cited by the TPWD.
(2) Compared screened streams with previously studied reservoir sites and published or potential water conveyance plans and eliminated streams that might conflict with potential water development projects.
(3) Compared screened streams with TNRCC water rights and wastewater discharge information and eliminated streams that might raise water quality permitting issues.
(4) Compared screened streams with Houston Canoe Club ranking of streams in region and other recreational use information from the Region H Task 3 Report.
(5) Compared screened streams with riparian conservation areas and prior ecological designations and added four streams that had not met the initial numeric selection criterion: Armand Bayou (a State Coastal Preserve); lower portion of Big Creek, Fort Bend County (Brazos Bend State Park); Big Creek, San Jacinto County (Sam Houston National Forest); and Menard Creek (a Corridor Unit of the Big Thicket National Preserve).

Table 6-1. TPWD Recommended River or Stream Segments and Criteria Satisfied[1]

River or Stream Segment	Biological Function	Hydrologic Function	Riparian Cons. Area	High Water Quality / Aesthetic Value	Endangered / Threatened Species
Armand Bayou	x	xx	xx	x	
Austin Bayou	x	x	xx		xxx
Bastrop Bayou	x	x	xx		xxx
Big Creek (Fort Bend)	x	x	xx	xx	
Big Creek (San Jacinto)	x		xxx	x	x
Brazos River	x	xxx	xxx		xx
Caney Creek	x	xx	xx		
Carpenters Bayou	x	xx	x		
Cedar Lake Creek	x	xx	xx		xxxx
Clear Creek	x	xx		x	
East Fork San Jacinto	x	xx	xx	xxx	
East Sandy Creek	x	x	x		
Halls Bayou	x	x			x
Harmon Creek	x	xx	x	x	
Jones Creek	x	x	xx		
Lake Creek	x	xx		xxx	x
Luce Bayou	x	xx			
Menard Creek	x	xx	x		x
Mill Creek	x	xx		xx	x
Nelson Creek	x	x		xx	
Old River	x	xx	x	x	
San Bernard River	x	xx			xx
Upper Trinity River		x			x
Lower Trinity River	x	xxx	xxx		xx
Upper Keechi Creek	x	x	x		
Wheelock Creek		x		x	
Winters Bayou	x	xx	x	x	

Note: More than one "x" in a criteria column indicates that the river or stream segment satisfies that particular criteria in more than one way. For example, Armand Bayou is a State Coastal Preserve and is also a part of the Great Texas Coastal Birding Trail.

[1] TPWD Report, Norris and Linam, October 1999.

After consideration of the above factors, six streams are recommended for designation as Streams of Unique Ecological Value in Region H. These are illustrated on the attached exhibit entitled "Recommended Unique Stream Segments."

Recommended Unique 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 is recommended for unique designation status for two of the streams; Armand Bayou and Menard Creek (segments within Region H.) For the remaining four streams only those portions adjacent to or within the riparian conservation areas are proposed for designation as unique streams.

The following are descriptions of each of these special watercourses.

Armand Bayou[2]

Armand Bayou is a coastal tributary of Clear Lake, a secondary bay in the Galveston Bay System, in southern Harris County. The bayou is often shallow and has a mean width of 40 feet that supports varying flow over a muddy substrate. This scenic natural bayou and associated riparian forest offer habitat for alligators, waterfowl, and other wildlife such as raccoons, bobcats, and river otters. Noteworthy bird species known to inhabit the area include; pileated woodpeckers, red shouldered hawks, barred owls, ospreys, and migratory songbirds. Several hundred acres of restored coastal prairie offer habitat for grassland species such as the sedge wren and Le Conte's sparrow. The associated marshes that border the riparian forest provide valuable habitat to commercially and recreationally important species such as white shrimp, blue crabs, and red drum. In addition, the bayou also provides valuable recreational opportunities to local residents within an urban context. The ecologically significant segment is from the confluence with Clear Lake in Harris County upstream to Genoa-Red Bluff Road in Harris County.

(1) Biological Function- significant riparian zone and associated marshes display significant overall habitat value.
(2) Hydrologic Function- performs valuable hydrologic function relating to flood attenuation for the Pasadena and Clear Lake areas.

[2] TPWD Report, Norris and Linam, October 1999

(3) Riparian Conservation Area- fringed by the Armand Bayou Coastal Preserve and is a part of the Great Texas Coastal Birding Trail.
(4) High Water Quality/Exceptional Aquatic Life/High Aesthetic Value- high aesthetic value for outdoor recreation within an urban context.
(5) Threatened or Endangered Species/Unique Communities- none identified.

Bastrop Bayou[3]

Bastrop Bayou is a scenic coastal waterway fringed by extensive freshwater wetland habitat. The bayou rises in the central part of Brazoria County and flows deeply in a southeasterly direction for 13 miles where it empties into Austin Bayou and ultimately Bastrop Bay. Like Austin Bayou, Bastrop Bayou provides valuable habitat for endangered or threatened shorebirds as well as waterfowl, grassland species, and birds of prey. These include geese, sandhill cranes, sedge wrens, grasshopper sparrows, white-tailed kites, and white-tailed hawks. In addition to numerous bird watching opportunities, the bayou also provides outdoor opportunities in the form of water related activities to local residents. The ecologically significant segment is that portion adjacent to the Brazoria National Wildlife Refuge within Brazoria County. This segment is within TNRCC stream segment 1105.

(1) Biological Function- extensive freshwater wetland habitat that displays significant overall habitat value.
(2) Hydrologic Function- extensive freshwater wetlands perform valuable hydrologic function relating to water quality.
(3) Riparian Conservation Area- fringed by the Brazoria National Wildlife Refuge and is part of the Great Texas Coastal Birding Trail.
(4) High Water Quality/Exceptional Aquatic Life/High Aesthetic Value- insufficient data to evaluate criteria.
(5) Threatened or Endangered Species/Unique Communities- designated as an internationally significant shorebird site by the Western Hemisphere Shorebird Reserve Network, provides habitat for the wood stork, reddish egret, and white-faced ibis.

Big Creek (Fort Bend)[4]

Big Creek begins south of Rosenberg and flows southeasterly 25 miles into the Brazos River in Fort Bend County. The creek is an old Brazos River channel with associated sloughs, bayous, oxbow lakes, and coastal prairies that are bordered by bottomland hardwood forest. This habitat provides an excellent opportunity for bird watching, as over 270 species of birds have been sighted in this area. Birds commonly seen here include purple gallinules, least bitterns, prothonotary warblers, barred owls, white-ibis', herons, and egrets among others. Other wildlife that inhabits the area

[3] TPWD Report, Norris and Linam, October 1999
[4] TPWD Report, Norris and Linam, October 1999

includes alligators, bobcats, raccoons, feral hogs, and gray foxes. The ecologically significant segment is that portion of the stream within the Brazos Bend State Park.

(1) Biological Function- no significant biological function identified.
(2) Hydrologic Function- bottomland hardwood forest and associated wetlands perform valuable hydrologic function relating to water quality.
(3) Riparian Conservation Area- fringed by Brazos Bend State Park and is part of the Great Texas Coastal Birding Trail.
(4) High Water Quality/Exceptional Aquatic Life/High Aesthetic Value- designated as an Ecoregion Reference Stream by the TPWD River Studies Program for high dissolved oxygen and diversity of benthic macroinvertebrates.
(5) Threatened or Endangered Species/Unique Communities- none identified.

Big Creek (San Jacinto)[5]

Big Creek rises near Cold Springs in Central San Jacinto County and flows southeasterly into Northern Liberty County where it joins the Trinity River. The creek is narrow with a sandy bottom, follows a run, riffle, pool sequence, and contains abundant woody debris. This provides habitat for a diverse community of fish and macroinvertebrates including the southern brook lamprey, blacktail shiner, blacktail redhorse, blackstripe topminnow, numerous perch species, and several species of sunfish. The creek meanders through pristine forestland in the Sam Houston National Forest and provides significant opportunities for bird watching and outdoor recreation. Bird species often found include Louisiana waterthrushes and worm-eating warblers, as well as the endangered red-cockaded woodpecker that the National Forest Service developed an interpretive site around. An interpretive trail through the Big Creek Scenic Area and the Lone Star Hiking Trail provide access to the creek and provide an opportunity to see mammals such as bobcats, squirrels, and beavers. The ecologically significant segment is that portion of the stream that exists within the Sam Houston National Forest within San Jacinto County.

(1) Biological Function- displays significant overall habitat value considering the high degree of biodiversity.
(2) Hydrologic Function- no information available.
(3) Riparian Conservation Area- fringed by the Sam Houston National Forest and the Big Creek Scenic Area and is part of the Great Texas Coastal Birding Trail.
(4) High Water Quality/Exceptional Aquatic Life/High Aesthetic Value- exceptional aesthetic value.
(5) Threatened or Endangered Species/Unique Communities- red-cockaded woodpecker group nearby.

Cedar Lake Creek[6]

[5] TPWD Report, Norris and Linam, October 1999
[6] TPWD Report, Norris and Linam, October 1999

Cedar Lake Creek begins in northwest Brazoria County and flows southeasterly 28 miles into Cedar Lake and ultimately to the Gulf of Mexico. The creek is bordered by bottomland hardwood forest in the northern portion and by interspersed native prairies, farmland, and coastal marshes in the south. It is one of the few remaining unchannelized bayous in the region. Approximately 3,500 acres of forested land along three miles of creek are in the process of being acquired as a Wildlife Management Area. The creek itself and the adjacent San Bernard National Wildlife Refuge provide habitat to numerous bird species including the scissor-tailed flycatcher and numerous shorebirds. The ecologically significant segments are those portions of the stream adjacent to the proposed Wildlife Management Area and the San Bernard Wildlife Refuge within Brazoria County.

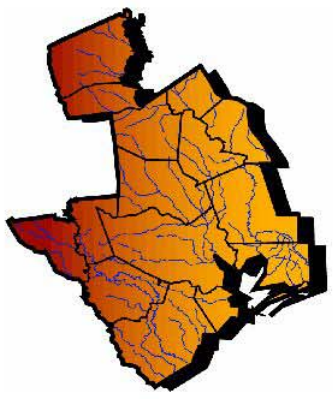
(1) Biological Function- undredged bayou with extensive forest and wetlands that display significant overall habitat value.
(2) Hydrologic Function- bottomland forest and wetlands perform valuable hydrologic functions relating to flood attenuation and water quality.
(3) Riparian Conservation Area- fringed by San Bernard National Wildlife Refuge and is part of the Great Texas Coastal Birding Trail.
(4) High Water Quality/Exceptional Aquatic Life/High Aesthetic Value- insufficient data to evaluate criteria.
(5) Threatened or Endangered Species/Unique Communities- significant due to presence of reddish egret, wood stork, brown pelican, and white-faced ibis.

Menard Creek[7]

Menard Creek begins east of Livingston in central Polk County and flows southeasterly to the Polk County line, where it turns northwesterly and flows through Liberty County into the Trinity River. The creek channel is narrow and shallow with a sandy bottom and follows a sinuous path through banks lined with pine and hardwood forest. The ecologically significant segment is from the confluence with the Trinity River near the Polk/Liberty County line upstream to its headwaters located east of Livingston in the central part of Polk County. The portion that runs through Hardin County is not included in the segment as it is out of Region H.

(1) Biological Function- bottomland hardwood forest that displays significant overall habitat value.
(2) Hydrologic Function- performs valuable hydrologic functions relating to water quality and groundwater recharge of the Chicot Aquifer.
(3) Riparian Conservation Area- fringed by the Big Thicket National Preserve.
(4) High Water Quality/Exceptional Aquatic Life/High Aesthetic Value- insufficient data to evaluate criteria.
(5) Threatened or Endangered Species/Unique Communities- high diversity of freshwater mussels, many of which are rare.

[7] TPWD Report, Norris and Linam, October 1999



Region H
Water Planning Group
Recommended Unique Stream Segments

Legend

- Recommended Unique Stream Segments
- Region H
- Streams
- Public Lands
- Lakes
- Counties

FREESTONE
LIMESTONE
Lake Limestone
LEON
HOUSTON
Houston County Lake
ANGELINA
Sam Rayburn Reservoir
Trinity River
MADISON
TRINITY
ROBERTSON
POLK
B. A. Steinhagen Lake
TYLER
JASPER
Lake Livingston
WALKER
Sam Houston National Forest
SAN JACINTO
Menard Creek
Big Thicket National Preserve
East Fork San Jacinto
Big Creek
BURLESON
BRAZOS
GRIMES
Lake Conroe
Somerville Lake
HARDIN
LIBERTY
WASHINGTON
MONTGOMERY
Lake Houston
Lucas Bayou
Clear Creek
AUSTIN
WALLER
HARRIS
CHAMBERS
Armand Bayou
Galveston Bay
COLORADO
FORT BEND
Brazos River
Big Creek
Brazos Bend State Park
GALVESTON
WHARTON
BRAZORIA
Bastrop Bayou
West Bay
Brazoria National Wildlife Refuge
Cedar Lake Creek
San Bernard National Wildlife Refuge
MATAGORDA
Gulf of Mexico

N
W
E
S

90000 0 90000 Feet

Source: TWDB, TNRCC, USGS

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JOINT VENTURE

August 2000

6.2 UNIQUE RESERVOIR SITES

The Texas Water Code offers an opportunity to designate sites of unique value for use as surface water supply reservoirs within a planning region. The following criteria are outlined within the Texas Water Code.

> ***31 TAC § 357.9 Unique Sites for Reservoir Construction***
>
> *A regional water-planning group may recommend sites of unique value for construction of reservoirs by including descriptions of the sites, reasons for the unique designation and expected beneficiaries of the water supply to be developed at the site. The following criteria shall be used to determine if a site is unique for reservoir construction:*
>
> 1. *Site-specific reservoir development is recommended as a specific water management strategy or in an alternative long-term scenario in an adopted regional water plan; or*
> 2. *The location, hydrologic, geologic, topographic, water availability, water quality, environmental, cultural, and current development characteristics, or other pertinent factors make the site uniquely suited for:*
>   A. *Reservoir development to provide water supply for the current planning period; or*
>   B. *Where it might reasonably be needed to meet needs beyond the 50-year planning period.*

Through use of a decision-based water management strategy analysis and selection process, the Region H Water Planning Group selected three surface water reservoir projects for inclusion within the final plan. Each of these projects is therefore a specific water management strategy. Water supply from each project is needed to meet water needs within the current 50-year planning period. The RHWPG has decided to designate the site locations of each of these projects as unique sites. Therefore, after consideration of all of the above factors, three reservoir sites are recommended for designation as Sites of Unique Value in Region H. These are illustrated on the attached exhibit entitled "Recommended Reservoir Sites."

The three sites include:

ALLENS CREEK RESERVOIR

This site is located in Austin County, 1 mile north of the City of Wallis, on Allens Creek, a tributary to the Brazos River. This site exists within the Brazos River Basin and is in Region H. Approximately 7,000 acres would be inundated. This project is configured as a scalping reservoir that would divert stormwater flows (periods of high water) from the Brazos River and impound these flows in the reservoir to create storage yield. The maximum dam height is 53 feet. The conservation storage quantity is approximately

145,500 acre-feet at an elevation of 121.0 feet msl. The projected firm yield of this project is 99,650 acre-feet per year. The total project cost is estimated as $157,300,000. The Brazos River Authority and City of Houston will jointly develop this reservoir project for their water users within the lower Brazos and San Jacinto river basins.

The project location is shown on Exhibit 3, Allens Creek Reservoir.

BEDIAS RESERVOIR

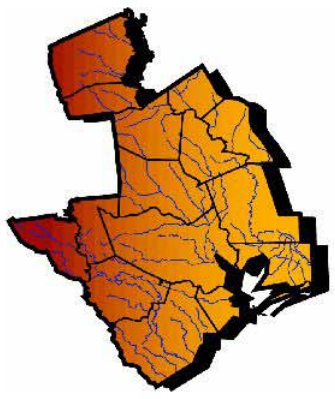
This site is at the junction of Grimes, Madison and Walker Counties, located principally within Madison County about 3.5 miles west of Highway 75. The site includes Bedias and Caney Creeks. This site exists within the Trinity River Basin and is in Regions G and H. The upstream drainage area is approximately 395 square miles. The dam is proposed with a maximum height of 45 feet and a normal pool elevation of 230.0 feet msl. The reservoir would have conservation storage of 181,000 acre-feet and would inundate approximately 13,000 acres. The approximate firm yield of Bedias Reservoir is 90,700 acre-feet per year. The estimated project cost is $132,000,000. This project is currently included in the TRA Trinity River Basin Master Plan. As planned, the Trinity River Authority and the San Jacinto River Authority would jointly develop this project for their water users within the lower Trinity and San Jacinto river basins, respectively.

The Project location is shown on Exhibit 4, Bedias Reservoir

LITTLE RIVER RESERVOIR

This site is located on the main stem of the Little River just upstream from its confluence with the Brazos River. It is near the City of Cameron in Milam County, and is located within the Brazos River basin within Region G. The site would have a surface area of 35,000 acres and a storage volume of about 930,000 acre-feet. The approximately 7,500 square mile upstream drainage area is uncontrolled which produces a significant yield. The fully developed site would have a firm yield of about 129,000 acre-feet per year. The approximate project cost is $361,000,000. The Brazos River Authority and the Gulf Coast Water Authority propose this project for joint development for their water customers within the Brazos and the San Jacinto-Brazos river basins. Brazos River Authority customers would exist within both Regions G and H, making this project truly regional in scope.

The project location is shown on Exhibit 5, Little River Reservoir.



Region H
Water Planning Group
Recommended Reservoir Sites

Legend

- Region H
- Streams
- Recommended Reservoir Sites
- Lakes
- Counties

FREESTONE
LIMESTONE
LEON
Houston County Lake
Lake Limestone
FALLS
ROBERTSON
MADISON
TRINITY
Bedias Reservoir
Little River Reservoir
WILLIAM
GRIMES
WALKER
POLK
TYLER
Lake Livingston
SAN JACINTO
BURLESON
BRAZOS
Lake Conroe
Somerville Lake
LEE
WASHINGTON
LIBERTY
MONTGOMERY
Lake Houston
FAYETTE
AUSTIN
WALLER
HARRIS
CHAMBERS
Allens Creek Reservoir
COLORADO
FORT BEND
Galveston Bay
WHARTON
GALVESTON
LAVACA
BRAZORIA
MATAGORDA
Gulf of Mexico

N W E S

90000 0 90000 Feet

Source: TWDB, TNRCC, USGS

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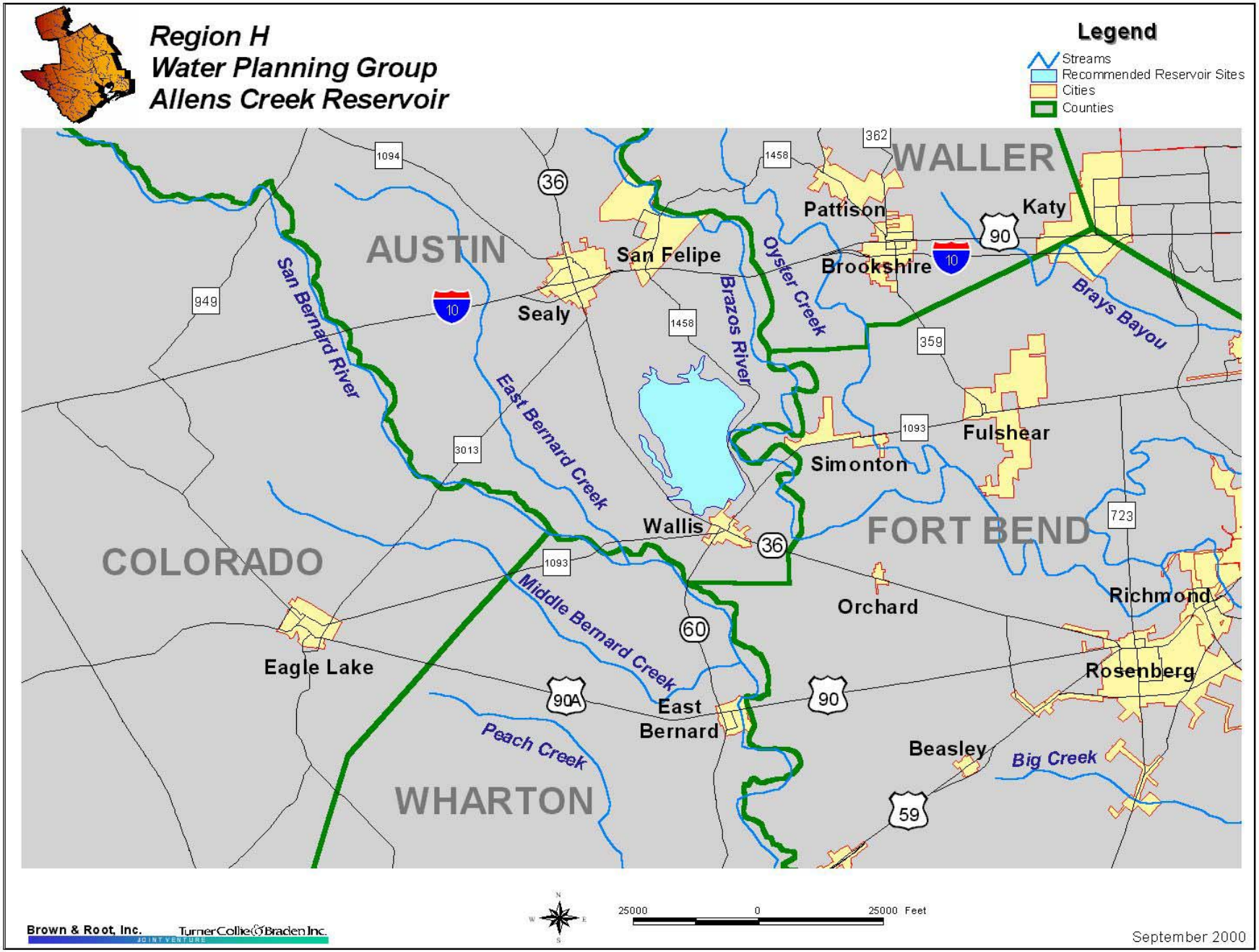
JOINT VENTURE

August 2000

Exhibit 3


Region H
Water Planning Group
Allens Creek Reservoir
Legend
Streams
Recommended Reservoir Sites
Cities
Counties
WALLER
AUSTIN
COLORADO
WHARTON
FORT BEND
Pattison
Katy
Brookshire
San Felipe
Sealy
Simonton
Fulshear
Wallis
Orchard
Richmond
Rosenberg
Eagle Lake
East Bernard
Beasley
San Bernard River
East Bernard Creek
Middle Bernard Creek
Peach Creek
Brazos River
Oyster Creek
Brays Bayou
Big Creek
1094
36
1458
362
949
10
90
359
1093
3013
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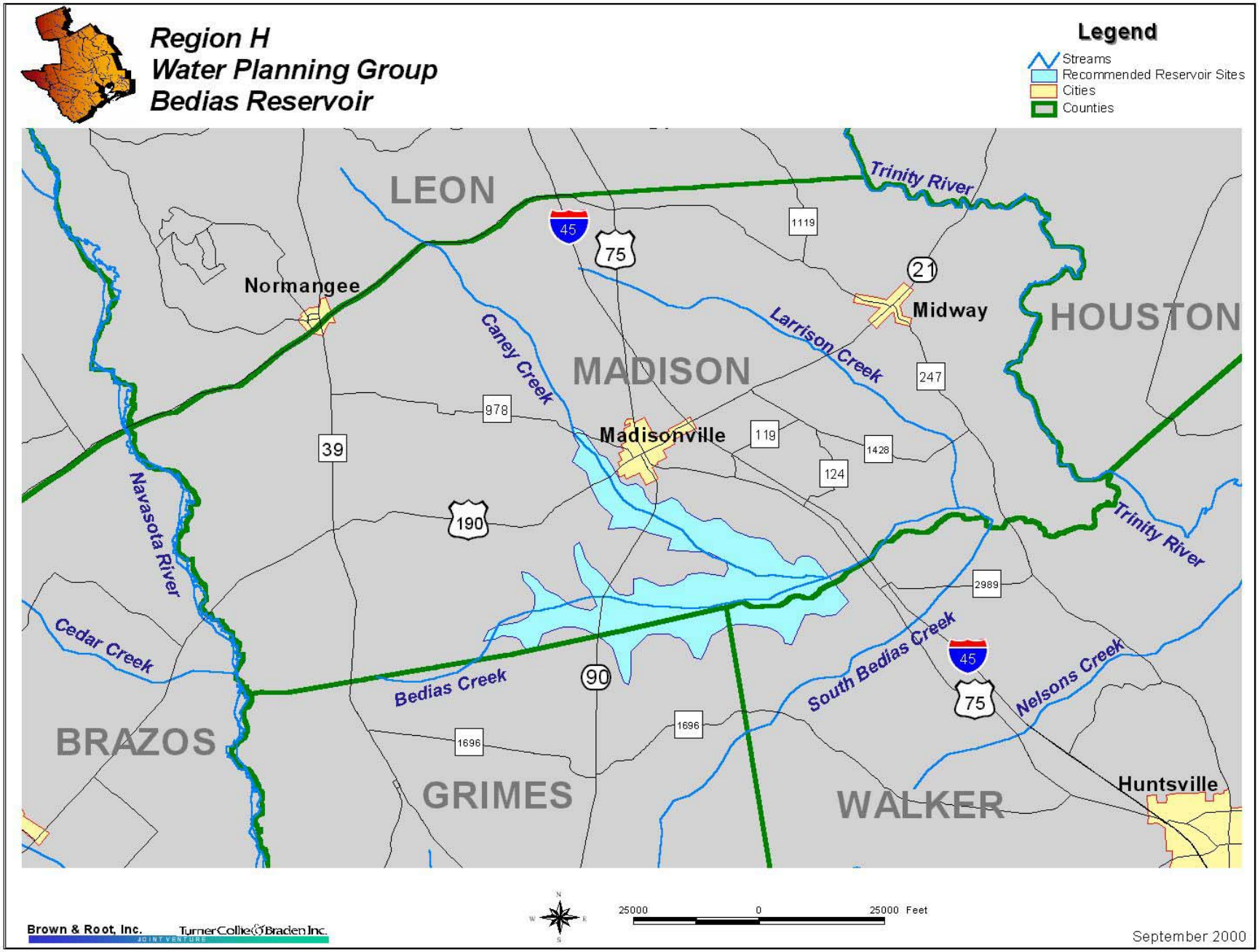
September 2000

Exhibit 4


Region H
Water Planning Group
Bedias Reservoir
Legend
Streams
Recommended Reservoir Sites
Cities
Counties
LEON
MADISON
HOUSTON
BRAZOS
GRIMES
WALKER
Normangee
Madisonville
Midway
Huntsville
Trinity River
Caney Creek
Larrison Creek
Navasota River
Cedar Creek
Bedias Creek
South Bedias Creek
Nelsons Creek
45
75
21
39
190
90
1119
247
978
119
1428
124
2989
1696
25000
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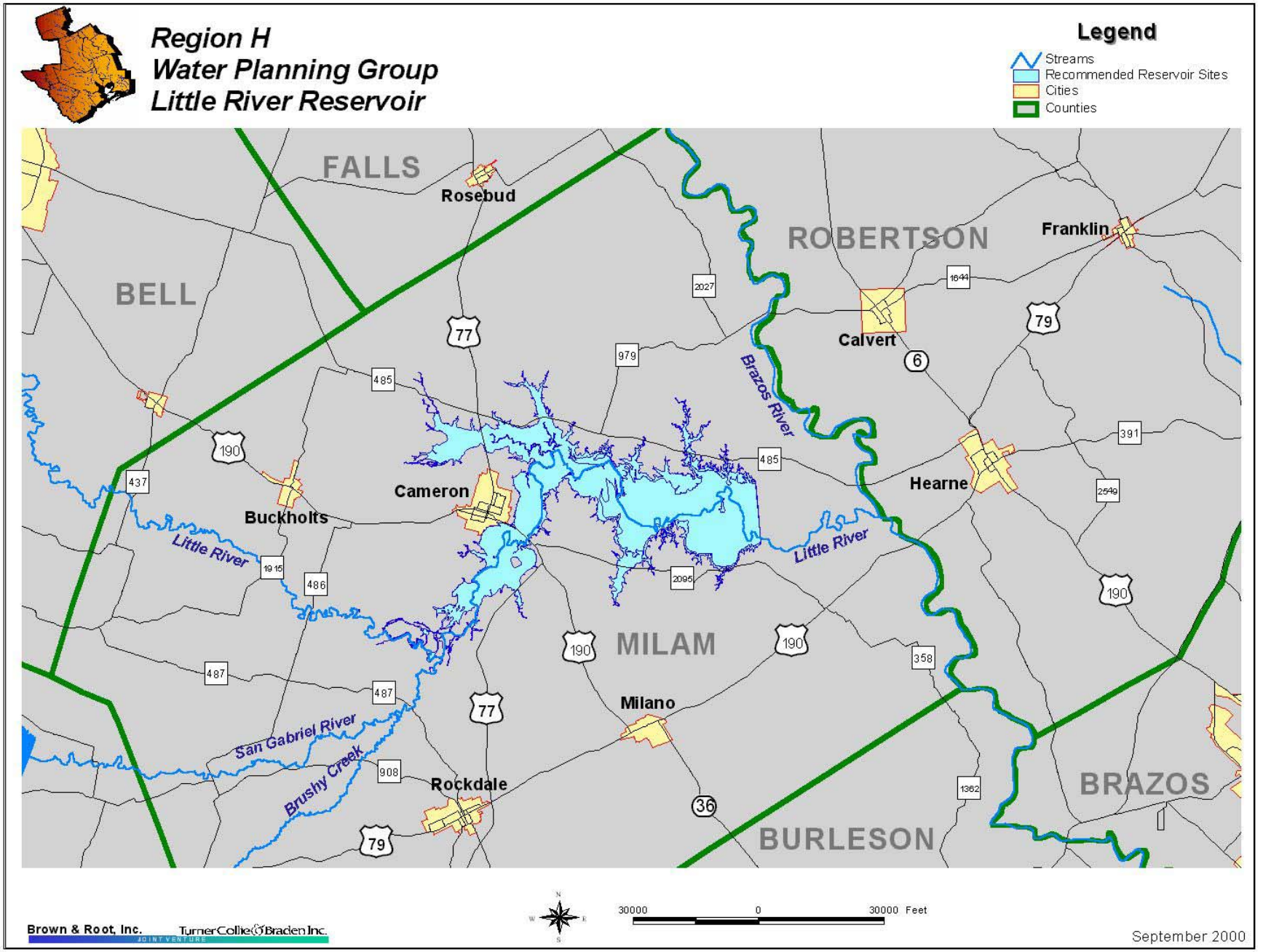
25000 Feet
Brown & Root, Inc.
Turner Collie & Braden Inc.
JOINT VENTURE
September 2000

Exhibit 5


Region H
Water Planning Group
Little River Reservoir
Legend
Streams
Recommended Reservoir Sites
Cities
Counties
FALLS
BELL
ROBERTSON
MILAM
BRAZOS
BURLESON
Rosebud
Franklin
Calvert
Cameron
Buckholts
Hearne
Milano
Rockdale
Brazos River
Little River
Little River
San Gabriel River
Brushy Creek
77
79
6
190
36
485
487
486
437
1915
2027
1644
979
391
2549
2095
358
908
1362
30000
0
30000 Feet
Brown & Root, Inc.
Turner Collie & Braden Inc.
JOINT VENTURE
September 2000

6.3 REGULATORY, ADMINISTRATIVE AND LEGISLATIVE RECOMMENDATIONS

INTRODUCTION

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:

> *"357.7(a) Regional water plan development shall include the following…*
> *(9) regulatory, administrative, or legislative recommendations that the regional water planning group believes are needed and desirable to: facilitate the orderly development, management, and conservation of water resources and preparation for and response to drought conditions in order that sufficient water will be available at a reasonable cost to ensure public health, safety, and welfare; further economic development; and protect the agricultural and natural resources of the state and regional water planning area. The regional water planning group may develop information as to the potential impact once proposed changes in law are enacted."*

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 (Legislature.)

SUMMARY OF RECOMMENDATIONS

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 and demand estimates as necessary.
  - Allow more flexibility in the allocation of multiple water management strategies to meet defined water shortages.
  - Base the water planning on renewal of current water supply contracts when they expire.
  - Modify the notification procedures for amendments to regional water plans 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 those 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 were developed as a result of financing 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 and intent of the 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 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.

REGULATORY AND AMINISTRATIVE RECOMMENDATIONS

Revise Population Projections

A number of Municipal WUGs within Region H strongly disagree with the current set of population and water demand projections. Various Municipal WUGs have transmitted evidence that their specific communities have year 2000 populations significantly higher or lower than the projections used in the current regional planning effort. An opportunity exists to rectify this situation with completion of the year 2000 Census. Accurate, consistent information should exist for each Region H Municipal WUG as a result of the Census.

The Region H Water Planning Group recommends that the TWDB immediately revise the existing population and water demand projections upon official acceptance of the Census information. These revised population and water demand projections should then be transmitted to the regional planning groups for amendment, if necessary, of the current regional water plan.

Water Management Strategy Flexibility

Section 357.7(a)(8) of the TWDB Regional Water Planning guidelines requires "specific recommendations of water management strategies to meet near term needs…" The TWDB interpretation of these requirements suggests a direct relationship between a defined water shortage with one specific water management strategy. We are concerned that this requirement decreases the local control and flexibility that have been an important part of successful efforts to meet water needs in Region H and throughout the state. Changing circumstances can alter the preferred alternative for new water supplies very quickly. We are also concerned that limiting the options of water suppliers may make negotiations to obtain needed land or water (through contract, for instance) more difficult and drive up the cost of new water supplies.

The Region H Water Planning Group recommends that the TWDB and the TNRCC interpret existing legislation to give the maximum possible flexibility to water suppliers. Legislative and regulatory changes should be made to remove this requirement for specificity from the regional water planning guidelines and allow plans to present multiple sources of supply where appropriate.

Contract Expiration Policy

TWDB has interpreted its current regulations to require regional water planning groups to assume that contract water will not be made available after the expiration date of the current contracts. In reality, buyers and sellers of water virtually always renew their contract commitments. The existing TWDB policy therefore appears to create a worst case scenario in regard to the long-term availability of water for WUGs with contracts. Subsequently, this assumption causes an unrealistically enormous estimate of

socioeconomic impacts. These impacts occur as a result of projected water shortages, which are based on the assumption that expiring contracts will not be renewed. For some municipalities, these expiring contracts represent the majority of their supply, and the projected impacts (loss of population, loss of industry, etc.) are severe. The magnitude of the socioeconomic impacts in Region H might cause a public official or the public in general to be unduly alarmed, when in fact sufficient water supplies are in existence to address near-term water needs.

The Region H Water Planning Group recommends that the TWDB change its policy to allow water planning groups to assume that current contracts will be extended beyond the current expiration date unless specific information suggests otherwise.

Notification Procedures for Regional Plan Amendments

The same notification requirements associated with adoption of a regional water plan should not be used upon amendment of a specific component of the plan. The RHWPG anticipates a number of plan amendments prior to review of the entire plan in approximately five years. These plan amendments will only affect certain aspects of the plan and certain communities and water suppliers. The current notification requirements for the entire plan are expensive.

The Region H Water Planning Group recommends adoption of a revised set of notification procedures for regional water plan amendments.

WAM Analysis Assumptions

The current TNRCC Water Availability Modeling (WAM) effort will produce a wealth of information that may assist in the development of future regional water plans. The current TNRCC rules regarding construction of the WAMs are based on a need for water rights permitting (strict prior appropriation doctrine) whereas the regional water planning efforts need WAMs based on a water supply planning basis. This distinction can create very different results.

The Region H Water Planning Group recommends adoption of WAMs predicated on planning based water models that represent current operations of regional water suppliers.

Regional Water Planning Area Definition

There may be a tendency to revise the current water planning regional boundaries. Planning region revision could potentially require large-scale re-analysis of the current plans. Additionally, it is anticipated that modifications to the plans would become more difficult to assess with an added burden of revising the existing regional definitions.

The Region H Water Planning Group recommends maintenance of the current boundary definitions of the sixteen regional water planning areas.

LEGISLATIVE RECOMMENDATIONS

Permit Exemption from Cancellation for Nonuse

Existing Texas Water Law provides for the potential cancellation of a water right due to 10 years of nonuse of the permitted water supplies. Water rights associated with relatively large water supply projects may be developed many years in advance of the actual need. These projects and their associated water rights are a result of prudent planning and a financial commitment to develop such a project. Cancellation of water rights associated with such a project defeats the purpose of performing long-term planning and project development.

The Region H Water Planning Group supports modification of current Texas Water Law to exempt from cancellation certain water rights that have not been utilized for 10 years or more.

Permit Exemption of Water Rights of Project Sponsor

Existing Texas Water Law is indiscriminate in regards to potential cancellation proceedings. The sponsors of water supply projects that secure water rights resulting with development of water supplies developed by that project sponsor should be exempt from any potential cancellation proceedings. Water supply project sponsors invest a significant amount of time, energy and capital in the development of water supply projects. These investments should not be subject to forfeiture due to nonuse of the developed water supplies.

The Region H Water Planning Group supports adoption of new legislation to exempt from cancellation those water rights secured by the project sponsor of a water supply project.

Interbasin Transfers

Senate Bill One states that water rights developed as a result of an interbasin transfer become junior to other water rights granted before the interbasin transfer permit. The effect of this change is to make obtaining a permit for interbasin transfer significantly more problematic than it was under prior law and thus discourages the use of interbasin transfers for water supply. This is undesirable for several reasons:

- Current supplies greatly exceed projected demands in some basins, and the supplies already developed in those basins can only be used via interbasin transfers (Trinity basin within Region H.)

- Interbasin transfers have been used extensively in Texas and are an important part of the state's current water supply. For example, three of the five Region H Major

Water Providers (City of Houston, Trinity River Authority and San Jacinto River Authority) maintain current permits for interbasin transfers collectively of over 1,000,000 acre-feet per year. Virtually all future water demands within the San Jacinto basin (Harris County in particular) of Region H must rely on interbasin transfers.

- Emerging regional water supply plans for major metropolitan areas in Texas (Dallas-Fort Worth and San Antonio) rely on interbasin transfers as a key component of their plans. It is difficult to envision developing a water supply for these areas without significant new interbasin transfers.

The Region H Water Planning Group recommends that the legislature revise the current law on interbasin transfers and remove the unnecessary and counterproductive barriers to such transfers that now exist.

Rule of Capture

Groundwater is a vital resource within Region H. This is especially true within the rural counties of the region that are predominantly dependent on groundwater. Current groundwater law based on the Rule-of-Capture has facilitated orderly development of groundwater systems throughout the State of Texas and, barring the intrusion of private interests, could continue to serve the water usage interests throughout the state. It appears that the Rule-of-Capture could continue per the status quo to serve the groundwater interests within the region.

The Region H Water Planning Group supports continued usage of the Rule-of-Capture as the basis of groundwater law throughout the State of Texas except as modified through creation of certified groundwater conservation districts.

Groundwater Conservation Districts

Region H communities, particularly those within the rural areas of the region, are dependent on groundwater supplies. Groundwater is a very valuable resource to this region. Region H contains counties, specifically Austin, Leon and Madison where some municipalities, water supply corporations and property owners believe groundwater conservation districts (GCD) are needed to retain long-term groundwater supplies within their respective counties. Region H also has several counties, including Brazoria, Waller and Montgomery, where groundwater supplies will, in theory, reach their maximum sustainable yield due solely to projected in-county water usage rates. A GCD is a potential vehicle for these counties to manage and protect groundwater supplies from over-development within each respective county. The potential of losing these supplies to outside interests before the county of origin can maximize the use of these supplies would create a burden on local water users.

The Region H Water Planning Group supports creation of GCDs, as necessary, by local subarea water interests. The RHWPG supports development of truly regional GCDs as

opposed to single county districts to recognize the regional expansiveness of underground aquifers and to provide the greatest degree of regional water supply protections.

Ongoing RWPG Activities

It is apparent that the RWPGs will have to meet periodically to address changed conditions related to the adopted regional water management plans. Ongoing activities will include, but not be limited to:

- Consideration of additions and modifications to the adopted plans
- Serving as communications liaisons with the water user communities within each region
- Assisting in the reconciliation of inter-regional water issues

It will be necessary to consider additional funding to support maintenance of the RWPGs. Also, the administrative provisions of Senate Bill One and the subsequent policies that have been enacted should be reviewed to determine if the appropriate organizational structure exists to accomplish the work of the RWPGs. Additional funding should be developed to support technical studies necessary to support the needs of the RWPGs.

The Region H RWPG recommends that the TWDB request additional funding and adoption of the appropriate administrative procedures from the legislature to facilitate ongoing activities of the RWPGs.

Texas Bays and Estuaries Program Funding

The RHWPG has adopted specific language associated with establishment of freshwater inflows to maintain the health and productivity of the bay. Galveston Bay is an important economic and recreational resource for our region. Current levels of funding within the State of Texas Bay & Estuary program are insufficient to continue the needed monitoring, study and development of management strategies for the bay.

The Region H Water Planning Group recommends establishment of additional funding to pursue necessary future efforts of the Galveston Bay & Estuary program.

Water Supply Project Financing Mechanism

The Region H Regional Water Plan includes development of several surface water reservoirs and other supply projects. The capital cost to develop these projects is significantly higher than the historic cost of water supply projects. The projected costs are such as to dissuade local communities from making a financial commitment to support future projects. These financing issues will delay the implementation of needed projects.

To address this situation, the Region H Water Planning Group supports establishment of financing methods by the State of Texas to capitalize a fund to support development of water supply projects recommended within adopted regional water management plans.

Unique Stream Segments and Reservoirs

While the RHWPG adopted both unique stream segment and reservoirs, there appears to be some confusion on the definition and legislative intent of the designations for each of these elements. It is clear that conflicts may be created for stream segments that might be used for both water supply conveyance and recreational purposes. To assist in the adoption of future unique stream segments and/or unique reservoir sites the RHWPG requests additional legislative clarification.

The Region H Water Planning Group supports clarification and definition of the legislative intent of the unique stream segments and of the unique reservoir sites.

Groundwater Availability Modeling Funding

Many areas of Region H are totally dependent on groundwater to support the long-term viability of these areas. The current Groundwater Availability Modeling effort is supported since it is the most comprehensive groundwater assessment and analysis effort of the previous 20 years. The current GAMs effort, however, is omitting minor aquifers and other groundwater considerations that are vital for certain local communities.

The Region H Water Planning Group supports continued funding for the GAMs effort, and recommends comprehensive analysis of all groundwater resources within the state.

Agricultural and Irrigation Conservation Funding

The Region H water management plan includes a number of irrigation conservation based water management strategies. It is apparent that adoption of irrigation conservation practices may benefit the irrigation and agricultural industry in addition to local communities that may take advantage of water supply savings resulting from irrigation conservation. Additionally, the RHWPG supports further research and development of water-efficient and drought-resistant crop and species.

The Region H Water Planning Group supports funding of research and development studies associated with the efficient usage of irrigation technologies and practices.

Desalination

The RHWPG considered desalination of brackish groundwater as a potential water source, but did not include it in the final plan because this strategy was more costly than other strategies. However, the RHWPG recognizes that the cost of desalination technology is decreasing, and that this strategy may merit consideration in future plans. It would be helpful and appropriate for the state to establish a program promoting

desalination research and development. Such a program might offer financial assistance or incentives for project implementation.

The Region H Water Planning Group recommends that a research and development program for desalination be established in Texas, and that it include financial assistance and/or incentives for desalination project implementation.

Water Conservation

The RHWPG strongly supports water conservation at all levels, and has incorporated it in the regional water plan as a management strategy. However, realizing advanced conservation savings in municipal county-other areas may be difficult, as these practices require some management, funding and oversight. While the RHWPG does not advocate a one-size-fits-all conservation program for the State of Texas, they recommend that the legislature address water conservation and provide some guidance and ability for county and local governments to implement these programs.

The Region H Water Planning Group supports water conservation and recommends that the legislature address and improve water conservation activities in the state.

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