

February 19, 2015

Agricultural
Robert Bruner
Pudge Willcox

Counties
John Blount
Mark Evans, Chair
Judge Art Henson

Electric Generating Utilities
Gene Fisseler

Environmental
John R. Bartos,
Executive Committee

Groundwater Management Areas
David Bailey
Kathy Jones

Industries
James Comin
Glenn Lord

Municipalities
Jun Chang,
Executive Committee
Robert Istre

Public
Carl Masterson

River Authorities
David Collinsworth
Jace Houston, Secretary
Kevin Ward

Small Businesses
Judge Bob Hebert
John Howard

Water Districts
Marvin Marcell
Ron Neighbors, Vice-Chair
Jimmie Schindewolf

Water Utilities
James Morrison
William Teer

Mr. Kevin Patteson
Executive Administrator
Texas Water Development Board
1700 North Congress Avenue
Austin, TX 78701

**Re: Amendment to the 2011 Region H Water Plan
Dow Chemical Company
Gulf Coast Water Authority
Adoption of Amendments by Region H**

Dear Mr. Patteson:

The Region H Water Planning Group (RHWPG) has reviewed, considered, and approved the amendment of the 2011 Region H Regional Water Plan (RWP) to include two projects to be developed by the Dow Chemical Company (Dow) and the Gulf Coast Water Authority (GCWA). This action follows your determinations of major and minor amendment status for these revisions on September 19, 2014 and December 1, 2014, respectively.

According to your determination of the Dow revision as a major amendment, the RHWPG provided 30-day notice prior to a December 10, 2014 public hearing to take comment on the proposal. Following this hearing, a 30-day period was also observed for the receipt of comment related to the amendment through January 12th. This amendment was subsequently adopted by the RHWPG on February 4th. According to your determination of the GCWA revision as a minor amendment, the RHWPG provided 14-day notice prior to the February 4, 2015 RHWPG meeting to consider adoption of the amendment. Following this action by the RHWPG, a 14-day period was also observed for the receipt of comment related to the minor amendment through February 18th. The RHWPG now wishes to submit a completed amendment package including both revisions to the RWP along with comments received from the public regarding the amendments.

Should you have any further questions regarding this submittal, please feel free to contact me at 281.440.3924 or mevans@nhcrwa.com or the Region H consultant, Jason Afinowicz, at 713.600.6841 or jason.afinowicz@freese.com.

Sincerely,



Mark Evans
Region H Chair

cc: Lann Bookout, TWDB

REGION H

Water Planning Group

**MAJOR AMENDMENT TO THE 2011 REGION H
REGIONAL WATER PLAN
Dow Chemical Company**

**MINOR AMENDMENT TO THE 2011 REGION H
REGIONAL WATER PLAN
Gulf Coast Water Authority**

March, 2015

Attachment	Description
A	Amended excerpts from Executive Summary including Tables ES-7 and ES-8.
B	Amended excerpts from Chapter 4: Identification, Evaluation and Selection of Water Management Strategies Based on Needs
C	Amended Table 4A-3: Water Management Strategy Screening
D	Amended Table 4A-4: Water Management Strategy Environmental Impacts
E	Amended Table 4A-5: Recommended WMS by County
F	Amended Table 4A-6: Decadal WMS Summary
G	Amended Table 4A-7: WMS Supply Allocations by WUG
H	Amended Table 4A-8: WUG-Level Contracts
I	Revised Technical Memorandum 4B-47 (Dow Off-Channel Reservoir and Pump Station Expansion)
J	New Technical Memorandum: 4B-54: Gulf Coast Water Authority Reclaimed Water from City of Houston
K	Amended Table 4C-1: WWP-Level Project Costs
L	Amended Table 4C-2: WUG-Level Project Costs
M	Amended Appendix 4E: Environmental Flows Modeling for New WMS
N	Amended excerpts from Chapter 5: Impacts of Management Strategies on Water Quality and Impacts of Moving Water from Rural and Agricultural Areas
O	Summary of database entries anticipated for DB12
P	Comments received regarding proposed major amendment by Dow Chemical Company
Q	Comments received regarding proposed minor amendment by Gulf Coast Water Authority
R	Revised project prioritization for 2011 Region H Regional Water Plan

Attachment A:

Amended excerpts from Executive Summary including Tables ES-7 and ES-8

- **River Plantation MUD**
- **San Jacinto River Authority WRAP**
- **Sugar Land**
- **West Harris County Regional Water Authority**

Reservoir Strategies

- **Allen's Creek Reservoir** – This proposed reservoir creates 99,650 ac-ft/yr of supplies for the City of Houston and the Brazos River Authority.
- **Brazoria County Off-Channel Reservoir** – This proposed reservoir creates 24,000 ac-ft/yr of firm supply for manufacturing demands in Brazoria County.
- **Dow Off-Channel Reservoir and Pump Station Expansion** – This proposed reservoir expansion creates 80,000 ac-ft/yr in firm supply by increasing the storage associated with an existing Dow water right.
- **Fort Bend Off-Channel Reservoir** – This proposed reservoir creates 46,000 ac-ft/yr of firm supply for municipal and industrial demands in Fort Bend County
- **GCWA Off-Channel Reservoir** – This proposed reservoir creates 39,500 ac-ft/yr of firm supply for manufacturing use served by GCWA. This reservoir uses existing water rights with surplus interruptible supply to produce this firm yield.

Reuse Strategies

- **Fulshear Reuse** – Development of a direct reuse project for the City of Fulshear and surrounding utilities.
- **GCWA Reclaimed Water from City of Houston** – Transfer of reclaimed water from the City of Houston Southwest Wastewater Treatment Plant and other treatment facilities upstream along Brays Bayou.
- **Houston Indirect Wastewater Reuse**—The City of Houston has applied for a water right permit to indirectly reuse up to 580,900 ac-ft/yr of wastewater discharges. A portion of that is recommended for direct reuse to industry.
- **Montgomery County MUD 8/9 Reuse** – Indirect reuse project for potable water by districts along Lake Conroe in Montgomery County.
- **NHCRWA Indirect Wastewater Reuse** –The North Harris County Regional Water Authority has the potential to indirectly reuse up to 126,000 ac-ft/yr of wastewater discharges.
- **Wastewater Reclamation for Industry** –This strategy proposes that 67,200 ac-ft/yr of Houston's municipal wastewater be treated and directly reused by industries along the Houston Ship Channel.
- **Wastewater Reclamation for Municipal Irrigation** – This strategy anticipates the development of direct reuse project incorporated into new community growth in the rapidly-developing counties of Region H.

Permit Strategies

- **Brazos River Authority System Operations** –The Brazos River Authority has applied for a water right that permits existing additional yield within their reservoirs, and new yield that can be achieved through operation of their reservoirs as a basin-wide system. Approximately 25,350 ac-ft/yr of this water will be available for customers in Region H.

NFBWA Internal Distribution	106,402	\$225,000,000	N/A	2020
NFBWA Shared Transmission Line	71,876	\$213,000,000	N/A	2020
NHCRWA Internal 2010 Distribution	34,714	\$153,149,640	N/A	2010
NHCRWA Internal 2020 Distribution	91,167	\$345,292,192	N/A	2020
NHCRWA Internal 2030 Distribution	117,755	\$37,439,584	N/A	2030
NHCRWA Transmission 2010	34,714	\$80,690,624	N/A	2010
NHCRWA Transmission 2020	91,167	\$172,558,512	N/A	2020
NHCRWA Transmission 2030	117,755	\$0	N/A	2030
Pearland SWTP	13,420	\$0	\$265,000,000	TBD
Sealy GW Treatment Expansion	888	\$0	\$6,450,000	2020
WHCRWA Internal Distribution	78,839	\$552,472,000	N/A	2010
WHCRWA Transmission Line	78,839	\$290,084,193	N/A	2010

Reservoir Strategies:

Allens Creek Reservoir	99,650	\$222,752,400	See Contracts	2020
Brazoria County Off-channel Reservoir	24,100	\$173,898,602	See Contracts	2060
Dow Off-channel Reservoir and Pump Station Expansion	80,000	\$226,837,000	See Contracts	2020
Fort Bend County Off-channel Reservoir	46,000	\$202,514,788	See Contracts	2050
GCWA Off-channel Reservoir	39,500	\$197,448,012	See Contracts	2030

Reuse Strategies:

Fulshear Reuse	430	\$0	\$566,625	TBD
GCWA Reclaimed Water from COH	56,896	\$65,920,541	See Contracts	2020
Houston Indirect Reuse	128,801	\$0	\$721,822,850	2040
Montgomery MUD 8/9 Indirect Reuse	1,120	\$0	\$12,245,687	2016
NHCRWA Indirect Reuse	16,300	\$0	\$66,778,694	2040
Wastewater Reuse for Industry	67,200	\$332,051,761	\$0	2060
Wastewater Reclamation for Mun. Irrigation	36,388	\$0	\$48,043,249	2030

Permit Strategies:

BRA System Operations Permit	25,400	TBD	See Contracts	2020
Houston Bayous Permit*	0	\$20,956,000	\$0	2020

Other Strategies:

Brazoria Co. Interruptible Supplies for Irr.	104,977	\$0	\$0	2010
Freeport Desalination Plant	33,600	\$255,699,000	See Contracts	2050
Brazos Saltwater Barrier	N/A	\$44,470,739	\$0	2030

1. WUG-level costs for a number of WMS are indicated as "See Contracts". The WUG-level costs for these strategies will be infrastructure costs associated with implementing *future* contracts from WWPs. For simplification, these costs are collectively represented under the "WUG-Level Contracts" WMS, as common infrastructure from a WUG may treat or transmit water from multiple WMS.
2. Yield value includes surface water transmission volume and is therefore not additional yield.
3. Includes supply volume of TRA to SJRA Contract
4. The Houston Bayous Permit has not yet been approved by TCEQ.

**Table ES-8
Recommended Water Management Strategies by County (in ac-ft/yr)**

	2010	2020	2030	2040	2050	2060
Austin						
Initial Shortage	0	-739	-1,240	-1,496	-1,635	-1,865
Expanded GW	0	739	1,240	1,496	1,635	1,865
Municipal Conservation	0	223	251	265	273	285
Contract Expansions	0	0	0	0	0	0
Net Shortage	0	223	251	265	273	285
Brazoria						
Initial Shortage	-150,907	-186,760	-211,634	-238,588	-266,405	-299,199
Expanded GW	0	4,049	12,988	13,515	15,658	16,209
Municipal Conservation	1,476	2,610	2,978	3,249	3,567	3,918
Contract Expansions	7,750	7,750	7,750	7,750	7,750	7,750
Net Shortage	-141,681	-172,351	-187,918	-214,074	-239,430	-271,322
Irrigation Conservation	18,792	18,792	18,792	18,792	18,792	18,792
Wastewater Reclamation for Mun. Irrigation	0	0	116	227	344	465
Brazoria Co. Interruptible Supplies for Irr.	98,189	86,759	64,000	64,000	64,000	64,000
Reallocate Existing Supply	13,694	13,694	13,895	13,988	14,019	13,694
Interim Strategies	24,916	0	0	0	0	0
GCWA Offchannel Reservoir	0	0	39,500	39,500	39,500	39,500
Allens Creek Lake/Reservoir	0	45,277	41,779	66,665	58,092	66,196
BRA System Operations Permit	0	3,010	3,010	3,010	3,010	3,010
Brazoria OCR	0	0	0	0	0	24,000
Freeport Desalination Plant	0	0	0	0	33,600	33,600
Dow Off-channel Reservoir and Pump Station Expansion	0	80,000	80,000	80,000	80,000	80,000
New Groundwater Wells for Livestock	0	27	27	27	27	27
BWA Brackish Groundwater	0	3,136	3,136	3,136	3,136	3,136
GCWA Reclaimed Water from COH	0	6,363	6,557	7,106	7,826	8,710
Total after Recommendations	13,910	84,707	82,894	82,377	82,916	83,808
Chambers						
Initial Shortage	-42,520	-47,412	-50,831	-54,251	-57,612	-61,065
Expanded GW	0	577	681	796	905	1,010
Municipal Conservation	137	195	219	239	263	291
Contract Expansions	0	0	0	0	0	0
Net Shortage	-42,383	-46,640	-49,931	-53,216	-56,444	-59,764
Irrigation Conservation	24,018	24,018	24,018	24,018	24,018	24,018
CLCND W Chambers System	0	1,691	1,978	2,235	2,511	2,804
Reallocate Existing Supply	21,010	21,264	21,389	21,509	21,627	21,725
Interim Strategies	903	0	0	0	0	0
New Contract from Existing Supply	13,823	17,083	19,972	22,888	25,732	28,672
Total after Recommendations¹	17,371	17,416	17,426	17,434	17,444	17,455
Fort Bend						
Initial Shortage	-86	-11,410	-52,608	-84,380	-123,623	-178,948
Expanded GW	0	6,886	3,423	3,813	4,378	5,052
Municipal Conservation	1,435	7,077	10,277	12,253	14,678	17,497
Contract Expansions	0	367	1,295	1,226	1,225	1,016
Net Shortage	1,349	2,920	-37,613	-67,088	-103,342	-155,383
Irrigation Conservation	5,197	5,197	5,197	5,197	5,197	5,197
WHCRWA GRP	0	0	0	0	0	0

	2010	2020	2030	2040	2050	2060
NFBWA GRP	0	0	0	0	0	0
Sugar Land GRP	0	488	4,921	4,835	4,915	4,961
Missouri City GRP	0	4,401	4,401	4,401	4,401	4,401
Wastewater Reclamation for Mun. Irrigation	0	0	2,136	4,744	8,403	12,277
Fort Bend MUD 25 GRP	0	589	589	589	589	589
BRA System Operations Permit	0	3,611	15,860	22,340	22,340	22,340
Fort Bend OCR	0	0	0	0	90	45,943
Allens Creek Lake/Reservoir	0	0	0	6,605	25,864	16,145
TRA to Houston Contract	0	0	13,813	27,824	39,179	39,179
Reallocate Existing Supply	0	0	4,687	4,510	3,720	13,762
Fulshear Reuse	0	287	430	430	430	430
Industrial Conservation	0	558	558	558	558	558
Total after Recommendations	6,546	18,051	14,979	14,945	12,344	10,399

Galveston

Initial Shortage	-16,307	-16,466	-17,787	-18,738	-19,884	-21,276
Expanded GW	0	811	1,352	1,350	1,352	1,352
Municipal Conservation	768	846	886	896	903	914
Contract Expansions	0	25,630	25,630	25,630	25,630	25,630
Net Shortage	-15,539	10,821	10,081	9,138	8,001	6,620
Irrigation Conservation	2,392	2,392	2,392	2,392	2,392	2,392
New Contract from Existing Supply	16	23	26	29	33	37
Interim Strategies	6,410	0	0	0	0	0
Allens Creek Lake/Reservoir	0	12,101	13,234	14,175	15,310	16,687
New Groundwater Wells for Livestock	0	14	14	14	14	14
Interruptible Supplies for Irr.	6,788	0	0	0	0	0
GCWA Reclaimed Water from COH	0	50,533	50,339	49,790	49,070	48,177
Total after Recommendations	67	75,884	76,086	75,538	74,820	73,927

Harris

Initial Shortage	-51,413	-194,925	-270,301	-323,711	-375,414	-458,509
Expanded GW	0	15,481	27,659	27,693	27,727	27,560
Municipal Conservation	37,292	46,836	51,902	56,748	61,656	66,947
Contract Expansions	0	108,852	66,039	51,840	42,538	31,971
Net Shortage	-14,121	-23,756	-124,701	-187,430	-243,493	-332,031
New Contract from Existing Supply	23,008	31,264	38,732	54,777	54,805	54,849
NHCRWA GRP	0	0	0	0	0	0
WHCRWA GRP	-65	-258	-409	-566	-751	-968
COH GRP	0	0	0	0	0	0
Missouri City GRP	0	386	386	386	386	386
Wastewater Reclamation for Mun. Irrigation	0	0	3,268	6,616	10,027	13,431
Reallocate Existing Supply	18,253	15,276	7,308	19,232	30,220	96,881
Interim Strategies	15	0	0	0	0	0
Allens Creek Lake/Reservoir	0	15	83	336	384	622
TRA to Houston Contract	0	0	93,744	86,519	75,164	75,164
NHCRWA Indirect Reuse	0	0	0	7,300	16,300	16,300
Wastewater Reuse for Industry	0	0	0	0	0	67,200
Houston Indirect Reuse	0	0	0	66,420	114,679	128,801
Total after Recommendations	27,090	22,927	18,411	53,590	57,721	120,635

Attachment B:

Amended excerpts from Chapter 4: Identification, Evaluation and Selection of Water Management Strategies Based on Needs

- WWP Contracts

Groundwater Strategies

- Expanded Use of Groundwater
- Interim Strategies
- New Groundwater Wells for Livestock

Groundwater Reduction Plans

- CHCRWA GRP (see CHCRWA Transmission)
- City of Houston GRP (see COH Treatment Expansion)
- City of Missouri City GRP
- Fort Bend MUD 25 GRP
- Fort Bend WCID 2 GRP
- NFBWA GRP (see NFBWA Transmission)
- NHCRWA GRP (see NHCRWA Transmission)
- Pecan Grove GRP
- Richmond/Rosenberg GRP
- River Plantation GRP
- SJRA WRAP
- Sugar Land GRP
- WHCRWA GRP (see WHCRWA Transmission)
-

Reservoir Strategies:

- Allens Creek Reservoir
- Brazoria County Off-Channel Reservoir
- Dow Off-Channel Reservoir and Pump Station Expansion
- Fort Bend County Off-Channel Reservoir
- GCWA Off-channel Reservoir
- Millican Reservoir
- Little River Off-Channel Reservoir
- Other Potential Reservoirs

Reuse Strategies:

- Fulshear Reuse
- GCWA Reclaimed Water from City of Houston
- Houston Indirect Reuse
- Montgomery County MUD 8/9 Indirect Reuse

Huntsville WTP	11,200	\$61,023,906	\$0	2010
LLWSSSC Surface Water Project	954	\$0	\$3,087,974	2010
Luce Bayou Transfer	450,000	\$253,916,914	\$0	2020
NFBWA Internal Distribution	106,402	\$225,000,000	N/A	2020
NFBWA Shared Transmission Line	71,876	\$213,000,000	N/A	2020
NHCRWA Internal 2010 Distribution	34,714	\$153,149,640	N/A	2010
NHCRWA Internal 2020 Distribution	91,167	\$345,292,192	N/A	2020
NHCRWA Internal 2030 Distribution	117,755	\$37,439,584	N/A	2030
NHCRWA Transmission 2010	34,714	\$80,690,624	N/A	2010
NHCRWA Transmission 2020	91,167	\$172,558,512	N/A	2020
NHCRWA Transmission 2030	117,755	\$0	N/A	2030
Pearland SWTP	13,420	\$0	\$265,000,000	TBD
Sealy GW Treatment Expansion	888	\$0	\$6,450,000	2020
WHCRWA Internal Distribution	78,839	\$552,472,000	N/A	2010
WHCRWA Transmission Line	78,839	\$290,084,193	N/A	2010

Reservoir Strategies:

Allens Creek Reservoir	99,650	\$222,752,400	See Contracts	2020
Brazoria County Off-channel Reservoir Dow Off-channel Reservoir and Pump Station Expansion	24,100	\$173,898,602	See Contracts	2060
Fort Bend County Off-channel Reservoir	80,000	\$226,837,000	See Contracts	2020
Fort Bend County Off-channel Reservoir	46,000	\$202,514,788	See Contracts	2050
GCWA Off-channel Reservoir	39,500	\$197,448,012	See Contracts	2030

Reuse Strategies:

Fulshear Reuse	430	\$0	\$566,625	TBD
GCWA Reclaimed Water from COH	58,896	\$66,840,044	See Contracts	2020
Houston Indirect Reuse	128,801	\$0	\$721,822,850	2040
Montgomery MUD 8/9 Indirect Reuse	1,120	\$0	\$12,245,687	2016
NHCRWA Indirect Reuse	16,300	\$0	\$66,778,694	2040
Wastewater Reuse for Industry	67,200	\$332,051,761	\$0	2060
Wastewater Reclamation for Mun. Irrigation	36,388	\$0	\$48,043,249	2030

Permit Strategies:

BRA System Operations Permit	25,400	TBD	See Contracts	2020
Houston Bayous Permit*	0	\$20,956,000	\$0	2020

Other Strategies:

Brazoria Co. Interruptible Supplies for Irr.	104,977	\$0	\$0	2010
Freeport Desalination Plant	33,600	\$255,699,000	See Contracts	2050
Brazos Saltwater Barrier	N/A	\$44,470,739	\$0	2030

1. WUG-level costs for a number of WMS are indicated as "See Contracts". The WUG-level costs for these strategies will be infrastructure costs associated with implementing *future* contracts from WWPs. For simplification, these costs are collectively represented under the "WUG-Level Contracts" WMS, as common infrastructure from a WUG may treat or transmit water from multiple WMS.
2. Yield value includes surface water transmission volume and is therefore not additional yield.
3. Includes supply volume of TRA to SJRA Contract
4. The Houston Bayous Permit has not yet been approved by TCEQ.

Attachment C:

Amended Table 4A-3: Water Management Strategy Screening

Region H
Table 4A-3: Water Management Strategy Screening

Water Management Strategy Screening Factor Weight:	Water User Group or Wholesale Provider	Strategy Description	Strategy Capital Cost (\$)	Average Annual Cost of Water (\$/ac-ft)	Major WWS	Earliest Potential Starting Decade	Firm Yield (ac-ft/yr)	Basin	Interbasin Transfer (Yes/No)	Impacts on Habitat / Stream / B&E Flows	Impacts on Landform	Decision Matrix Factors (High, Medium, Low)										Total of Screening Factors	Selected as Part of 2001 Plan	Selected as Part of 2006 Plan			
												Cost	Yield	Location	Water Quality	Environment	Local Preference	Institutional Constraints	Risk of Implementation	Impacts on Water Resources	Impacts on Other Management Strategies						
Conservation Strategies																											
Industrial Conservation	Manufacturing	Reduce water demand through selected BMPs	TBD	TBD		2010	TBD	All	No	No impact	None	0	0	1	0	0	0	1	0	1					3	No	No
Irrigation Conservation																											
Brazoria County	Irrigation	Reduce irrigation losses through land leveling, point irrigation and canal lining	\$1,850,200 annual cost, on-farm methods \$198,200 capital cost, canal lining	\$99		2010	18,792	Brazos, Brazos-Colorado	No	Reduces losses that feed small streams	None	1	1	1	0	0	0	1	0	1					5	Yes	Yes
Chambers County	Irrigation	Reduce irrigation losses through land leveling, point irrigation and canal lining	\$2,338,300 annual cost, on-farm methods \$279,200 capital cost, canal lining	\$98		2010	24,018	Trinity	No	Reduces losses that feed small streams	None	1	1	1	0	0	0	1	0	1					5	Yes	Yes
Fort Bend County	Irrigation	Reduce irrigation losses through land leveling, point irrigation and canal lining	\$509,900 annual cost, on-farm methods \$56,500 capital cost, canal lining	\$99		2010	5,198	Brazos, Brazos-Colorado, San Jacinto-Brazos	No	Reduces losses that feed small streams	None	1	1	1	0	0	0	1	0	1					5	Yes	Yes
Galveston County	Irrigation	Reduce irrigation losses through land leveling, point irrigation and canal lining	\$231,100 annual cost, on-farm methods \$29,400 capital cost, canal lining	\$98		2010	2,392	San Jacinto - Brazos	No	Reduces losses that feed small streams	None	1	1	1	0	0	0	1	0	1					5	Yes	Yes
Liberty County	Irrigation	Reduce irrigation losses through land leveling, point irrigation and canal lining	\$2,089,800 annual cost, on-farm methods \$188,700 capital cost, canal lining	\$100		2010	20,877	Trinity	No	Reduces losses that feed small streams	None	1	1	1	0	0	0	1	0	1					5	Yes	Yes
Waller County	Irrigation	Reduce irrigation losses through land leveling, point irrigation	\$726,700 annual cost, on-farm methods	\$110		2050	6,606	San Jacinto	No	Reduces losses that feed small streams	None	1	1	1	0	0	0	1	0	1					5	Yes	Yes
Municipal Conservation	Multiple	Reduce demand through various methods	From \$9.3 to \$22.8 million for all WUGs collectively	\$202 (Sm Sys) \$311 (Med Sys) \$213 (Lg Sys)		2010	From 45,605 to 105,494	All	No	No impact	None	0	1	1	0	0	1	1	0	1					5	Yes	Yes
Contractual Strategies																											
Expand/ Increase Current Contracts	Multiple	Increase existing contracts to meet customer demands	At WUG level	System Rate		2010	Varies by contract. No new supply created	Multiple	Yes	Reduced streamflows due to use of currently unused supplies	None	1	0	1	0	0	1	1	0	1					5	Yes	Yes
New Contracts from Existing Supply	Multiple	Create new contracts from existing unallocated supplies	At WUG level	System Rate		2010	Varies by contract. No new supply created	Multiple	Yes	Reduced streamflows due to use of currently unused supplies	None	1	0	1	0	0	1	1	0	1					5		Yes
Reallocation of Existing Supply	Multiple	Reallocate surplus water to WUGs with shortages	At WUG level	System Rate		2010	Varies by contract. No new supply created	Multiple	Yes	Altered location of return flows	None	1	0	1	0	0	1	1	0	1					5	No	No
TRA to SJRA contract	TRA / SJRA	Sell uncommitted supply to SJRA.	\$302,781,597	\$687 Y		2040	76,476	Trinity to San Jacinto	Yes	Potential introduction of invasive species	Requires construction of new conveyance	0	1	0	0	0	0	0	-1	0					0	No	Yes
TRA to Houston Contract	TRA / Houston	Sell uncommitted supply to Houston	None - Infrastructure cost already reflected under Luce Bayou WWS	None - Infrastructure cost already reflected under Luce Bayou WWS		2030	123,524	Trinity to San Jacinto	Yes	Potential introduction of invasive species via Luce Bayou conveyance.	Unknown	1	1	0	0	0	1	1	-1	0					3	Yes	Yes
WUG Level Contracts	Multiple WUGs	Contracts from WUGs to WUGs. Includes contracts for volumes created under other yield-producing WMS	WUG-specific infrastructure	Contract Rate		2010	Varies by contract. No new supply created	All	Yes (source-dependent)	None - impacts associated with yield-creating WMS or infrastructure	None	NA	NA	NA	NA	NA	NA	NA	NA	NA					NA	NA	NA
WWP Contracts	Multiple WWPs	Contracts between WWPs. Includes contracts for volumes created under other yield-producing WMS	WUG-specific infrastructure	Contract Rate		2010	Varies by contract. No new supply created	All	Yes (source-dependent)	None - impacts associated with yield-creating WMS or infrastructure	None	NA	NA	NA	NA	NA	NA	NA	NA	NA					NA	NA	NA
Groundwater Strategies																											
Expanded Use of Groundwater	Multiple	Increase groundwater use, to the sustainable or permitted yield.	\$589,500 per 1 mgd well. \$165,928,999 total capital cost for WUG infrastructure	\$205		2010	90,617	All	No	Uses existing supply, return flows remain in basin of origin.	New wells may require some land clearing.	0	1	1	1	0	1	0	0	0					4	Yes	
Interim Strategies	Brazoria, Chambers, Galveston, Harris, and Montgomery Counties	Temporary groundwater use in excess of available supply	\$389,500 per 1 mgd well. \$86,701,535 total capital cost for WUG infrastructure	\$788 Y		2010	NA - temporary use of 45,512 ac-ft/yr	Multiple	No	Potential for subsidence and excess drawdown	New wells may require some land clearing.	1	1	1	0	-1	1	0	1	0					4	No	No
New Groundwater Wells for Livestock	Multiple	Added well capacity to facilitate expanded pumping or interim groundwater use	\$18,635	\$37		2010	41	San Jacinto-Brazos, Neches-Trinity	No	None - impacts associated with yield-creating WMS or infrastructure	New wells may require some land clearing.	0	NA	1	1	0	1	0	0	0					3	No	Yes
Groundwater Reduction Plans																											
CHCRWA GRP	CHCRWA	Conversion of CHCRWA to surface water.	TBD	TBD		2010	NA	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion		0	1	0	0	1	0	0	0					2	No	No
COH GRP	COH	Conversion of portions of COH service area to surface water	See COH Treatment Expansion and Distribution	See COH Treatment Expansion and Distribution		2010	NA	Multiple		Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion		0	1	0	0	1	0	0	0						No	No

Region H
Table 4A-3: Water Management Strategy Screening

Water Management Strategy	Water User Group or Wholesale Provider	Strategy Description	Strategy Capital Cost (\$)	Average Annual Cost of Water (\$/ac-ft)	Major WWS	Earliest Potential Starting Decade	Firm Yield (ac-ft/yr)	Basin	Interbasin Transfer (Yes/No)	Impacts on Habitat / Stream / B&E Flows	Impacts on Landform	Decision Matrix Factors (High, Medium, Low)										Total of Screening Factors	Selected as Part of 2001 Plan	Selected as Part of 2006 Plan			
												Cost	Yield	Location	Water Quality	Environment	Local Preference	Institutional Constraints	Risk of Implementation	Impacts on Water Resources	Impacts on Other Management Strategies						
Screening Factor Weight:												1	1	1	1	1	1	1	1	1	1						
Missouri City GRP	Missouri City	Conversion of Missouri City and surrounding area to surface water. Also includes Aquifer Storage and Recovery.	\$92,070,990 capital cost to WWP, \$8,397,800 infrastructure cost to participating WUGs	\$378 per ac-ft (WWP cost only - excludes infrastructure cost of customer WUGs / GRP participation)		2020 (2013)	4,790 (new supply from reuse + ASR)	Brazos, San Jacinto-Brazos	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	-1	0	1	0	0	1	0	0	0	0	1	No	No			
Fort Bend County MUD 25 GRP	Fort Bend MUD 25	A combination of reuse and surface water to allow for groundwater reduction.	\$766,100 capital cost (estimated as \$564 per acre-foot construction cost based on Wastewater Reuse for Municipal Irrigation WMS).	\$499 for infrastructure - does not include customer contract rate		2020 (2013)	589 (Reuse)	Brazos	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	-1	0	1	0	0	1	0	0	0	0	1	No	No			
Fort Bend County WCID No. 2 GRP	Fort Bend County WCID No. 2	Surface water conversion	\$24,828,857	\$353		2020 (2013)	NA	San Jacinto, San Jacinto-Brazos	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant	-1	0	1	0	0	1	0	0	0	0	1	No	No			
NFBWA GRP	NFBWA	Conversion of NFBWA to surface water. Also includes reuse and major water supply infrastructure.	\$1,638,000 infrastructure cost to WUGS. WWP infrastructure detailed separately.	See inf. Cost		2020 (2013)	NA	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	0	1	0	0	1	0	0	0	0	0	2	No	No			
NHCRWA GRP	NHCRWA	Conversion of NHCRWA to surface water. Also includes major water supply infrastructure.	\$17,814,600 infrastructure cost to WUGS. WWP infrastructure detailed separately.	See inf. Cost		2010	NA	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	0	1	0	0	1	0	0	0	0	0	2	No	Yes			
Pecan Grove GRP	Pecan Grove	Conversion of Pecan Grove to surface water. Also includes reuse	\$15,960,000	\$865		2020 (2013)	NA	Brazos, San Jacinto-Brazos	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	-1	0	1	0	0	1	0	0	0	0	1	No	No			
Richmond-Rosenberg GRP	Richmond, Rosenberg	Conversion of Richmond-Rosenberg to surface water.	\$117,220,150 capital cost for WWP	NA - existing contract		2020 (2015)	NA	Brazos	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	0	0	1	0	0	1	0	0	0	0	2	No	No			
River Plantation GRP	River Plantation	Entering into GWR with River Plantation CC golf course to provide additional WWTP effluent for irrigation purposes	\$484,926	495		2010	NA	San Jacinto	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	0	0	1	0	0	1	0	0	0	0	2	No	No			
SJRA WRAP	Montgomery County	Conversion of Montgomery County to surface water. Also includes reuse and major water supply infrastructure.	\$900,000,000 capital cost for WWP. \$217,856,853 infrastructure cost for participating WUGs / GRP participation)	\$849. (WWP cost only - excludes infrastructure cost of customer WUGs / GRP participation)		2020 (2015)	NA	San Jacinto	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	-1	0	1	0	0	1	0	0	0	0	1	No	No			
Sugar Land GRP	Sugar Land	Conversion of Sugar Land and surrounding area to surface water. Also includes reuse.	\$161,360,000 capital cost for WWP. \$6,360,100 infrastructure cost for participating WUGs / GRP participation)	\$1,234. (WWP cost only - excludes infrastructure cost of customer WUGs / GRP participation)		2020 (2013)	NA	Brazos, San Jacinto-Brazos	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	-1	0	1	0	0	1	0	0	0	0	1	No	No			
WHCRWA GRP	WHCRWA	Conversion of WHCRWA to surface water. Also includes reuse and major water supply infrastructure.	\$3,249,000 infrastructure cost for participating WUGs. WWP infrastructure detailed separately.	See WHCRWA Transmission and WHCRWA Internal Distribution.		2010	NA	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	0	1	0	0	1	0	0	0	0	0	2	No	Yes			
Infrastructure Strategies																											
BWA Brackish Groundwater	BWA	Designate of brackish groundwater from Gulf Coast Aquifer to enhance the yield of surface water sources in use in the lower Brazos River Basin.	\$30,570,395	\$390-594		2020	3,136	Multiple	No	Increased return flows form groundwater development and RO concentrate.	Limited disturbance outside of existing plant area.	-1	0	1	0	0	1	0	1	0	0	2	No	No			
BWA Plant Expansion	BWA	Expansion of BWA's conventional SWTP to enhance the yield of surface water sources in use in the lower Brazos River Basin.	\$14,359,419	\$432		2020	NA	Multiple	No	Potential disturbance due to construction.	No disturbance outside of existing plant area.	-1	0	1	0	0	1	1	0	0	0	2	No	No			
CHCRWA Transmission	CHCRWA	Transmission capacity development	TBD	TBD		2010	NA	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant	0	1	0	0	1	0	0	0	0	2	No	No				
CHCRWA Distribution	CHCRWA	Distribution capacity development	TBD	TBD		2010	NA	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant	0	1	0	0	1	0	0	0	0	2	No	No				
NFBWA Shared Transmission Line	NFBWA	Transmission capacity development	\$213,000,000 capital cost	\$150		2020 (2013)	NA	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant	0	0	1	0	0	1	0	0	0	2	No	No				
NFBWA Internal Distribution	NFBWA	Distribution capacity development	\$225,000,000 capital cost	\$85		2020 (2013)	NA	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant	1	0	1	0	0	1	0	0	0	3	No	No				
NHCRWA Transmission	NHCRWA	Transmission capacity development	\$253,249,100 capital cost	\$106		2010	NA	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant	0	0	1	0	0	1	0	0	0	2	No	No				

Region H
Table 4A-3: Water Management Strategy Screening

Water Management Strategy	Water User Group or Wholesale Provider	Strategy Description	Strategy Capital Cost (\$)	Average Annual Cost of Water (\$/ac-ft)	Major WWS	Earliest Potential Starting Decade	Firm Yield (ac-ft/yr)	Basin	Interbasin Transfer (Yes/No)	Impacts on Habitat / Stream / B&E Flows	Impacts on Landform	Decision Matrix Factors (High, Medium, Low)										Total of Screening Factors	Selected as Part of 2001 Plan	Selected as Part of 2006 Plan			
												Cost	Yield	Location	Water Quality	Environment	Local Preference	Institutional Constraints	Risk of Implementation	Impacts on Water Resources	Impacts on Other Management Strategies						
Screening Factor Weight:												1	1	1	1	1	1	1	1	1	1						
NHCRWA Internal Distribution	NHCRWA	Distribution capacity development	\$535,881,400 capital cost	\$222		2010	NA	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant	-1	0	1	0	0	1	0	0	0		1	No	No			
WHCRWA Transmission	WHCRWA	Transmission capacity development	\$290,084,200 capital cost	\$178		2010	NA	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant	0	0	1	0	0	1	0	0	0		2	No	No			
WHCRWA Internal Distribution	WHCRWA	Distribution capacity development	\$552,472,000 capital cost	\$338		2010	NA	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant	-1	0	1	0	0	1	0	0	0		1	No	No			
West Chambers County Supply System	CLCND	Develop a surface water supply system to meet demands in western Chambers County with water from the Trinity basin.	\$20,380,000	\$408		2020	NA	Sabine to San Jacinto	Yes (previously permitted)	Potential introduction of invasive species		-1	0	1	0	0	1	0	0	0		1	No	No			
COH Treatment Expansion	Houston	Increasing capacity in COH treatment facilities infrastructure.	\$2,045,672,200 capital cost	\$1,003		Various	NA	Trinity-San Jacinto, San Jacinto, San Jacinto-Brazos, Brazos	No	Footprint of facilities largely already developed.	Footprint of facilities largely already developed.	-1	1	1	0	0	1	0	0	1		3	No	No			
COH Distribution Expansion	Houston	Distribution expansion for WWP	\$261,040,000	TBD		2010 (2011)	NA	San Jacinto	No	Footprint of facilities largely already developed.	Footprint of facilities largely already developed.		1	0	0	0	1	0	0	1		3	No	No			
Huntsville WTP	Huntsville	WTP construction to utilize existing contracts	\$61,023,900 capital cost (estimated using Region H standard cost assumptions).	\$587		2010	NA	Trinity, San Jacinto	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	-1	1	1	0	0	1	0	0	0		2	No	No			
LLWSSSC Surface Water Project	Lake Livingston Water Supply and Sewer Service Company	Expansion of SWTP to meet municipal demands	\$3,087,974	\$373		2010	NA	Trinity	No	Potential disturbance due to construction.	Land required for facility construction	-1	1	1	0	0	1	0	-1	0		1	No	No			
Harris County MUD 50 SWTP	Harris MUD 50	Treat surface water from SJRA for municipal use.	\$6,131,600	\$736		2020	NA	San Jacinto	No	Potential disturbance due to construction.	Land required for facility construction	-1	1	1	0	0	1	0	-1	0		1	No	No			
Luce Bayou	COH	Development of a conveyance from the Trinity River to Lake Houston	\$253,917,000 capital cost	\$91		2020	NA	Trinity to San Jacinto	Yes (previously permitted)	Potential introduction of invasive species	Conveyance requires extensive canal construction	1	0	1	0	-1	1	-1	-1	0		0	Yes	Yes			
Sealy GW Treatment Expansion	Sealy	Expansion of a SWTP	\$6,450,000	\$966		2020	NA	Brazos	No	Potential disturbance due to construction.	Land required for facility construction	-1	1	1	0	0	1	0	-1	0		1	No	No			
Pearland SWTP	Pearland	Installation of a SWTP	\$265,000,000	\$848		2010	NA	San Jacinto - Brazos	No	Potential disturbance due to construction.	Land required for facility construction	-1	1	1	0	0	1	0	-1	0		1	No	No			
Reservoir Strategies																											
Allens Creek Reservoir	BRA / Houston	New reservoir in Austin County	\$222,752,400	\$197	Y	2020	99,650	Brazos	No	Wetlands and bottomland hardwoods impacted	Innundates 7,000 acres	0	0	1	1	-1	1	0	-1	1		2	Yes	Yes			
Bedias Reservoir	SJRA	New Reservoir in Madison/Grimes Counties	\$247,241,628	\$237	Y	2030	90,700	Trinity	No	7,300 acres of bottomland hardwoods	Innundates 27,400 acres	0	0	0	0	-1	0	-1	-1	-1		-4	Yes	No			
Dow Off-Channel Reservoir and Pump Station Expansion	Dow / Brazosport Water Authority	Increase total raw water pumping and storage capacity	\$226,837,000	\$256	Y	2020	80,000	Brazos	No	Potential habitat impacts to 2,000 acres. Impacts potentially already incurred due to agricultural use	Impacts to 2,000 acres of agricultural land.	-1	1	1	0	0	0	1	-1	0		1	No	No			
Little River Reservoir	BRA / GCWA	New reservoir in Milam County	\$556,520,000	\$328	Y	2040	119,000	Brazos	No	Listed and endangered species habitat	Innundates 35,600 acres	-1	0	0	0	-1	-1	-1	-1	0		-5	Yes	No			
Little River Off-Channel Reservoir	BRA	New reservoir in Milam County	\$137,356,000	\$436	Y	2040	27,255	Brazos	No	Potential impact on terrestrial species habitats	Innundates 4,400 acres	-1	-1	0	0	0	0	0	-1	1		-2	No	Yes			
Brazoria Off-Channel Reservoir	Brazoria County	New reservoir in Brazoria County	\$173,898,602	\$1,206	Y	2030	24,000	San Jacinto - Brazos	No	Potential impact on terrestrial species habitats	Innundates 3,200 acres	-1	1	1	0	0	1	0	-1	0		1	No	No			
Fort Bend Off-Channel Reservoir	Fort Bend County	New reservoir in Fort Bend County	\$202,514,788	\$1,206	Y	2030	46,000	San Jacinto - Brazos	No	Potential impact on terrestrial species habitats	Innundates 3,000 acres	-1	1	1	0	0	1	0	-1	0		1	No	No			
GCWA Off-Channel Reservoirs	GCWA	Use storage to enhance the yield of existing GCWA rights	\$197,448,012	\$827	Y	2030	39,530	San Jacinto - Brazos	No	Potential impact on terrestrial species habitats	Innundates 4,000 acres	-1	1	1	0	0	1	0	-1	0		1	No	No			
Lower Lake Creek Reservoir	SJRA	New reservoir in Montgomery County	\$480,777,860	\$583	Y	2040	67,200	San Jacinto	No	Potential impact on terrestrial species habitats	Innundates about 13,100 acres including 2,200 acres of bottomland hardwoods, 7,000 acres of oak, hickory, and pine forest, and 1,800 acres of shrubland and grasses. Some Endangered Species Identified	There are about 2,200 acres of bottomland hardwoods, 7,000 acres of oak, hickory, and pine forest, and 1,800 acres of shrubland and grasses.	-1	1	0	0	-1	0	-1	-1	1		-2	No	No		
Millican Reservoir (Panther Creek Dam)	BRA	New reservoir in Brazos, Madison, Leon, and Robertson Counties	\$1,159,907,000	\$1,241 (allocated portion only - for fully-utilized reservoir, unit cost is \$424 per acre-foot)	Y	2040	194,500	Brazos	No	Some endangered species have been identified. Innundates 71,000 acres. Approximately 17,000 acres of mixed bottomland hardwoods. Probable high environmental impacts.	Innundates 71,000 acres. Approximately 17,000 acres of mixed bottomland hardwoods.	-1	0	-1	0	-1	0	-1	-1	0		-5	No	No			
Millican-Bundic Reservoir	BRA	New reservoir in Brazos, Madison, Leon, and Robertson Counties	\$720,224,000	\$1,431	Y	2030	36,990	Brazos	No	Avoids Manning and Yegua lignite, avoids Kurten oil and gas field, avoids the Wilcox lignite in the upper river reaches and avoids significant bottomland hardwood population. Size of lake would be constrained by the Wilcox lignite, and inundation of marsh area upstream of Old San Antonio Road. Probable moderate to high environmental and instream flows impacts.	The inundation area impacts approximately 9,210 acres of mixed Bottomland Hardwood Forest, 4,086 acres of Grasses/Forbs, and 1,334 acres of Post Oak Woods.	-1	0	-1	0	-1	0	-1	-1	0		-5	No	No			

Region H
Table 4A-3: Water Management Strategy Screening

Water Management Strategy	Water User Group or Wholesale Provider	Strategy Description	Strategy Capital Cost (\$)	Average Annual Cost of Water (\$/ac-ft)	Major WMS	Earliest Potential Starting Decade	Firm Yield (ac-ft/yr)	Basin	Interbasin Transfer (Yes/No)	Impacts on Habitat / Stream / B&E Flows	Impacts on Landform	Decision Matrix Factors (High, Medium, Low)										Total of Screening Factors	Selected as Part of 2001 Plan	Selected as Part of 2006 Plan		
												Coast	Yield	Location	Water Quality	Environment	Local Preference	Institutional Constraints / Risk of Implementability	Impacts on Water Resources / Other Management Strategies							
Fulshear Reuse	Fulshear	Development of a direct reuse system to provide reclaimed water to Fulshear and surrounding communities.	\$566,600 capital cost (estimated as \$564 per acre-foot construction cost based on Wastewater Reuse for Municipal Irrigation WMS).	\$502		2020	430	Brazos, San Jacinto-Brazos	No	Reduces return flows to Upper Galveston Bay, offset by reduced diversions from the Trinity Basin.	None	-1	0	1	1	0	1	0	-1	0	1	No	No			
GCWA Reclaimed Water from City of Houston	GCWA	Transfer of reclaimed water from COH SSWWTP and upstream plants.	\$66,840,500	\$80	Y	2020	56,896	Brazos, San Jacinto-Brazos	Yes	Reduces return flows to Upper Galveston Bay.	Primarily developed in existing corridor.	0	1	-1	0	1	0	0	-1	0	0	No	No			
Houston Indirect Wastewater Reuse	Houston	Reuse wastewater from all city WWTPs in lieu of Trinity Supply.	\$721,822,900 infrastructure cost for participating WUGs.	\$402 to \$1,232 per ac-ft (\$777 average)	Y	2020	Up to 490,225	San Jacinto	No	Reduces return flows to Upper Galveston Bay, offset by reduced diversions from the Trinity Basin.	Size and location of diversion pump stations still TBD.	0	1	1	0	0	0	-1	-1	1	1	Yes	Yes			
Montgomery County MUDs 8/9 Reuse	Montgomery MUDs 8/9	Reuse water from Montgomery County MUDs 8/9	\$12,245,700	\$878 per acre-foot (based on allocated volume)		2020 (2016)	1,120 (max)	San Jacinto	No	This WMS will not be permitted to negatively impact downstream rights.	none	-1	1	1	0	1	1	0	0	0	3	No	No			
NHCRWA Indirect Wastewater Reuse	NHCRWA	Reuse wastewater from member WWTPs in lieu of purchasing additional supply.	\$66,778,694	\$702 per acre-foot allocated	Y	2010	Up to 157,000	San Jacinto	No	Reduces return flows to Upper Galveston Bay, offset by reduced diversions from the Trinity Basin.	Size and location of diversion pump stations still TBD.	0	1	1	0	0	0	-1	-1	1	1	Yes	Yes			
Wastewater Reclamation for Industry	Houston, Manufacturing	Deliver treated wastewater to industry for use in lieu of Trinity River supply.	\$332,051,761	\$893	Y	2010	67,200	San Jacinto	No	Minimal change in habitat	None	-1	1	1	1	0	1	0	1	1	5	Yes	Yes			
Wastewater Reclamation for Municipal Irrigation	County-Other and Authorities in Brazoria, Fort Bend, Harris, and Montgomery Counties	Reuse for municipal irrigation	\$48,043,200 infrastructure cost for participating WUGs.	\$539 average		2030	36,388 (in 2060)	Multiple	No	Reduces return flows to Upper Galveston Bay, offset by reduced diversions from the Trinity Basin.	None	-1	0	1	1	0	1	0	-1	0	1	No	No			
Permit Strategies																										
BRA System Operations Permit	BRA	Use peak flows, when available, and systems management to reduce the use of water stored under other permits.	TBD - based on system rate of \$61 per acre-foot	TBD - based on system rate of \$61 per acre-foot	Y	2020 (2015)	25,350 (Region H)	Brazos	No	Harvests peak flows through system management, positive affect on below-median flows	New pump stations may be required.	1	1	1	0	0	1	-1	0	0	3	Yes	Yes			
Houston Bayous Permit	Houston	Use peak flows, when available, to reduce the use of water stored under other permits.	\$20,956,000	System rate		NA	0	San Jacinto	No	Reduces return flows to Upper Galveston Bay, offset by reduced diversions from the Trinity Basin.	Size and location of diversion pump stations still TBD.	1	-1	1	0	-1	1	-1	0	0	0	Yes	Yes			
Other Strategies																										
Brazoria County Interruptible Supplies for Irrigation	GCWA	Use of interruptible portion of GCWA water right for irrigation	NA	NA		2010	Non-firm 124,000 64,000 w/ GCWA off-channel	Brazos, San Jacinto-Brazos	No	Reduced flows in Brazos River due to increased diversion	None	1	1	1	0	0	0	0	-1	0	2	NA	NA			
Brazos Salt Water Barrier	BRA / DOW	Prevent the seasonal migration of the saltwater wedge upstream to protect existing diversion points.	\$44,470,700	NA		2030	NA	Brazos	No	Will influence flood plain response to major storms.	New structure in river channel	0	-1	1	1	0	0	0	1	1	3	NA	Yes			
Freeport Desalination	BRA / DOW	Desalinate seawater for industrial and municipal use.	\$85,233,000 (11,200AF) - \$255,699,000 (33,600AF)	\$1,730 to \$2,376	Y	2040	11,200 to 33,600	Brazos, San Jacinto-Brazos	No	Offsets some use of Brazos basin flows.	New facility may require some land clearing.	-1	1	1	1	0	0	0	0	0	2	No	Yes			
Montgomery County MUD 8/9 Brackish Desal	Montgomery County MUDs 8 and 9	Development of a brackish groundwater desalination facility that would supplement existing wells, reducing dependence on fresh water formations of the Gulf Coast Aquifer.	TBD	TBD		2010 (2014)	Up to 2,240 acre-feet per year (average 2.0 MGD)	San Jacinto	No	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	No	No			
Sabine to Region H Transfer	Harris / Montgomery Counties	Transfer existing supply from Toledo Bend Reservoir to Region H.	\$760,813,320		Y	2030	From 26,762 (2020) to 486,500 (2060)	Sabine to San Jacinto	Yes	Potential introduction of invasive species / Reduction of freshwater inflows to Sabine Lake	1398-acres	0	1	-1	0	-1	-1	-1	-1	1	-3	NA	No			
Galveston County Desal	GCWA		TBD	TBD				San Jacinto-Brazos			Unknown	-1	0	1	1	0	0	0	0	0	1	No	No			

Attachment D:

Amended Table 4A-4: Water Management Strategy Environmental Impacts

Region H
Table 4A-4: Water Management Strategy Environmental Impacts

Water Management Strategy	Water User Group or Wholesale Provider	Strategy Description	Basin	Interbasin Transfer (Yes/No)	Impacts on Habitat / Stream / B&E Flows	Impacts on Landform	Instream Flows	Bay and Estuary Inflows	Wildlife Habitat	Wetlands	Threatened and Endangered Species	Cultural Resources	Evaluation of Impacts of Water Management Strategies on Threats to Natural Resources	Use of Environmental Planning Criteria or Site-Specific Information on Environmental Flow Needs	Description of Regional Planning Area	Description of Water Sources, including Major Springs	Description of Natural Resources (Animal, Vegetable, or Mineral)	Identification of Water Quality Problems	Identification of Threats to Natural Resources	Recommendations for Ecologically Unique River and Stream Segments	Recommendations that are Needed and Desirable to Protect Natural Resources	
Screening Factor Weight:																						
Conservation Strategies																						
Industrial Conservation	Manufacturing	Reduce water demand through selected BMPs	All	No	No impact	None	Strategy reduces the demand for additional water supply, but also reduces return flows from existing sources.	Reduces return flows from current sources, but the rate of savings does not compensate for the rate of growth in the largest counties.	NA - does not require the construction of new infrastructure.	NA - does not require the construction of new infrastructure.	Does not require the construction of new infrastructure.	NA - does not require the construction of new infrastructure.	Reducing water demand provides a positive effect on existing supply sources.	NA - strategy does not require a new reservoir or water right.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 regional plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Irrigation Conservation	Irrigation	Reduce irrigation losses through land leveling, point irrigation and canal lining	Various	No	Reduces losses that feed small streams	None	Strategy reduces the demand for additional water supply, but also reduces run-off and seepage losses from existing irrigation.	No significant effect on bay and estuary flows.	NA - does not require the construction of new infrastructure.	NA - does not require the construction of new infrastructure.	NA - Does not require the construction of new infrastructure.	NA - does not require the construction of new infrastructure.	Reducing water demand provides a positive effect. Although instream flows potentially could be reduced due to less return flows off fields, as well as reducing water flow habitat.	NA - strategy does not require a new reservoir or water right.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Brazoria County	Irrigation	Reduce irrigation losses through land leveling, point irrigation and canal lining	Brazos, Brazos-Colorado	No	Reduces losses that feed small streams	None	Strategy reduces the demand for additional water supply, but also reduces run-off and seepage losses from existing irrigation.	No significant effect on bay and estuary flows.	NA - does not require the construction of new infrastructure.	NA - does not require the construction of new infrastructure.	NA - Does not require the construction of new infrastructure.	NA - does not require the construction of new infrastructure.	Reducing water demand provides a positive effect. Although instream flows potentially could be reduced due to less return flows off fields, as well as reducing water flow habitat.	NA - strategy does not require a new reservoir or water right.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Chambers County	Irrigation	Reduce irrigation losses through land leveling, point irrigation and canal lining	Trinity	No	Reduces losses that feed small streams	None	Strategy reduces the demand for additional water supply, but also reduces run-off and seepage losses from existing irrigation.	No significant effect on bay and estuary flows.	NA - does not require the construction of new infrastructure.	NA - does not require the construction of new infrastructure.	NA - Does not require the construction of new infrastructure.	NA - does not require the construction of new infrastructure.	Reducing water demand provides a positive effect. Although instream flows potentially could be reduced due to less return flows off fields, as well as reducing water flow habitat.	NA - strategy does not require a new reservoir or water right.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Galveston County	Irrigation	Reduce irrigation losses through land leveling, point irrigation and canal lining	San Jacinto - Brazos	No	Reduces losses that feed small streams	None	Strategy reduces the demand for additional water supply, but also reduces run-off and seepage losses from existing irrigation.	No significant effect on bay and estuary flows.	NA - does not require the construction of new infrastructure.	NA - does not require the construction of new infrastructure.	NA - Does not require the construction of new infrastructure.	NA - does not require the construction of new infrastructure.	Reducing water demand provides a positive effect. Although instream flows potentially could be reduced due to less return flows off fields, as well as reducing water flow habitat.	NA - strategy does not require a new reservoir or water right.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Liberty County	Irrigation	Reduce irrigation losses through land leveling, point irrigation and canal lining	Trinity	No	Reduces losses that feed small streams	None	Strategy reduces the demand for additional water supply, but also reduces run-off and seepage losses from existing irrigation.	No significant effect on bay and estuary flows.	NA - does not require the construction of new infrastructure.	NA - does not require the construction of new infrastructure.	NA - Does not require the construction of new infrastructure.	NA - does not require the construction of new infrastructure.	Reducing water demand provides a positive effect. Although instream flows potentially could be reduced due to less return flows off fields, as well as reducing water flow habitat.	NA - strategy does not require a new reservoir or water right.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Waller County	Irrigation	Reduce irrigation losses through land leveling, point irrigation	San Jacinto	No	Reduces losses that feed small streams	None	Strategy reduces the demand for additional water supply, but also reduces run-off and seepage losses from existing irrigation.	No significant effect on bay and estuary flows.	NA - does not require the construction of new infrastructure.	NA - does not require the construction of new infrastructure.	NA - Does not require the construction of new infrastructure.	NA - does not require the construction of new infrastructure.	Reducing water demand provides a positive effect. Although instream flows potentially could be reduced due to less return flows off fields, as well as reducing water flow habitat.	NA - strategy does not require a new reservoir or water right.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Municipal Conservation	Multiple	Reduce demand through various methods	All	No	No impact	None	Strategy reduces the demand for additional water supply, but also reduces per-capita return flows from groundwater use.	Reduces per capita return flows from groundwater, but the rate of savings does not compensate for the rate of population growth.	NA - does not require the construction of new infrastructure.	NA - does not require the construction of new infrastructure.	Does not require the construction of new infrastructure.	NA - does not require the construction of new infrastructure.	Reducing per capita water demand provides a positive effect. Although instream flows potentially could be reduced due to less return flows.	NA - strategy does not require a new reservoir or water right.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 regional plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Contractual Strategies																						
Expand/ Increase Current Contracts	Multiple	Increase existing contracts to meet customer demands	Multiple	Yes	Reduced streamflows due to use of currently unused supplies	None	Reduces in-stream flows in all basins due to full use of existing water supplies.	Return flows (typically equal to 60% of diversion) will off-set increased diversions. Houston and SJRA use will result in return flows to Upper Galveston Bay vice Trinity Bay (if left unused).	NA - does not require the construction of new infrastructure beyond expansion of existing plants.	NA - does not require the construction of new infrastructure.	Does not require the construction of new infrastructure, but full use of permits will affect riparian habitat.	NA - does not require the development of new infrastructure sites.	NA - strategy does not require a new reservoir or water right.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 regional plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay		
New Contracts from Existing Supply	Multiple	Create new contracts from existing unallocated supplies	Multiple	Yes	Reduced streamflows due to use of currently unused supplies	None	Reduces in-stream flows in all basins due to full use of existing water supplies.	Return flows (typically equal to 60% of diversion) will off-set increased diversions. Houston and SJRA use will result in return flows to Upper Galveston Bay vice Trinity Bay (if left unused).	NA - does not require the construction of new infrastructure beyond expansion of existing plants.	NA - does not require the construction of new infrastructure.	Does not require the construction of new infrastructure, but full use of permits will affect riparian habitat.	NA - does not require the development of new infrastructure sites.	NA - strategy does not require a new reservoir or water right.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 regional plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay		
Reallocation of Existing Supply	Multiple	Reallocate surplus water to WUGs with shortages	Multiple	Yes	Altered location of return flows	None	Reduces in-stream flows in all basins due to full use of existing water supplies.	Return flows (typically equal to 60% of diversion) will off-set increased diversions. Houston and SJRA use will result in return flows to Upper Galveston Bay vice Trinity Bay (if left unused).	NA - does not require the construction of new infrastructure beyond expansion of existing plants.	NA - does not require the construction of new infrastructure.	Does not require the construction of new infrastructure, but full use of permits will affect riparian habitat.	NA - does not require the development of new infrastructure sites.	NA - strategy does not require a new reservoir or water right.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 regional plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay		
TRA to SJRA contract	TRA / SJRA	Sell uncommitted supply to SJRA.	Trinity to San Jacinto	Yes	Potential introduction of invasive species	Requires construction of new conveyance.	Transfers unused supply from the Trinity to the San Jacinto River basin, resulting in decreased flows below Lake Livingston.	Return flows (typically equal to 60% of diversion) will return to Upper Galveston Bay vice Trinity Bay.	Increased diversion from Lake Livingston will increase lake-level fluctuations and reduce flows in the lower Trinity. No new construction impacts are associated with this strategy. Lake level fluctuations will affect wetlands along the shoreline and tributaries.	No new construction impacts are associated with this strategy. Lake level fluctuations will affect wetlands along the shoreline and tributaries.	Potential impact to Wood Stork and Alligator Snapping Turtle habitat through reduced flows in lower Trinity River.	Potential impacts along conveyance route	NA - strategy does not require a new reservoir or water right.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay		
TRA to Houston Contract	TRA / Houston	Sell uncommitted supply to Houston	Trinity to San Jacinto	Yes	Potential introduction of invasive species	Unknown	Transfers unused supply from the Trinity to the San Jacinto River basin, resulting in decreased flows below Lake Livingston.	Return flows (typically equal to 60% of diversion) will return to Upper Galveston Bay vice Trinity Bay.	Increased diversion from Lake Livingston will increase lake-level fluctuations and reduce flows in the lower Trinity. No new construction impacts are associated with this strategy. Lake level fluctuations will affect wetlands along the shoreline and tributaries.	No new construction impacts are associated with this strategy. Lake level fluctuations will affect wetlands along the shoreline and tributaries.	Potential impact to Wood Stork and Alligator Snapping Turtle habitat through reduced flows in lower Trinity River.	NA - does not require the construction of new infrastructure.	NA - strategy does not require a new reservoir or water right.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay		
WUG Level Contracts	Multiple WUGs	Contracts from WUGs to WUGs	All	Yes (source-dependent)	None - impacts associated with yield-creating WMS or infrastructure	None	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
WUG Contracts	Multiple WUGs	Contracts between WUGs	All	Yes (source-dependent)	None - impacts associated with yield-creating WMS or infrastructure	None	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Groundwater Strategies																						

Region H
Table 4A-4: Water Management Strategy Environmental Impacts

Water Management Strategy	Water User Group or Wholesale Provider	Strategy Description	Basin	Interbasin Transfer (Yes/No)	Impacts on Habitat / Stream / B&E Flows	Impacts on Landform	Instream Flows	Bay and Estuary Inflows	Wildlife Habitat	Wetlands	Threatened and Endangered Species	Cultural Resources	Evaluation of Impacts of Water Management Strategies on Threats to Natural Resources	Use of Environmental Planning Criteria or Site-Specific Information on Environmental Flow Needs	Description of Regional Planning Area	Description of Water Sources, including Major Springs	Description of Natural Resources (Animal, Vegetable, or Mineral)	Identification of Water Quality Problems	Identification of Threats to Natural Resources	Recommendations for Ecologically Unique River and Stream Segments	Recommendations that are Needed and Desirable to Protect Natural Resources
Expanded Use of Groundwater	Multiple	Increase groundwater use, to the sustainable or permitted yield.	All	No	Uses existing supply, return flows remain in basin of origin.	New wells may require some land clearing.	Groundwater return flows contribute to streams in all basins.	Full utilization of groundwater reduces potential for transfer from Trinity Basin, leaving flows into Trinity Bay.	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
Interim Strategies	Brazoria, Chambers, Galveston, Harris, and Montgomery Counties	Temporary groundwater use in excess of available supply	Multiple	No	Potential for subsidence and excess drawdown	New wells may require some land clearing.	Groundwater return flows contribute to streams in all basins.	Full utilization of groundwater reduces potential for transfer from Trinity Basin, leaving flows into Trinity Bay.	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
New Groundwater Wells for Livestock	Multiple	Added well capacity to facilitate expanded pumping or interim groundwater use	All	No	None - impacts associated with yield-creating WMS or infrastructure	New wells may require some land clearing.	Groundwater return flows contribute to streams in all basins.	Full utilization of groundwater reduces potential for transfer from Trinity Basin, leaving flows into Trinity Bay.	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
Groundwater Reduction Plans																					
CHCRWA GRP	CHCRWA	Conversion of CHCRWA to surface water.	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to streams in all basins.	Full utilization of groundwater reduces potential for transfer from Trinity Basin, leaving flows into Trinity Bay.	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
COH GRP	COH	Conversion of portions of COH service area to surface water	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Transfers unused supply from the Trinity to the San Jacinto River basin, resulting in decreased flows below Lake Livingston.	Return flows (typically equal to 60% of diversion) will return Upper Galveston Bay vice Trinity Bay.	Increased diversion from Lake Livingston will increase lake-level fluctuations and reduce flows in the lower Trinity. No new construction impacts are associated with this strategy.	No new construction impacts are associated with this strategy. Lake level fluctuations will affect wetlands along the shoreline and tributaries.	Potential impact to Wood Stork and Alligator Snapping Turtle habitat through reduced flows in lower Trinity River.	NA - does not require the construction of new infrastructure.	N/A - strategy does not require a new reservoir or water right.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Missouri City GRP	Missouri City	Conversion of Missouri City and surrounding area to surface water. Also includes Aquifer Storage and Recovery.	Brazos, San Jacinto-Brazos	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to increased instream flows	Groundwater return flows will contribute to increased B&E flows	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
Fort Bend County MUD 25 GRP	Fort Bend MUD 25	A combination of reuse and surface water to allow for groundwater reduction.	Brazos	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to increased instream flows	Groundwater return flows will contribute to increased B&E flows	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
Fort Bend County WCID No. 2 GRP	Fort Bend County WCID No. 2	Surface water conversion	San Jacinto, San Jacinto-Brazos	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to increased instream flows	Groundwater return flows will contribute to increased B&E flows	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
NFBWA GRP	NFBWA	Conversion of NFBWA to surface water. Also includes reuse and major water supply infrastructure.	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to increased instream flows	Groundwater return flows will contribute to increased B&E flows	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
NHCRWA GRP	NHCRWA	Conversion of NHCRWA to surface water. Also includes reuse and major water supply infrastructure.	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to increased instream flows	Groundwater return flows will contribute to increased B&E flows	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
Pecan Grove GRP	Pecan Grove	Conversion of Pecan Grove to surface water. Also includes reuse	Brazos, San Jacinto-Brazos	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to increased instream flows	Groundwater return flows will contribute to increased B&E flows	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
Richmond-Rosenberg GRP	Richmond, Rosenberg	Conversion of Richmond-Rosenberg to surface water.	Brazos	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to increased instream flows	Groundwater return flows will contribute to increased B&E flows	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
River Plantation GRP	River Plantation MUD	Entering into GRP with River Plantation CC golf course to provide additional WWTP effluent for irrigation purposes	San Jacinto	No	Instream flows potentially decreased due to wastewater reuse. However, indirect reuse potentially has less negative impacts on instream flows than direct reuse.	none	Instream flows potentially decreased due to wastewater reuse. However, indirect reuse potentially has less negative impacts on instream flows than direct reuse.	All return flows remain in Galveston Bay watershed.	TBD. Impacts expected to be minimal	TBD. Impacts expected to be minimal	TBD. Impacts expected to be minimal	Site surveys must be conducted for each individual well site.	TBD	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
SJRA WRAP	Montgomery County	Conversion of Montgomery County to surface water. Also includes reuse and major water supply infrastructure.	San Jacinto	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to increased instream flows	Groundwater return flows will contribute to increased B&E flows	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
Sugar Land GRP	Sugar Land	Conversion of Sugar Land and surrounding area to surface water. Also includes reuse.	Brazos, San Jacinto-Brazos	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to increased instream flows	Groundwater return flows will contribute to increased B&E flows	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay

Region H
Table 4A-4: Water Management Strategy Environmental Impacts

Water Management Strategy	Water User Group or Wholesale Provider	Strategy Description	Basin	Interbasin Transfer (Yes/No)	Impacts on Habitat / Stream / B&E Flows	Impacts on Landform	Instream Flows	Bay and Estuary Inflows	Wildlife Habitat	Wetlands	Threatened and Endangered Species	Cultural Resources	Evaluation of Impacts of Water Management Strategies on Threats to Natural Resources	Use of Environmental Planning Criteria or Site-Specific Information on Environmental Flow Needs	Description of Regional Planning Area	Description of Water Sources, including Major Springs	Description of Natural Resources (Animal, Vegetable, or Mineral)	Identification of Water Quality Problems	Identification of Threats to Natural Resources	Recommendations for Ecologically Unique River and Stream Segments	Recommendations that are Needed and Desirable to Protect Natural Resources
WHCRWA GRP Infrastructure Strategies	WHCRWA	Conversion of WHCRWA to surface water. Also includes reuse and major water supply infrastructure.	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to increased instream flows	Groundwater return flows will contribute to increased B&E flows	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
BWA Brackish Groundwater	BWA	Desalinate of brackish groundwater from Gulf Coast Aquifer to enhance the yield of surface water sources in use in the lower Brazos River Basin.	Multiple	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to stream.	Groundwater return flows will contribute to increased B&E flows	Site surveys must be conducted for each individual well site.	TBD. Potential mitigation of impacts to Waters of the US from pipeline alignments.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
BWA Plant Expansion	BWA	Expansion of BWA's conventional SWTP to enhance the yield of surface water sources in use in the lower Brazos River Basin.	Multiple	No	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Low probability of significant impacts	Low probability of significant impacts	Limited potential for impact at existing plant site.	Limited potential for impact at existing plant site.	Limited potential for impact at existing plant site.	Limited potential for impact at existing plant site.	N/A	Diversions covered under existing supplies.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
CHCRWA Transmission	CHCRWA	Transmission capacity development	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to streams in all basins.	Full utilization of groundwater reduces potential for transfer from Trinity Basin, leaving flows into Trinity Bay.	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
CHCRWA Distribution	CHCRWA	Distribution capacity development	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to streams in all basins.	Full utilization of groundwater reduces potential for transfer from Trinity Basin, leaving flows into Trinity Bay.	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
NFBWA Shared Transmission Line	NFBWA	Transmission capacity development	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to increased instream flows	Groundwater return flows will contribute to increased B&E flows	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
NFBWA Internal Distribution	NFBWA	Distribution capacity development	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to increased instream flows	Groundwater return flows will contribute to increased B&E flows	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
NHCRWA Transmission	NHCRWA	Transmission capacity development	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to increased instream flows	Groundwater return flows will contribute to increased B&E flows	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
NHCRWA Internal Distribution	NHCRWA	Distribution capacity development	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to increased instream flows	Groundwater return flows will contribute to increased B&E flows	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
WHCRWA Transmission	WHCRWA	Transmission capacity development	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to increased instream flows	Groundwater return flows will contribute to increased B&E flows	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
WHCRWA Internal Distribution	WHCRWA	Distribution capacity development	Multiple	Yes (previously permitted)	Potential disturbance due to construction.	Temporary disturbance due to transmission line construction. Land required for plant construction/expansion	Groundwater return flows contribute to increased instream flows	Groundwater return flows will contribute to increased B&E flows	Site surveys must be conducted for each individual well site.	Groundwater wells can usually be located outside of wetlands, near the point of use.	Groundwater wells should be sited to avoid or minimize impact on habitats.	Site surveys must be conducted for each individual well site.	N/A - uses supply allocated for this use in the 2001 plan	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
West Chambers County Supply System	CLCND	Develop a surface water supply system to meet demands in western Chambers County with water from the Trinity basin.	Sabine to San Jacinto	Yes (previously permitted)	Potential introduction of invasive species	Conveyance requires extensive canal construction	Will reduce instream flows to convey water to the west	Return flows will be returned to Galveston Bay	Potential impact to habitat along transmission system alignment	Potential impact to wetlands along transmission system alignment	Potential impact to T&E species along transmission system alignment	Potential impact to cultural resources along transmission system alignment	N/A	N/A - does not divert surface water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
COH Treatment Expansion	Houston	Increasing capacity in COH treatment facilities infrastructure.	Trinity-San Jacinto, San Jacinto, San Jacinto-Brazos	No	Footprint of facilities largely already developed.	Footprint of facilities largely already developed.	Low probability of significant impacts	Low probability of significant impacts	Potential impact to habitat on SWTP site	Potential impact to wetlands on SWTP site	Potential impact to T&E species on site	Potential impact to cultural resources on SWTP site	N/A	NA - strategy does not require a new reservoir or water right.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
COH Distribution Expansion	Houston	Distribution expansion for WWP	San Jacinto	No	Footprint of facilities largely already developed.	Footprint of facilities largely already developed.	Low probability of significant impacts	Low probability of significant impacts	Potential impact to habitat along transmission corridor.	Potential impact to habitat along transmission corridor.	Potential impact to habitat along transmission corridor.	Potential impact to cultural resources along transmission corridor.	N/A	NA - strategy does not require a new reservoir or water right.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
Huntsville WTP	Huntsville	WTP construction to utilize existing contracts	Trinity, San Jacinto	No	Potential impact to habitat on site	Land required for facility construction	Low probability of significant impacts	Low probability of significant impacts	Potential impact to habitat on SWTP site	Potential impact to wetlands on SWTP site	Potential impact to T&E species on site	Potential impact to cultural resources on SWTP site	N/A	N/A	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
Harris County MUD 50 SWTP	Harris MUD 50	Treat surface water from SJRA for municipal use.	San Jacinto	No	Potential impact to habitat on site	Land required for facility construction	Low probability of significant impacts	Low probability of significant impacts	Potential impact to habitat on SWTP site	Potential impact to wetlands on SWTP site	Potential impact to T&E species on site	Potential impact to cultural resources on SWTP site	N/A	N/A	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay

Region H
Table 4A-4: Water Management Strategy Environmental Impacts

Water Management Strategy	Water User Group or Wholesale Provider	Strategy Description	Basin	Interbasin Transfer (Yes/No)	Impacts on Habitat / Stream / B&E Flows	Impacts on Landform	Instream Flows	Bay and Estuary Inflows	Wildlife Habitat	Wetlands	Threatened and Endangered Species	Cultural Resources	Evaluation of Impacts of Water Management Strategies on Threats to Natural Resources	Use of Environmental Planning Criteria or Site-Specific Information on Environmental Flow Needs	Description of Regional Planning Area	Description of Water Sources, including Major Springs	Description of Natural Resources (Animal, Vegetable, or Mineral)	Identification of Water Quality Problems	Identification of Threats to Natural Resources	Recommendations for Ecologically Unique River and Stream Segments	Recommendations that are Needed and Desirable to Protect Natural Resources	
LLWSSSC Surface Water Project	Lake Livingston Water Supply and Sewer Service Company	Expansion of SWTP to meet municipal demands	Trinity	No	Potential impact to habitat on site	Land required for facility expansion	Low probability of significant impacts	Low probability of significant impacts	Potential impact to habitat on SWTP site	Potential impact to wetlands on SWTP site	Potential impact to T&E species on site	Potential impact to cultural resources on SWTP site	N/A		2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Luce Bayou	COH	Development of a conveyance from the Trinity River to Lake Houston	Trinity to San Jacinto	Yes (previously permitted)	Potential introduction of invasive species	Conveyance requires extensive canal construction	Reduces flow in the Trinity River below Liberty.	Return flows (typically equal to 60% of diversion) will return to Upper Galveston Bay vice Trinity Bay.	Conveyance requires 23.6 miles of canal. Blending supply in Lake Houston may affect lake habitat.	Potential impact due to diversion structure. Potential wetland impacts due to project.	Potential impact to White-faced Ibis, Wood Stork and Alligator Snapping Turtle habitat through reduced flows in lower Trinity River. Increased flow in Luce Bayou may impact Creek Chubsucker habitat.	Privately owned ranches and farms along Luce Bayou. Pump station study identified historic homestead, which was studied and cataloged at the time of the original permit.			2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Sealy GW Treatment Expansion	Sealy	Expansion of a SWTP	Brazos	No	Potential impact to habitat on site	Land required for facility construction	Low probability of significant impacts	Low probability of significant impacts	Potential impact to habitat on SWTP site	Potential impact to wetlands on SWTP site	Potential impact to T&E species on site	Potential impact to cultural resources on SWTP site	N/A		2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Pearland SWTP	Pearland	Installation of a SWTP	San Jacinto	No	Potential impact to habitat on site	Land required for facility construction	Low probability of significant impacts	Low probability of significant impacts	Potential impact to habitat on SWTP site	Potential impact to wetlands on SWTP site	Potential impact to T&E species on site	Potential impact to cultural resources on SWTP site	N/A		2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Reservoir Strategies																						
Alens Creek Reservoir	BRA / Houston	New reservoir in Austin County	Brazos	No	Wetlands and bottomland hardwoods impacted	Inundates 7,000 acres		Diverts peak flows. When base flow is above median, diversions cannot reduce it below media. When base flow is above 25th percentile, diversions cannot reduce it below 25th percentile. Below 25th percentile, diversions cannot reduce it below a 70Z.			Sire specific study ongoing. Potential impact from 700 to 1700 wetland acres, based upon initial studies.	Austin County is habitat for White-faced Ibis, Wood Stork and Houston Toad.	Site located near the town of Wallis. A detailed site survey must be conducted.			2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay
Dow Off-Channel Reservoir and Pump Station Expansion		Increase total raw water pumping and storage capacity	Brazos	No	Potential habitat impacts to 2,000 acres. Impacts potentially already incurred due to agricultural use.	Impacts to 2,000 acres of agricultural land.	Some impacts possible due to increased diversions. Source is existing senior right.	Some impacts possible due to increased diversions. Source is existing senior right.	Impacts to 2,000 acres which are likely already impacted due to existing agricultural use.	Potential impacts.	Assessment as part of project development.	Cultural Resources survey will be required to determine impacts to cultural resources in the area	Potential reduction to B&E inflows. Limited impacts to other strategies anticipated as source is senior right near basin outlet.	Diversion would be from existing senior right modeled in ICFE WAM.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Little River Off-Channel Reservoir	BRA	New reservoir in Milam County	Brazos	No	Potential impact on terrestrial species habitats	Inundates 4400 acres		Will have substantial impacts on the instream biological community at the proposed reservoir site. However, there would be minimal impacts in the Little River diversion site. It is not likely that this project, alone, would have a substantial influence on total discharge in the Brazos River, in which case there would be minimal influence on freshwater inflows to the Brazos River estuary. However, the cumulative impact of multiple projects may reduce freshwater inflows into the estuary.	Would inundate 4,343 acres; Projected wildlife habitat that will be impacted includes 2,215 acres of Mixed Grassland, 1,839 acres of Post Oak Woods, and 289 acres of Mixed Riparian Woods/Forest.		The species that could occur within the vicinity of the site include Houston toad, bald eagle interior least tern, piping plover, and whooping crane, and Navasota ladies'-tresses.	31 archeological sites have been documented within the general vicinity of the proposed reservoir. Pin Oak Cemetery may lie within the reservoir site. Prior to reservoir inundation, the project must be coordinated with the Texas Historical Commission and a cultural resources survey must be conducted to determine if any cultural resources are present within the conservation pool.	Water potentially available for impoundment estimated using the Brazos G WAM. Firm yield computed subject to the reservoir and Little River diversion having to pass inflows to meet CCEFN instream flow requirements	Regional G Draft RPP Technical Evaluations of WMS, 4B.13.5	Regional G Draft RPP Technical Evaluations of WMS, 4B.13.5	Regional G Draft RPP Technical Evaluations of WMS, 4B.13.5	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	The project is expected to have negligible impacts to the stream flow and water quality in the Little River and Brazos River.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay		
Brazoria County Off-Channel Reservoir	Brazoria County	New reservoir in Brazoria County	San Jacinto - Brazos	No	Potential impact on terrestrial species habitats	Inundates 4,000 acres		The project would promote a minor reduction in instream flows, but as a percentage of total flow the difference would be minor.			Potential for multiple threatened and endangered species to be located within the vicinity of the proposed project site.	Cultural Resources survey will be required to determine impacts to cultural resources in the area	Lower streamflows, declining water quality, and reduced inflows to reservoirs.	Water potentially available for impoundment estimated using the Brazos G WAM. Firm yield computed subject to the reservoir and Little River diversion having to pass inflows to meet CCEFN instream flow requirements	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Fort Bend County Off-Channel Reservoir	Fort Bend County	New reservoir in Fort Bend County	Brazos	No	Potential impact on terrestrial species habitats	Inundates 4,000 acres		The project would promote a minor reduction in instream flows, but as a percentage of total flow the difference would be minor.			Potential for multiple threatened and endangered species to be located within the vicinity of the proposed project site.	Cultural Resources survey will be required to determine impacts to cultural resources in the area	Lower streamflows, declining water quality, and reduced inflows to reservoirs.	Water potentially available for impoundment estimated using the Brazos G WAM. Firm yield computed subject to the reservoir and diversion having to pass inflows to meet CCEFN instream flow requirements	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
GCWA Off-Channel Reservoirs	GCWA	Use storage to enhance the yield of existing GCWA rights	San Jacinto - Brazos	No	Potential impact on terrestrial species habitats	Inundates 4,000 acres		The project would promote a minor reduction in instream flows, but as a percentage of total flow the difference would be minor.			Potential for multiple threatened and endangered species to be located within the vicinity of the proposed project site.	Cultural Resources survey will be required to determine impacts to cultural resources in the area	Lower streamflows, declining water quality, and reduced inflows to reservoirs.	Water potentially available for impoundment estimated using the Brazos G WAM. Firm yield computed subject to the reservoir and diversion having to pass inflows to meet CCEFN instream flow requirements	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Reuse Strategies																						
Fulshear Reuse	Fulshear	Development of a direct reuse system to provide reclaimed water to Fulshear and surrounding communities.	Brazos, San Jacinto-Brazos	No	Reduces return flows to Upper Galveston Bay, offset by reduced diversions from the Trinity Basin.	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
GCWA Reclaimed Water from City of Houston	GCWA	Transfer of reclaimed water from COH SWWTP and upstream plants.	Brazos, San Jacinto-Brazos	Yes	Reduces return flows to Upper Galveston Bay.	Primarily developed in existing corridor.	Permit limits curb impacts to instream flows.	All return flows remain in Galveston Bay watershed.	Permit applications point out the urbanized watershed.	Permit applications state that potential diversion points will have minimal impacts on wetlands adjacent to streams.	Permit applications are silent on this issue.	NA	N/A	Water right permit addressed environmental flow needs.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	

Region H
Table 4A-4: Water Management Strategy Environmental Impacts

Water Management Strategy	Water User Group or Wholesale Provider	Strategy Description	Basin	Interbasin Transfer (Yes/No)	Impacts on Habitat / Stream / B&E Flows	Impacts on Landform	Instream Flows	Bay and Estuary Inflows	Wildlife Habitat	Wetlands	Threatened and Endangered Species	Cultural Resources	Evaluation of Impacts of Water Management Strategies on Threats to Natural Resources	Use of Environmental Planning Criteria or Site-Specific Information on Environmental Flow Needs	Description of Regional Planning Area	Description of Water Sources, including Major Springs	Description of Natural Resources (Animal, Vegetable, or Mineral)	Identification of Water Quality Problems	Identification of Threats to Natural Resources	Recommendations for Ecologically Unique River and Stream Segments	Recommendations that are Needed and Desirable to Protect Natural Resources	
Houston Indirect Wastewater Reuse	Houston	Reuse wastewater from all city WWTPs in lieu of Trinity Supply.	San Jacinto	No	Reduces return flows to Upper Galveston Bay, offset by reduced diversions from the Trinity Basin.	Size and location of diversion pump stations still TBD.	Instream flows potentially decreased due to wastewater reuse. However, indirect reuse potentially has less negative impacts on instream flows than direct reuse.	All return flows remain in Galveston Bay watershed. Reuse of supplies in San Jacinto Basin reduces potential need for transfer from Trinity Basin.	Permit applications point out the urbanized watershed	Permit applications state that potential diversion points will have minimal impacts on wetlands adjacent to streams.	Permit applications are silent on this issue	NA	N/A	SJRA permit addresses flows using existing downstream diversion point. Other applications are silent on this issue.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Montgomery County MUDs 8/9 Reuse	Montgomery MUDs 8/9	Reuse water from Montgomery County MUDs 8/9	San Jacinto	No	Instream flows potentially decreased due to wastewater reuse. However, indirect reuse potentially has less negative impacts on instream flows than direct reuse.	none	Instream flows potentially decreased due to wastewater reuse. However, indirect reuse potentially has less negative impacts on instream flows than direct reuse.	All return flows remain in Galveston Bay watershed.	TBD. Impacts expected to be minimal	TBD. Impacts expected to be minimal	TBD. Impacts expected to be minimal	TBD	TBD		2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
NHCRWA Indirect Wastewater Reuse	NHCRWA	Reuse wastewater from member WWTPs in lieu of purchasing additional supply.	San Jacinto	No	Reduces return flows to Upper Galveston Bay, offset by reduced diversions from the Trinity Basin.	Size and location of diversion pump stations still TBD.	Instream flows potentially decreased due to wastewater reuse. However, indirect reuse potentially has less negative impacts on instream flows than direct reuse.	All return flows remain in Galveston Bay watershed. Reuse of supplies in San Jacinto Basin reduces potential need for transfer from Trinity Basin.	Majority of the needed infrastructure will be constructed in urbanized areas. Therefore, the impact to wildlife habitat will be limited.	Majority of the needed infrastructure will be constructed in urbanized areas. Therefore, the impact to wetlands will be limited.	Potential impact to Creek Chubsucker and Alligator Snapping Turtle habitat through reduced wastewater return flows.	NA	N/A	SJRA permit addresses flows using existing downstream diversion point. Other applications are silent on this issue.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Wastewater Reclamation for Industry	Houston, Manufacturing	Deliver treated wastewater to industry for use in lieu of Trinity River supply.	San Jacinto	No	Minimal change in habitat	None	Reduces municipal return flows into Sims and Buffalo Bayous. Manufacturing return flows into the ship channel will not be affected.	Reuse water is intended to offset supply transferred from Lake Livingston, leaving the inflows for Trinity Bay vice Upper Galveston Bay	Sims and Buffalo Bayous will realize reduced freshwater flows due to reuse. Central treatment facility may impact up to 15 acres of undeveloped land.	4 new pipeline crossings may impact 6 acres through reduced wastewater return flows.	Potential impact to Wood Stork and Alligator Snapping Turtle habitat through reduced wastewater return flows.	Project is within an industrial area, but site studies must still be conducted for new facilities.	NA - strategy does not require new reservoir or water right.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay		
Wastewater Reclamation for Municipal Irrigation	County-Other and Authorities in Brazoria, Fort Bend, Harris, and Montgomery Counties	Reuse for municipal irrigation	Multiple	No	Reduces return flows to Upper Galveston Bay, offset by reduced diversions from the Trinity Basin.	None	Instream flows potentially decreased due to wastewater reuse. However, indirect reuse potentially has less negative impacts on instream flows than direct reuse.	Potential to reduce return flows in specific basin of use.	Permit applications point out the urbanized watershed	Permit applications state that potential diversion points will have minimal impacts on wetlands adjacent to streams.	Permit applications are silent on this issue	NA	N/A		2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Permit Strategies																						
BRA System Operations Permit	BRA	Use peak flow flows, when available, and systems management to reduce the use of water stored under other permits.	Brazos	No	Harvests peak flows through system management, positive affect on below-median flows	New pump stations may be required.	Diverts from streamflows when above median flow, reducing peaks. Releases from storage when below median flows, increasing the flows above diversion points.	Reduces peak flushing effects due to diversions above median flows. Flows below median are minimally affected.	Application points to the deferred or eliminated need for Little River Reservoir	Application points to the deferred or eliminated need for Little River Reservoir. New diversion points must be assessed as needed.	None discussed in permit application. Deferring Little River Reservoir reduces overall basin impact.	Application points to the deferred or eliminated need for Little River Reservoir	N/A	TCEQ Draft permit has been granted	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Houston Bayous Permit	Houston	Use peak flows, when available, to reduce the use of water stored under other permits.	San Jacinto	No	Reduces return flows to Upper Galveston Bay, offset by reduced diversions from the Trinity Basin.	Size and location of diversion pump stations still TBD.	Permit applications refer to capturing peak flows. Model includes current Lake Houston instream flow requirement	Permit applications refer to capturing peak flows. Model includes current Lake Houston instream flow requirement	Permit applications point out the urbanized watershed	Permit applications state that potential diversion points will have minimal impacts on wetlands adjacent to streams.	Permit applications are silent on this issue	N/A - Does not recommend new diversion point	N/A	SJRA permit addresses flows using existing downstream diversion point. Other applications are silent on this issue.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Other Strategies																						
Brazoria County Interruptible Supplies for Irrigation	GCWA	Use of interruptible portion of GCWA water right for irrigation	San Jacinto-Brazos	No	Reduced flows in Brazos River due to increased diversion	None	Use of interruptible supplies will decrease instream flows															
Brazos Salt Water Barrier	BRA / DOW	Prevent the seasonal migration of the saltwater wedge upstream to protect existing diversion points.	Brazos	No	Will influence flood plain response to major storms.	New structure in river channel	Structure will create a pool during low-flow periods, but river flows should spill at the same rate as before the structure.	The structure will be designed not to impound seasonal low flows.	The structure will fill [TBD] acres. Access road will require [TBD] acres. The introduction of the barrier may impact migratory fish species.	The structure will affect [TBD] acres of river bottomlands.	Potential habitat impacts to Black Rail, White-faced Ibis, Wood Stork, Diamondback Terrapin and Corkwood.	Siting study is required to identify any cultural resources being impacted. Site will be above Sea Center Texas hatchery.	Strategy reduces the influence of saltwater migration upstream to protect freshwater diversion points. This reduces the need for replacement supplies.	NA - strategy will not impound water	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Freeport Desalination	BRA / DOW	Desalinate seawater for industrial and municipal use.	Brazos, San Jacinto-Brazos	No	Offsets some use of Brazos basin flows.	New facility may require some land clearing.	Displacement of water that is currently diverted to meet municipal demands.	Saline water release is made into Dow discharge canal that empties directly into the Gulf of Mexico.	As many as 530 acres of property impacted by the installation of delivery lines, some of which follow existing easements.	Same as wildlife impact potential.	Unknown. Will require assessment before implementation of the strategy.	Will require study before implementation of the strategy.	Will require study before implementation of the strategy.	Will require study before implementation of the strategy.	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	
Montgomery County MUD 8/9 Brackish Desal	Montgomery County MUDs 8 and 9	Development of a brackish groundwater desalination facility that would supplement existing wells, reducing dependence on fresh water formations of the Gulf Coast Aquifer.	San Jacinto	No	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Sabine to Region H Transfer	Harris / Montgomery Counties	Transfer existing supply from Toledo Bend Reservoir to Region H.	Sabine to San Jacinto	Yes	Potential introduction of invasive species / Reduction of freshwater inflows to Sabine Lake	TBD	Displacement of water from Lake Livingston and reduced use of Livingston water in lower basin will result in reduced flow between the lake and the IBT discharge point on the Trinity.	Inflows to Sabine Lake could potentially be impacted.	Nearly entire Neches-Trinity segment is within Priority 3, 5, and 6 designated bottomland hardwood.	Wetlands would be affected in the majority of areas crossed by new canal segments.	Route would potentially impact the Bald Eagle, Brown Pelican, Houston Toad, Interior Least Tern, Louisiana Pike Snake, Nacatox Ladies-tresses, Northern Scarlet Snake, Red-cockaded Woodpecker, and Smooth Green Snake.	Private priority along the transfer route, especially in sections of entirely new canal or pipeline. The segment between Lake Livingston and the San Jacinto River passes through the Sam Houston National Forest.		0	2011 Regional Plan, Chapter 1	2011 Regional Plan, Chapters 1 and 3	2011 Regional Plan, Chapters 1 and 7	2011 Regional Plan Chapter 5 details the impacts of management strategies on water quality, and provides TCEQ 303(d) listed impaired waters within the Region.	2011 Regional Plan, Chapter 3 refers to protecting inflows to the Galveston Bay estuary. Chapter 8 designates unique stream segments for habitat protection.	2011 Regional Plan, Chapter 8	2011 Regional Plan, Chapter 3, Target Inflows for Galveston Bay	

Attachment E:

Amended Table 4A-5: Recommended WMS by County

Region H
Table 4A-5: Recommended WMS by County (ac-ft/yr)

	2010	2020	2030	2040	2050	2060
Austin						
Initial Shortage	0	-739	-1,240	-1,496	-1,635	-1,865
Expanded GW	0	739	1,240	1,496	1,635	1,865
Municipal Conservation	0	223	251	265	273	285
Contract Expansions	0	0	0	0	0	0
Net Shortage	0	223	251	265	273	285
Brazoria						
Initial Shortage	-150,907	-186,760	-211,634	-238,588	-266,405	-299,199
Expanded GW	0	4,049	12,988	13,515	15,658	16,209
Municipal Conservation	1,476	2,610	2,978	3,249	3,567	3,918
Contract Expansions	7,750	7,750	7,750	7,750	7,750	7,750
Net Shortage	-141,681	-172,351	-187,918	-214,074	-239,430	-271,322
Irrigation Conservation	18,792	18,792	18,792	18,792	18,792	18,792
Wastewater Reclamation for Mun. Irrigation	0	0	116	227	344	465
Brazoria Co. Interruptible Supplies for Irr.	98,189	86,759	64,000	64,000	64,000	64,000
Reallocate Existing Supply	13,694	13,694	13,895	13,988	14,019	13,694
Interim Strategies	24,916	0	0	0	0	0
GCWA Offchannel Reservoir	0	0	39,500	39,500	39,500	39,500
Allens Creek Lake/Reservoir	0	45,277	41,779	66,665	58,092	66,196
BRA System Operations Permit	0	3,010	3,010	3,010	3,010	3,010
Brazoria OCR	0	0	0	0	0	24,000
Freeport Desalination Plant	0	0	0	0	33,600	33,600
Dow Off-channel Reservoir and Pump Station Expansion	0	80,000	80,000	80,000	80,000	80,000
New Groundwater Wells for Livestock	0	27	27	27	27	27
BWA Brackish Groundwater	0	3,136	3,136	3,136	3,136	3,136
GCWA Reclaimed Water from COH	0	6,363	6,557	7,106	7,826	8,719
Total after Recommendations	13,910	84,707	82,894	82,377	82,916	83,817
Chambers						
Initial Shortage	-42,520	-47,412	-50,831	-54,251	-57,612	-61,065
Expanded GW	0	577	681	796	905	1,010
Municipal Conservation	137	195	219	239	263	291
Contract Expansions	0	0	0	0	0	0
Net Shortage	-42,383	-46,640	-49,931	-53,216	-56,444	-59,764
Irrigation Conservation	24,018	24,018	24,018	24,018	24,018	24,018
CLCND W Chambers System	0	1,691	1,978	2,235	2,511	2,804
Reallocate Existing Supply	21,010	21,264	21,389	21,509	21,627	21,725
Interim Strategies	903	0	0	0	0	0
New Contract from Existing Supply	13,823	17,083	19,972	22,888	25,732	28,672
Total after Recommendations¹	17,371	17,416	17,426	17,434	17,444	17,455

Region H
Table 4A-5: Recommended WMS by County (ac-ft/yr)

	2010	2020	2030	2040	2050	2060
Fort Bend						
Initial Shortage	-86	-11,410	-52,608	-84,380	-123,623	-178,948
Expanded GW	0	6,886	3,423	3,813	4,378	5,052
Municipal Conservation	1,435	7,077	10,277	12,253	14,678	17,497
Contract Expansions	0	367	1,295	1,226	1,225	1,016
Net Shortage	1,349	2,920	-37,613	-67,088	-103,342	-155,383
Irrigation Conservation	5,197	5,197	5,197	5,197	5,197	5,197
WHCWA GRP	0	0	0	0	0	0
NFBWA GRP	0	0	0	0	0	0
Sugar Land GRP	0	488	4,921	4,835	4,915	4,961
Missouri City GRP	0	4,401	4,401	4,401	4,401	4,401
Wastewater Reclamation for Mun. Irrigation	0	0	2,136	4,744	8,403	12,277
Fort Bend MUD 25 GRP	0	589	589	589	589	589
BRA System Operations Permit	0	3,611	15,860	22,340	22,340	22,340
Fort Bend OCR	0	0	0	0	90	45,943
Allens Creek Lake/Reservoir	0	0	0	6,605	25,864	16,145
TRA to Houston Contract	0	0	13,813	27,824	39,179	39,179
Reallocate Existing Supply	0	0	4,687	4,510	3,720	13,762
Fulshear Reuse	0	287	430	430	430	430
Industrial Conservation	0	558	558	558	558	558
Total after Recommendations	6,546	18,051	14,979	14,945	12,344	10,399
Galveston						
Initial Shortage	-16,307	-16,466	-17,787	-18,738	-19,884	-21,276
Expanded GW	0	811	1,352	1,350	1,352	1,352
Municipal Conservation	768	846	886	896	903	914
Contract Expansions	0	25,630	25,630	25,630	25,630	25,630
Net Shortage	-15,539	10,821	10,081	9,138	8,001	6,620
Irrigation Conservation	2,392	2,392	2,392	2,392	2,392	2,392
New Contract from Existing Supply	16	23	26	29	33	37
Interim Strategies	6,410	0	0	0	0	0
Allens Creek Lake/Reservoir	0	12,101	13,234	14,175	15,310	16,687
New Groundwater Wells for Livestock	0	14	14	14	14	14
Interruptible Supplies for Irr.	6,788	0	0	0	0	0
GCWA Reclaimed Water from COH	0	50,533	50,339	49,790	49,070	48,177
Total after Recommendations	67	75,884	76,086	75,538	74,820	73,927
Harris						
Initial Shortage	-51,413	-194,925	-270,301	-323,711	-375,414	-458,509
Expanded GW	0	15,481	27,659	27,693	27,727	27,560
Municipal Conservation	37,292	46,836	51,902	56,748	61,656	66,947
Contract Expansions	0	108,852	66,039	51,840	42,538	31,971
Net Shortage	-14,121	-23,756	-124,701	-187,430	-243,493	-332,031
New Contract from Existing Supply	23,008	31,264	38,732	54,777	54,805	54,849
NHCWA GRP	0	0	0	0	0	0
WHCWA GRP	-65	-258	-409	-566	-751	-968
COH GRP	0	0	0	0	0	0
Missouri City GRP	0	386	386	386	386	386
Wastewater Reclamation for Mun. Irrigation	0	0	3,268	6,616	10,027	13,431
Reallocate Existing Supply	18,253	15,276	7,308	19,232	30,220	96,881
Interim Strategies	15	0	0	0	0	0
Allens Creek Lake/Reservoir	0	15	83	336	384	622
TRA to Houston Contract	0	0	93,744	86,519	75,164	75,164
NHCWA Indirect Reuse	0	0	0	7,300	16,300	16,300
Wastewater Reuse for Industry	0	0	0	0	0	67,200
Houston Indirect Reuse	0	0	0	66,420	114,679	128,801
Total after Recommendations	27,090	22,927	18,411	53,590	57,721	120,635

Region H
Table 4A-5: Recommended WMS by County (ac-ft/yr)

	2010	2020	2030	2040	2050	2060
Leon						
Initial Shortage	0	-376	-614	-707	-779	-908
Expanded GW	0	376	614	707	779	908
Municipal Conservation	0	126	140	124	107	116
Contract Expansions	0	0	0	0	0	0
Net Shortage	0	126	140	124	107	116
Total after Recommendations	0	126	140	124	107	116
Liberty						
Initial Shortage	-11,846	-15,142	-18,687	-22,539	-27,061	-32,363
Expanded GW	0	2,537	4,590	6,809	9,399	12,544
Municipal Conservation	0	539	641	744	868	995
Contract Expansions	0	0	0	0	0	0
Net Shortage	-11,846	-12,066	-13,456	-14,986	-16,794	-18,824
Irrigation Conservation	20,876	20,876	20,876	20,876	20,876	20,876
Reallocate Existing Supply	6,657	6,697	6,732	6,767	6,805	6,833
Total after Recommendations	15,687	15,507	14,152	12,657	10,887	8,885
Madison						
Initial Shortage	-1	-130	-228	-239	-323	-450
Expanded GW	0	130	228	239	323	450
Municipal Conservation	1	91	110	112	116	119
Contract Expansions	0	0	0	0	0	0
Net Shortage	0	91	110	112	116	119
Total after Recommendations	0	91	110	112	116	119
Montgomery						
Initial Shortage	-17,728	-47,619	-69,513	-81,350	-120,398	-165,162
Expanded GW	0	5,615	4,471	5,614	9,034	11,820
Municipal Conservation	4,460	6,007	7,384	8,838	10,795	13,089
Contract Expansions	0	0	0	0	0	0
Net Shortage	-13,268	-35,997	-57,658	-66,898	-100,569	-140,253
MUD 8 AND 9 Reuse	0	657	816	1,120	1,120	1,120
Wastewater Reclamation for Mun. Irrigation	0	0	1,752	3,838	6,787	10,215
SJRA WRAP	0	36,377	55,538	54,582	53,581	52,534
Interim Strategies	13,268	0	0	0	0	0
TRA To SJRA Contract	0	0	0	7,935	39,096	76,476
Total after Recommendations	0	1,037	448	577	15	92
Polk						
Initial Shortage	0	-117	-205	-272	-384	-513
Expanded GW	0	117	205	272	384	513
Municipal Conservation	0	158	173	180	187	198
Contract Expansions	0	0	0	0	0	0
Net Shortage	0	158	173	180	187	198
Total after Recommendations	0	158	173	180	187	198
San Jacinto						
Initial Shortage	0	-300	-533	-695	-793	-869
Expanded GW	0	542	928	984	1,007	1,060
Municipal Conservation	19	148	163	174	181	184
Contract Expansions	0	0	0	0	0	0
Net Shortage	19	390	558	463	395	375
Total after Recommendations	19	390	558	463	395	375

Region H
Table 4A-5: Recommended WMS by County (ac-ft/yr)

	2010	2020	2030	2040	2050	2060
Trinity						
Initial Shortage	0	0	0	0	0	0
Expanded GW	0	36	36	21	0	0
Municipal Conservation	0	2	1	0	0	0
Contract Expansions	0	0	0	0	0	0
Net Shortage	0	38	37	21	0	0
Total after Recommendations	0	38	37	21	0	0
Walker						
Initial Shortage	0	-815	-1,655	-1,973	-2,384	-2,853
Expanded GW	0	816	1,651	1,963	2,374	2,843
Municipal Conservation	0	68	74	89	90	92
Contract Expansions	0	0	0	0	0	0
Net Shortage	0	69	70	79	80	82
Total after Recommendations	0	69	70	79	80	82
Waller						
Initial Shortage	-82	-1,926	-2,940	-4,579	-8,177	-12,355
Expanded GW	0	1,447	2,231	3,644	5,382	7,431
Municipal Conservation	17	392	497	592	708	849
Contract Expansions	0	0	0	0	0	0
Net Shortage	-65	-87	-212	-343	-2,087	-4,075
Irrigation Conservation	0	0	0	0	6,606	6,606
WHCRWA GRP	65	258	409	566	751	968
Total after Recommendations	0	171	197	223	5,270	3,499

Notes:

¹Lines for reallocation of existing supplies include only the positive portions of reallocations, as negative portions remove surpluses from some WUGs. Shortage values reflect the sum of all WUG shortages without offsets for other WUG surpluses.

Attachment F:

Amended Table 4A-6: Decadal WMS Summary

Attachment G:

Amended Table 4A-7: WMS Supply Allocations by WUG

Attachment H:

Amended Table 4A-8: WUG-Level Contracts

Region H
Table 4A-8: WUG-Level Contracts

WWP	WWP ID	WUG	WUG Basin	WUG County	WUG ID	2010	2020	2030	2040	2050	2060
GULF COAST WATER AUTHORITY	325	PEARLAND	SAN JACINTO-BRAZOS	HARRIS	08045700010111	0	0	0	0	47	130
GULF COAST WATER AUTHORITY	325	TEXAS CITY	SAN JACINTO-BRAZOS	GALVESTON	08060200008411	0	19,343	19,233	19,066	18,858	18,606
GULF COAST WATER AUTHORITY	325	MANVEL	SAN JACINTO-BRAZOS	BRAZORIA	08072100002011	0	70	62	63	67	71
GULF COAST WATER AUTHORITY	325	COUNTY-OTHER	SAN JACINTO-BRAZOS	FORT BEND	08075707907911	0	0	0	1,950	1,950	1,950
GULF COAST WATER AUTHORITY	325	COUNTY-OTHER	SAN JACINTO-BRAZOS	GALVESTON	08075708408411	0	3,887	3,872	3,850	3,823	3,789
GULF COAST WATER AUTHORITY	325	CLEAR LAKE SHORES	SAN JACINTO-BRAZOS	GALVESTON	08076400008411	0	188	190	188	186	183
GULF COAST WATER AUTHORITY	325	TIKI ISLAND	SAN JACINTO-BRAZOS	GALVESTON	08097300008411	0	1,067	1,062	1,054	1,044	1,033
GULF COAST WATER AUTHORITY	325	MANUFACTURING	SAN JACINTO-BRAZOS	GALVESTON	08100108408411	0	28,631	28,291	27,776	27,129	26,352
GULF COAST WATER AUTHORITY	325	MANUFACTURING	SAN JACINTO-BRAZOS	BRAZORIA	08100102002011	0	0	1,580	1,580	1,580	1,580
GULF COAST WATER AUTHORITY	325	MANUFACTURING	BRAZOS	BRAZORIA	08100102002012	13,694	13,694	51,614	51,614	51,614	51,614
GULF COAST WATER AUTHORITY	325	STEAM ELECTRIC POWER	SAN JACINTO-BRAZOS	GALVESTON	08100208408411	0	2,893	3,738	4,869	6,231	7,864
GULF COAST WATER AUTHORITY	325	MINING	SAN JACINTO-BRAZOS	FORT BEND	08100307907911	0	86	703	717	729	739
GULF COAST WATER AUTHORITY	325	MINING	SAN JACINTO-BRAZOS	GALVESTON	08100308408411	0	21	24	28	31	34
GULF COAST WATER AUTHORITY	325	IRRIGATION	SAN JACINTO-BRAZOS	BRAZORIA	08100402002011	82,741	71,681	62,691	62,777	62,970	64,614
GULF COAST WATER AUTHORITY	325	IRRIGATION	BRAZOS	BRAZORIA	08100402002012	1,754	1,384	1,243	1,157	1,157	1,157
GULF COAST WATER AUTHORITY	325	IRRIGATION	SAN JACINTO-BRAZOS	GALVESTON	08100408408411	6,788	6,788	6,788	6,788	6,788	6,788
GULF COAST WATER AUTHORITY	325	BACLIFF MUD	SAN JACINTO-BRAZOS	GALVESTON	08401200008411	0	1,468	1,458	1,443	1,424	1,402
GULF COAST WATER AUTHORITY	325	BAYOU VISTA	SAN JACINTO-BRAZOS	GALVESTON	08075900008411	0	217	215	211	206	200
GULF COAST WATER AUTHORITY	325	GALVESTON COUNTY WCID #12	SAN JACINTO-BRAZOS	GALVESTON	08413600008411	0	3,579	3,563	3,540	3,511	3,476
GULF COAST WATER AUTHORITY	325	SANTA FE	SAN JACINTO-BRAZOS	GALVESTON	08074300008411	0	483	477	469	458	445
GULF COAST WATER AUTHORITY	325	SAN LEON MUD	SAN JACINTO-BRAZOS	GALVESTON	08432900008411	0	2,649	2,632	2,607	2,576	2,538
WWP Total						104,977	173,508	206,117	210,630	214,202	220,166
LOWER NECHES VALLEY AUTHORITY	140	MINING	NECHES-TRINITY	GALVESTON	08100308408407	16	23	26	29	33	37
WWP Total						16	23	26	29	33	37
MISSOURI CITY	999903	MISSOURI CITY	SAN JACINTO	FORT BEND	08040900007910	0	715	1,195	1,794	1,794	2,517
MISSOURI CITY	999903	MISSOURI CITY	SAN JACINTO-BRAZOS	FORT BEND	08040900007911	0	2,595	5,342	8,051	7,983	11,503
MISSOURI CITY	999903	MISSOURI CITY	BRAZOS	FORT BEND	08040900007912	0	508	665	822	890	905
MISSOURI CITY	999903	MISSOURI CITY	SAN JACINTO	HARRIS	08040900010110	0	386	454	707	707	862
MISSOURI CITY	999903	COUNTY-OTHER	SAN JACINTO-BRAZOS	FORT BEND	08075707907911	0	26	85	594	778	829
MISSOURI CITY	999903	COUNTY-OTHER	BRAZOS	FORT BEND	08075707907912	0	172	859	929	946	959
MISSOURI CITY	999903	FIRST COLONY MUD #9	BRAZOS	FORT BEND	08411300007912	0	342	793	831	879	926
MISSOURI CITY	999903	FORT BEND COUNTY MUD #23	SAN JACINTO-BRAZOS	FORT BEND	08412100007911	0	464	1,069	1,069	1,070	1,070
MISSOURI CITY	999903	SIENNA PLANTATION MUD #2	SAN JACINTO-BRAZOS	FORT BEND	08433400007911	0	292	655	651	651	651
WWP Total						0	5,500	11,117	15,448	15,698	20,222
NFBWA	999901	FULSHEAR	SAN JACINTO-BRAZOS	FORT BEND	08086900007911	0	0	0	0	45	112
NFBWA	999901	FULSHEAR	BRAZOS	FORT BEND	08086900007912	0	0	0	0	76	178
NFBWA	999901	ARCOLA	SAN JACINTO-BRAZOS	FORT BEND	08099800007911	0	106	258	295	345	397
NFBWA	999901	NFBWA	SAN JACINTO	FORT BEND	NFBWA07910	0	0	7,700	11,775	13,327	13,887
NFBWA	999901	NFBWA	SAN JACINTO-BRAZOS	FORT BEND	NFBWA07911	0	6,334	12,704	22,026	29,994	37,709
NFBWA	999901	NFBWA	BRAZOS	FORT BEND	NFBWA07912	0	150	892	1,905	3,313	5,103
NFBWA	999901	NFBWA	SAN JACINTO	HARRIS	NFBWA10110	0	444	732	865	926	939
WWP Total						0	7,034	22,286	36,866	48,026	58,325
NHCRWA	999904	TOMBALL	SAN JACINTO	HARRIS	08060800010110	620	2,102	2,830	3,760	4,441	5,442
NHCRWA	999904	JERSEY VILLAGE	SAN JACINTO	HARRIS	08070900010110	0	364	767	1,043	1,315	1,600
NHCRWA	999904	NORTHWEST HARRIS COUNTY MUD #1	SAN JACINTO	HARRIS	08428600010110	141	467	646	770	908	1,046
NHCRWA	999904	NHCRWA	SAN JACINTO	HARRIS	08800000010110	0	53,520	80,393	87,241	90,563	94,527
WWP Total						761	56,453	84,636	92,814	97,227	102,615
NORTH CHANNEL WATER AUTHORITY	607473	HARRIS COUNTY FWSD #47	SAN JACINTO	HARRIS	08414900010110	25	14	4	3	3	3
NORTH CHANNEL WATER AUTHORITY	607473	HARRIS COUNTY FWSD #51	SAN JACINTO	HARRIS	08415000010110	363	266	250	213	211	211
NORTH CHANNEL WATER AUTHORITY	607473	HARRIS COUNTY FWSD #6	SAN JACINTO	HARRIS	08415100010110	103	145	184	236	281	334
NORTH CHANNEL WATER AUTHORITY	607473	HARRIS COUNTY MUD #53	SAN JACINTO	HARRIS	08418600010110	587	920	1,231	1,652	2,029	2,454
NORTH CHANNEL WATER AUTHORITY	607473	HARRIS COUNTY WCID #21	SAN JACINTO	HARRIS	08419600010110	272	313	349	389	443	513
NORTH CHANNEL WATER AUTHORITY	607473	HARRIS COUNTY WCID #36	SAN JACINTO	HARRIS	08419700010110	190	268	338	438	540	660
NORTH CHANNEL WATER AUTHORITY	607473	HARRIS COUNTY WCID #84	SAN JACINTO	HARRIS	08420000010110	199	200	201	201	206	216
NORTH CHANNEL WATER AUTHORITY	607473	PINE TRAILS UTILITY	SAN JACINTO	HARRIS	08430200010110	215	266	312	379	444	521
WWP Total						1,954	2,392	2,869	3,511	4,157	4,912
NRG	398300	STEAM ELECTRIC POWER	BRAZOS	FORT BEND	08100207907912	0	0	0	0	0	8,500
WWP Total						0	0	0	0	0	8,500
RICHMOND-ROSENBERG	999905	RICHMOND	BRAZOS	FORT BEND	08050000007912	0	0	0	0	0	248
RICHMOND-ROSENBERG	999905	ROSENBERG	BRAZOS	FORT BEND	08051800007912	0	0	0	1,091	3,060	5,397
WWP Total						0	0	0	1,091	3,060	5,645
SAN JACINTO RIVER AUTHORITY	240	CONROE	SAN JACINTO	MONTGOMERY	08013000017010	0	5,256	8,550	8,377	14,027	20,630
SAN JACINTO RIVER AUTHORITY	240	WILLIS	SAN JACINTO	MONTGOMERY	08065500017010	0	236	380	377	635	941
SAN JACINTO RIVER AUTHORITY	240	OAK RIDGE NORTH	SAN JACINTO	MONTGOMERY	08072600017010	0	272	418	392	637	911
SAN JACINTO RIVER AUTHORITY	240	PANORAMA VILLAGE	SAN JACINTO	MONTGOMERY	08073200017010	0	251	334	277	384	475
SAN JACINTO RIVER AUTHORITY	240	PATTON VILLAGE	SAN JACINTO	MONTGOMERY	08073400017010	0	32	47	64	84	113
SAN JACINTO RIVER AUTHORITY	240	SHELANDOAH	SAN JACINTO	MONTGOMERY	08074500017010	0	737	1,098	1,002	1,570	2,200
SAN JACINTO RIVER AUTHORITY	240	COUNTY-OTHER	SAN JACINTO	HARRIS	08075710110110	0	0	5,299	19,014	16,041	17,533
SAN JACINTO RIVER AUTHORITY	240	COUNTY-OTHER	SAN JACINTO	MONTGOMERY	08075717017010	0	10,308	16,497	23,807	34,448	48,756
SAN JACINTO RIVER AUTHORITY	240	ROMAN FOREST	SAN JACINTO	MONTGOMERY	08080100017010	0	306	561	860	1,283	1,809
SAN JACINTO RIVER AUTHORITY	240	WOODBURCH	SAN JACINTO	MONTGOMERY	08080700017010	0	74	107	138	177	225
SAN JACINTO RIVER AUTHORITY	240	CUT AND SHOOT	SAN JACINTO	MONTGOMERY	08085400017010	0	86	134	130	212	309
SAN JACINTO RIVER AUTHORITY	240	MAGNOLIA	SAN JACINTO	MONTGOMERY	08090700017010	0	221	380	561	812	1,118

Region H

Table 4A-8: WUG-Level Contracts

WWP	WWP ID	WUG	WUG Basin	WUG County	WUG ID	2010	2020	2030	2040	2050	2060
SAN JACINTO RIVER AUTHORITY	240	SPLENDORA	SAN JACINTO	MONTGOMERY	08096200017010	0	83	141	212	313	435
SAN JACINTO RIVER AUTHORITY	240	MANUFACTURING	TRINITY-SAN JACINTO	HARRIS	08100110110109	23,008	27,754	31,791	35,763	38,736	37,244
SAN JACINTO RIVER AUTHORITY	240	MANUFACTURING	SAN JACINTO	MONTGOMERY	08100117017010	0	988	1,384	1,756	2,129	2,504
SAN JACINTO RIVER AUTHORITY	240	STEAM ELECTRIC POWER	SAN JACINTO	MONTGOMERY	08100217017010	0	0	0	0	1,593	4,307
SAN JACINTO RIVER AUTHORITY	240	MINING	SAN JACINTO	MONTGOMERY	08100317017010	0	216	279	331	382	425
SAN JACINTO RIVER AUTHORITY	240	CONSUMERS WATER INC	SAN JACINTO	MONTGOMERY	08407200017010	0	89	143	204	291	395
SAN JACINTO RIVER AUTHORITY	240	CRYSTAL SPRINGS WATER COMPAN	SAN JACINTO	MONTGOMERY	08408100017010	0	257	439	663	982	1,371
SAN JACINTO RIVER AUTHORITY	240	EAST PLANTATION UD	SAN JACINTO	MONTGOMERY	08409800017010	0	203	344	354	613	923
SAN JACINTO RIVER AUTHORITY	240	H M W SUD	SAN JACINTO	MONTGOMERY	08414700017010	0	672	1,055	1,011	1,670	2,425
SAN JACINTO RIVER AUTHORITY	240	HARRIS COUNTY MUD #50	SAN JACINTO	HARRIS	08418500010110	0	0	0	0	28	72
SAN JACINTO RIVER AUTHORITY	240	MONTGOMERY COUNTY MUD #18	SAN JACINTO	MONTGOMERY	08426100017010	0	865	1,655	1,788	3,251	5,046
SAN JACINTO RIVER AUTHORITY	240	MONTGOMERY COUNTY MUD #19	SAN JACINTO	MONTGOMERY	08426200017010	0	167	211	165	220	260
SAN JACINTO RIVER AUTHORITY	240	MONTGOMERY COUNTY MUD #8	SAN JACINTO	MONTGOMERY	08426300017010	0	399	624	720	861	964
SAN JACINTO RIVER AUTHORITY	240	MONTGOMERY COUNTY MUD #9	SAN JACINTO	MONTGOMERY	08426400017010	0	395	650	790	951	1,075
SAN JACINTO RIVER AUTHORITY	240	MONTGOMERY COUNTY UD #2	SAN JACINTO	MONTGOMERY	08426500017010	0	203	259	298	337	369
SAN JACINTO RIVER AUTHORITY	240	MONTGOMERY COUNTY UD #3	SAN JACINTO	MONTGOMERY	08426600017010	0	184	264	233	358	493
SAN JACINTO RIVER AUTHORITY	240	MONTGOMERY COUNTY UD #4	SAN JACINTO	MONTGOMERY	08426700017010	0	353	452	351	467	554
SAN JACINTO RIVER AUTHORITY	240	MONTGOMERY COUNTY WCID #1	SAN JACINTO	MONTGOMERY	08426800017010	0	189	272	358	470	600
SAN JACINTO RIVER AUTHORITY	240	NEW CANEY MUD	SAN JACINTO	MONTGOMERY	08427200017010	0	546	944	1,396	2,058	2,854
SAN JACINTO RIVER AUTHORITY	240	POINT AQUARIUS MUD	SAN JACINTO	MONTGOMERY	08430500017010	0	331	613	966	1,472	2,091
SAN JACINTO RIVER AUTHORITY	240	PORTER WSC	SAN JACINTO	MONTGOMERY	08430700017010	0	777	1,260	1,626	2,047	2,239
SAN JACINTO RIVER AUTHORITY	240	RAYFORD ROAD MUD	SAN JACINTO	MONTGOMERY	08431200017010	0	826	1,050	831	1,110	1,316
SAN JACINTO RIVER AUTHORITY	240	RIVER PLANTATION MUD	SAN JACINTO	MONTGOMERY	08432200017010	0	0	0	76	272	398
SAN JACINTO RIVER AUTHORITY	240	SOUTHERN MONTGOMERY COUNTY	SAN JACINTO	MONTGOMERY	08433900017010	0	866	1,118	911	1,231	1,493
SAN JACINTO RIVER AUTHORITY	240	SOUTHWEST UTILITIES	SAN JACINTO	MONTGOMERY	08434300017010	0	102	166	237	336	457
SAN JACINTO RIVER AUTHORITY	240	SPRING CREEK UD	SAN JACINTO	MONTGOMERY	08434400017010	0	224	372	377	653	982
SAN JACINTO RIVER AUTHORITY	240	STANLEY LAKE MUD	SAN JACINTO	MONTGOMERY	08434700017010	0	329	423	329	439	521
SAN JACINTO RIVER AUTHORITY	240	THE WOODLANDS	SAN JACINTO	MONTGOMERY	08800100017010	0	13,616	14,985	10,275	13,658	16,196
SAN JACINTO RIVER AUTHORITY	240	MONTGOMERY	SAN JACINTO	MONTGOMERY	MONTGOMERY17C	0	374	710	1,087	1,199	1,701
SAN JACINTO RIVER AUTHORITY	240	STAGECOACH	SAN JACINTO	MONTGOMERY	STAGECOACH17D	0	39	68	107	165	249
WWP Total						23,008	68,826	95,477	118,414	148,602	184,979
SUGAR LAND	999906	SUGAR LAND	SAN JACINTO	FORT BEND	08058500007910	0	0	35	35	35	35
SUGAR LAND	999906	SUGAR LAND	SAN JACINTO-BRAZOS	FORT BEND	08058500007911	0	0	440	404	404	1,304
SUGAR LAND	999906	SUGAR LAND	BRAZOS	FORT BEND	08058500007912	0	155	3,496	3,267	3,508	3,719
SUGAR LAND	999906	COUNTY-OTHER	SAN JACINTO-BRAZOS	FORT BEND	08075707907911	0	29	60	536	814	814
SUGAR LAND	999906	COUNTY-OTHER	BRAZOS	FORT BEND	08075707907912	0	102	919	1,293	1,291	1,183
SUGAR LAND	999906	FORT BEND COUNTY MUD #106	BRAZOS	FORT BEND	08411700007912	0	235	523	521	521	521
SUGAR LAND	999906	FORT BEND COUNTY MUD #108	BRAZOS	FORT BEND	08411800007912	0	141	312	312	312	312
SUGAR LAND	999906	FORT BEND COUNTY MUD #111	BRAZOS	FORT BEND	08411900007912	0	250	524	519	468	446
SUGAR LAND	999906	FORT BEND COUNTY MUD #67	BRAZOS	FORT BEND	08412600007912	0	266	556	549	495	472
SUGAR LAND	999906	FORT BEND COUNTY MUD #68	BRAZOS	FORT BEND	08412700007912	0	194	398	404	364	347
SUGAR LAND	999906	FORT BEND COUNTY MUD #69	BRAZOS	FORT BEND	08412800007912	0	157	311	323	292	278
SUGAR LAND	999906	PLANTATION MUD	SAN JACINTO-BRAZOS	FORT BEND	08430300007911	0	133	294	288	286	286
WWP Total						0	1,662	7,868	8,451	8,790	9,717
THE DOW CHEMICAL CO.	237200	MANUFACTURING	SAN JACINTO-BRAZOS	BRAZORIA	08100102002011	0	9,017	9,017	9,017	9,017	9,017
THE DOW CHEMICAL CO.	237200	MANUFACTURING	BRAZOS	BRAZORIA	08100102002012	0	62,414	62,414	62,414	62,414	62,414
WWP Total						0	71,431	71,431	71,431	71,431	71,431
TRINITY RIVER AUTHORITY	187	IRRIGATION	NECHES-TRINITY	LIBERTY	08100414614607	0	0	0	0	0	0
TRINITY RIVER AUTHORITY	187	IRRIGATION	TRINITY-SAN JACINTO	LIBERTY	08100414614609	0	0	0	0	0	1,091
TRINITY RIVER AUTHORITY	187	MANUFACTURING	TRINITY-SAN JACINTO	CHAMBERS	08100103603609	8,264	9,230	10,252	11,284	12,240	13,445
TRINITY RIVER AUTHORITY	187	MINING	TRINITY	CHAMBERS	08100303603608	4,344	6,494	7,816	9,116	10,411	11,550
TRINITY RIVER AUTHORITY	187	MINING	TRINITY-SAN JACINTO	CHAMBERS	08100303603609	1,215	1,359	1,904	2,488	3,081	3,677
WWP Total						13,823	17,083	19,972	22,888	25,732	29,763
WHCRWA	999907	KATY	SAN JACINTO	FORT BEND	08031200007910	68	238	356	462	601	764
WHCRWA	999907	KATY	SAN JACINTO	HARRIS	08031200010110	756	2,462	3,347	3,989	4,619	5,276
WHCRWA	999907	KATY	SAN JACINTO	WALLER	08031200023710	65	258	409	566	751	968
WHCRWA	999907	HARRIS COUNTY MUD #132	SAN JACINTO	HARRIS	08415700010110	421	1,393	1,909	2,292	2,667	3,058
WHCRWA	999907	HARRIS COUNTY MUD #151	SAN JACINTO	HARRIS	08415900010110	306	811	932	925	925	925
WHCRWA	999907	HARRIS COUNTY MUD #152	SAN JACINTO	HARRIS	08416000010110	189	650	909	1,112	1,324	1,536
WHCRWA	999907	HARRIS COUNTY MUD #180	SAN JACINTO	HARRIS	08417000010110	148	475	640	758	874	998
WHCRWA	999907	HARRIS COUNTY MUD #46	SAN JACINTO	HARRIS	08418300010110	201	526	598	593	593	593
WHCRWA	999907	TRAIL OF THE LAKES MUD	SAN JACINTO	HARRIS	08435500010110	334	876	1,005	986	986	986
WHCRWA	999907	WHCRWA	SAN JACINTO	FORT BEND	08800200007910	0	0	1,445	2,010	2,490	2,983
WHCRWA	999907	WHCRWA	SAN JACINTO	HARRIS	08800200010110	0	24,167	35,508	40,356	41,271	42,001
WWP Total						2,488	31,856	47,058	54,049	57,101	60,088

Notes:

Table includes summation of all WMS supplies provided by a WWP to a WUG. In cases where a WUG is also a WWP, supply volumes for the WWP and WUG are still listed in the contracts table for consistency

Attachment I:

Revised Technical Memorandum 4B-47 (Dow Off-Channel Reservoir and Pump Station Expansion)

REGION H WATER MANAGEMENT STRATEGY ANALYSIS TECHNICAL MEMORANDUM

STRATEGY TITLE: Dow Off-Channel Reservoir and Pump Station Expansion

DATE: August 18, 2014

SUMMARY

STRATEGY DESCRIPTION: The Dow Chemical Company – Texas Operations plans to increase the total raw water pumping and storage capacity available for use at their industrial site in Freeport, Texas. Increasing the site's reservoir storage capacity and building a new river intake and pump station would give Dow more flexibility in managing their raw water resources and provide protection during drought conditions when pumping from the Brazos River is limited or curtailed. This project does not require a new water right appropriation because it is intended to firm up existing water rights held by Dow and the Brazosport Water Authority to meet manufacturing and municipal shortages in Brazoria County. The proposed reservoir would provide an additional firm yield supply quantity of 80,000 acre-feet/year.

SUPPLY QUANTITY: 80,000 acre-feet/year

SUPPLY SOURCE: Brazos River

IMPLEMENTATION DECADE: 2020

TOTAL STRATEGY COST: \$226,837,000 (Costs rounded to nearest \$100)

ANNUAL UNIT WATER COST: \$256 per acre-foot

Water Management Strategy Analysis Description

Introduction:

Dow pumps raw water supply from the Brazos River to meet the manufacturing demands of its industrial site, manufacturing demands of fence line partners, and municipal demands of the Brazosport Water Authority and its customers. Water is diverted by Dow under Dow's water rights and on behalf of Brazosport Water Authority under the authority's water rights. The current supply available from the water rights held by Dow and the Brazosport Water Authority is 153,967 acre-feet per year, including 137,763 for manufacturing use (includes approximately 288 acre-feet per year provided to industry by BWA) and 16,204 acre-feet per year for municipal use. This was determined using the Brazos Basin WAM developed for use by the Brazos G and Region H Water Planning Groups during development of the 2011 Plans. During the drought in the summer of 2009, extremely low flows caused Dow to cease pumping from the Brazos River into their raw water storage reservoirs. The proposed project would increase the amount of off-channel reservoir storage capacity by 56,760 acre-feet and would provide a 4- to 8-month supply for Dow during the driest months of the critical drought, allowing Dow to meet more of its current raw water demand and the demands of the municipal customers of the Brazosport Water Authority. A new raw water intake and pump station, with a pumping capacity of 200,000 gpm, will make efficient use of the additional storage capacity, and allow Dow to provide an additional 80,000 acre-feet per year of firm supply when used in conjunction with Dow's and the Brazosport Water Authority's existing water rights and Dow's Two-Tier BRA contract.

Analysis:

The reservoir expansion would consist of an earthen embankment built to an elevation of 79 feet, MSL, with a conservation storage pool level of 73 feet, MSL. The reservoir expansion would have an average

water depth of 33 feet with an average embankment height of approximately 39 feet. An exploratory geotechnical analysis indicates that sufficient on-site materials exist to construct the compacted clay embankment. The embankment would include a vertical chimney drain and horizontal sand blanket drain. The materials for both drains would need to be imported from off-site. An outlet works system would discharge into Oyster Creek for transport to Dow's pumping facility in Lake Jackson.

A new intake and pump station on the Brazos River having a capacity of 200,000 gpm would be constructed, consisting of a headwall and intake screens leading to four 50,000 gpm vertical end-suction pumps with 1500 HP motors, which will discharge into a sedimentation basin adjacent to the reservoir expansion. Water pumped into the sediment basin will be allowed to flow into both the existing Harris Reservoir storage and the storage expansion.

Water User Group Application:

The supply developed by the project would be used to more effectively meet projected manufacturing and municipal supply shortages in Brazoria County during drought conditions. Historical use from the Dow reservoir system has been 80% for Dow's benefit and 20% for non-Dow benefit, which includes municipal and other industrial users. The seven member cities of the Brazosport Water Authority will be beneficiaries of the additional supply developed by the project.

Environmental Impact:

The project would impact approximately 2,000 acres of land, which is currently used for agricultural production and grazing.

Although a number of federal and state endangered and threatened species are listed for Brazoria County, the existing disturbed condition of the proposed site suggests that impacts to listed species essentially have already occurred and any additional impacts will be moderate to low.

Large changes in nearby property values are not anticipated due to the rural nature of the existing area. Recreational use of the reservoir will be closely managed by Dow and is anticipated to include fishing and bird watching.

Issues and Considerations:

The development of a project of this nature will require the study and consideration of many issues. These will include, but not necessarily limited to: TCEQ water rights permitting for additional off-channel storage capacity (application has been submitted to the TCEQ for the additional storage capacity), U.S. Army Corps of Engineers Section 404 permitting, environmental assessments of the intake and pump station and reservoir sites, Sand, Gravel and Marl permit from the Texas Parks and Wildlife Department, compliance with TCEQ dam safety regulations including reviews and construction approvals, revisions to FEMA floodplain mapping for the Oyster Creek and Brazos River floodplains, utility relocations, new electrical power supply to the pump station site, road relocations, sediment removal (permitting and facility design), Storm Water Pollution Prevention Plans for construction operations, and site security.

**Table 1
Off-Channel Reservoir Expansion Cost Summary**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
PROJECT COST SUMMARY					
1	CONSTRUCTION (CAPITAL) COST	1	LS	\$ 155,810,000	\$ 155,810,000
2	ENGINEERING, FINANCIAL & LEGAL SERVICES, AND CONTINGENCIES	1	LS	\$ 54,534,000	\$ 54,534,000
3	LAND & EASEMENTS & SURVEYING	1	LS	\$ 100,000	\$ 100,000
4	ENVIRONMENTAL - STUDIES & MITIGATION	1	LS	\$ 2,000,000	\$ 2,000,000
5	INTEREST DURING CONSTRUCTION	1	LS	\$ 14,393,000	\$ 14,393,000
PROJECT COST					\$ 226,837,000

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY							
		2010	2020	2030	2040	2050	2060
1	DEBT SERVICE (Off-Channel Reservoir)	\$ -	\$ 10,577,000	\$ 10,577,000	\$ 10,577,000	\$ 10,577,000	\$ 10,577,000
2	DEBT SERVICE (Intake and Pump Station)	\$ -	\$ 5,901,000	\$ 5,901,000	\$ 5,901,000	\$ -	\$ -
3	OPERATION & MAINTENANCE (O&M)	\$ -	\$ 2,397,000	\$ 2,397,000	\$ 2,397,000	\$ 2,397,000	\$ 2,397,000
4	PUMPING ENERGY COSTS	\$ -	\$ 1,431,000	\$ 1,431,000	\$ 1,431,000	\$ 1,431,000	\$ 1,431,000
5	PURCHASE OF WATER	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL ANNUAL COST		\$ -	\$ 20,306,000	\$ 20,306,000	\$ 20,306,000	\$ 14,405,000	\$ 14,405,000

ALL FACILITIES

CONSTRUCTION COSTS

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	\$ 31,310,000	\$ 31,310,000
2a	PIPELINES	0	LS	\$ -	\$ -
2b	PIPELINE CROSSINGS	0	LS	\$ -	\$ -
3	WATER TREATMENT PLANTS	0	LS	\$ -	\$ -
4	WATER STORAGE TANKS	0	LS	\$ -	\$ -
5	OFF-CHANNEL RESERVOIRS	1	LS	\$ 107,600,000	\$ 107,600,000
6	WELL FIELDS	0	LS	\$ -	\$ -
7	DAMS & RESERVOIRS	0	LS	\$ -	\$ -
8	RELOCATIONS	0	LS	\$ -	\$ -
9	WATER DISTRIBUTION SYSTEM IMPROVEMENTS	0	LS	\$ -	\$ -
10	STILLING BASINS	0	LS	\$ -	\$ -
11	WASTEWATER RECLAMATION PLANTS	0	LS	\$ -	\$ -
12	OTHER ITEMS	1	LS	\$ 16,900,000.000	\$ 16,900,000
PROJECT COST					\$ 155,810,000

**Table 1 (cont'd)
Off-Channel Reservoir Expansion Cost Summary**

ALL FACILITIES

OPERATIONS & MAINTENANCE (O&M) COSTS

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION & MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5%	%	\$ 31,310,000	\$ 783,000
2a	PIPELINES	1.0%	%	\$ -	\$ -
2b	PIPELINE CROSSINGS	1.0%	%	\$ -	\$ -
3	WATER TREATMENT PLANTS	1	LS	\$ -	\$ -
4	WATER STORAGE TANKS	1.0%	%	\$ -	\$ -
5	OFF-CHANNEL RESERVOIRS	1.5%	%	\$ 107,600,000	\$ 1,614,000
6	WELL FIELDS	1.0%	%	\$ -	\$ -
7	DAMS & RESERVOIRS	2.5%	%	\$ -	\$ -
8	RELOCATIONS	1.0%	%	\$ -	\$ -
9	WATER DISTRIBUTION SYSTEM IMPROVEMENTS	1.0%	%	\$ -	\$ -
10	STILLING BASINS	1.0%	%	\$ -	\$ -
11	WASTEWATER RECLAMATION PLANTS (see previous	1	LS	\$ -	\$ -
12	OTHER ITEMS	1.0%	%	\$ 16,900,000	\$ 169,000
ANNUAL OPERATION & MAINTENANCE COST					\$ 2,566,000

Attachment J:

New Technical Memorandum: 4B-54: Gulf Coast Water Authority Reclaimed Water from City of Houston

REGION H WATER MANAGEMENT STRATEGY ANALYSIS TECHNICAL MEMORANDUM

STRATEGY TITLE: Gulf Coast Water Authority Reclaimed Water from City of Houston¹

DATE: December 14, 2014

SUMMARY

STRATEGY DESCRIPTION: Transfer of reclaimed water from the City of Houston Southwest Wastewater Plant and other treatment facilities upstream along Brays Bayou.

SUPPLY QUANTITY: Direct Intake: 30.1 MGD average
Combined Intake: 50.8 MGD average

SUPPLY SOURCE: Effluent from as many as five City of Houston wastewater treatment plants as listed below.

IMPLEMENTATION DECADE: 2020 (Online date in 2018)

TOTAL STRATEGY COST: Direct Intake: \$53,857,800
(Costs rounded to nearest \$100) Combined Intake: \$66,840,500

UNIT WATER COST: Direct Intake: \$112 per ac-ft
Combined Intake: \$80 per ac-ft

WATER MANAGEMENT STRATEGY ANALYSIS DESCRIPTION

INTRODUCTION

In 2004, the City of Houston (COH) applied for a water right permit to utilize the effluent from 32 wastewater treatment plants (WWTPs) in the greater-Houston area. This permit, number 5827, allows for the use of 580,923 ac-ft of water at various locations around Houston assuming several criteria are met:

- 50% of the permitted volume is to be dedicated to bay and estuary inflows and is to be retained in the channels for discharge to Galveston Bay,
- Permitted discharge and diversion rates at WWTP outfall locations and diversion points are maintained, and
- Instream flow targets are met for the diversion of any water from the bayous.

Of the potential diversion points associated with this permit, the Southwest WWTP (SWWWTP) provides a unique opportunity to provide supply outside of the immediate COH service area by way of a right-of-way owned by CenterPoint Energy that runs from the vicinity of the SWWWTP south to a point in the area of McHard Road and Farm to Market 521. This terminus is also near the GCWA American Canal which provides water to customers in Brazoria and Galveston Counties. Please see *Figure 1* for an overview of these locations.

The SWWWTP is identified in Permit 5827 as both a source of effluent and a diversion point for use of treated water discharged upstream and conveyed through the bed and banks of Brays Bayou. Four additional WWTPs (Beltway, Keegans Bayou, Upper Brays, and WCID 111 WWTPs) lie upstream of the SWWWTP and their effluent is made available at the SWWWTP through Permit 5827. For that reason and for the opportunity presented by the existing CenterPoint corridor, the SWWWTP presents a prime opportunity for water supply development for GCWA's long-term water needs.

¹ This memorandum was prepared using information from Long Range Water Supply Study prepared by Freese and Nichols, Inc.

ANALYSIS

The potential supply available from the SWWWTP is limited by a number of different factors including:

- Actual discharge from the SWWWTP,
- Discharge rate of upstream WWTPs as varying over the course of the planning horizon,
- Consideration for bay and estuary inflows as stipulated by WR 5827,
- The instantaneous diversion rate as specified by WR 5827 and infrastructure in place to capture flows,
- Instream flow requirements as specified by WR 5827, and
- Basin hydrology.

In order to evaluate these factors and their impacts on the options presented above, a model was developed based on existing data sources in order to predict availability over time. Plant discharge records from the SWWWTP were reviewed to determine the potential yield that could be diverted directly from the plant. This supply would be limited by the overall terms of the permit related to bay and estuary inflows but not the instream flow requirements associated with diversions from Brays Bayou.

Naturalized flows from the Texas Commission on Environmental Quality (TCEQ) San Jacinto Basin Water Availability Model (WAM) were extracted to provide a basis for natural stream flows on a monthly basis for a historic period from January 1940 through December 1996. These flows represent naturalized conditions without diversions and discharges made following development of the basin. Daily streamflow data was investigated as a basis with which to disaggregate these monthly flow values into daily flow records. The Southwest WWTP diversion point, was found to have nearby sources of daily streamflow records that provided an adequate data set for assessment.

Flows from WWTPs associated with WR 5827 were identified for the year 2010 using information from Environmental Protection Agency (EPA) Discharge Monitoring Report (DMR) data. These discharges were compared against the discharges permitted in WR 5827 to determine the remaining capacity remaining in each plant. The COH population for the decades from 2010 through 2070 were used to scale the total wastewater flow from these WWTPs over time and the total increase in flow was apportioned to the individual WWTPs based on their remaining capacity in 2010. In that way, plants with larger shares of the remaining WWTP capacity were assumed to bear more of the burden as wastewater flows increased over time. These discharges for plants upstream of a diversion point could be added to the naturalized flows identified above to represent actual flow in the channels.

Finally, diversions were assumed to be limited by a number of factors including the maximum diversion rate at the identified diversion point, a limit of 50 percent of the upstream diversions to protect bay and estuary inflows, and the instream flow limits associated with each diversion point. Diversions of effluent from upstream were limited in such a way that diversions could not cause the downstream instream flow targets to not be met on any given day.

Output from the model provided the potential yield that could be developed from two scenarios. One alternative diverted effluent directly from the SWWWTP and was not subject to instream flow requirements associated with the bed and banks transfer of Permit 5827. The other alternative utilized a combined intake configuration that would divert flow from Brays Bayou when those diversions were allowed under permit and revert to direct diversions from the SWWWTP when conditions prevented the use of this water. These options were identified as the Direct and Combined Intake Alternatives, respectively.

Proposed pump station and pipeline configurations were developed in order to provide for adequate capacity to convey flows from the SWWWTP to the GCWA canal system. To fulfill the Direct diversion scenario, a 35 million gallons per day (MGD) pump station was recommended along with approximately 52,000 feet (9.85 miles) miles of 42-inch pipeline to provide for delivery of an average 30.1 MGD to GCWA. The Combined alternative would be accomplished with a 60 MGD pump station conveying an average of 50.8 MGD through a 48-inch pipeline of the same length. Approximately 39,000 feet of this corridor would be developed through the identified CenterPoint corridor. As part of the preliminary

investigation for this strategy, coordination as performed with CenterPoint to determine the extent of design and construction consideration, development costs, and annual fees would be associated with such a project. These costs were then factored into annual operation and maintenance (O&M) costs for the project. Project costs for each option are shown below in *Tables 1* (Direct alternative) and *2* (Combined alternative).

Costs are also included for improvements to the Thomas Mackey Water Treatment Plant to add ultra-violet disinfection to the treatment process. This is provided based on preliminary conversations with TCEQ related to the use of reclaimed water in the GCWA canal system upstream of the plant.

WATER USER GROUP APPLICATION

GCWA serves several municipal, industrial and agricultural customers in Brazoria, Galveston, and Fort Bend Counties. Although supply improvements benefit the entire system, overall, this strategy may potentially provide supply directly to the following WUGs:

- Brazoria County Municipal
 - Pearland
- Galveston County Industrial
 - Industrial Pump Station Manufacturing customers
 - Direct canal Manufacturing customers
 - Steam Electric Power
- Galveston County Municipal (by way of Thomas Mackey Water Treatment Plant)
 - Bacliff MUD
 - Bayou Vista
 - Clear Lake Shores
 - Galveston County WCID #12
 - Hitchcock
 - Kemah
 - La Marque
 - League City
 - San Leon MUD
 - Santa Fe
 - Texas City
 - Tiki Island
 - Galveston County Other

Development of the project will require amendments to contracts with each municipal and industrial customer associated with the system. This may add an additional 12 to 24 months of time to project development in order to allow for this.

**Table 1
Reclaimed Water from COH - Direct Alternative Cost Estimate**

OPINION OF PROBABLE CONSTRUCTION COST						December 14, 2014
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT COST SUMMARY						
1	CONSTRUCTION (CAPITAL) COST	1	LS	\$32,507,000	\$32,507,000	
2	ENGINEERING, FINANCIAL, AND LEGAL SERVICES AND CONTINGENCIES	1	LS	\$10,251,350	\$10,251,350	
3	LAND AND EASEMENTS	1	LS	\$4,715,000	\$4,715,000	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	\$4,715,000	\$4,715,000	
5	INTEREST DURING CONSTRUCTION	1	LS	\$1,669,474	\$1,669,474	
PROJECT COST					\$53,857,824	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2010	2020	2030	2040	2050	2060
1	DEBT SERVICE	\$0	\$4,506,787	\$4,506,787	\$0	\$0	\$0
2	OPERATION AND MAINTENANCE (O&M)	\$0	\$1,460,920	\$1,460,920	\$1,460,920	\$1,460,920	\$1,460,920
3	PUMPING ENERGY COSTS	\$0	\$500,082	\$500,082	\$500,082	\$500,082	\$500,082
4	PURCHASE COST OF WATER	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL ANNUAL COST		\$0	\$6,467,789	\$6,467,789	\$1,961,002	\$1,961,002	\$1,961,002

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2010	2020	2030	2040	2050	2060
1	ANNUAL COST	\$0	\$6,467,789	\$6,467,789	\$1,961,002	\$1,961,002	\$1,961,002
2	YIELD	-	33,712	33,712	33,712	33,712	33,712
3	UNIT COST	\$0	\$192	\$192	\$58	\$58	\$58
TOTAL UNIT COST							\$112

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	\$4,348,000	\$4,348,000
2	PIPELINES	1	LS	\$22,522,000	\$22,522,000
3	WATER TREATMENT PLANTS	1	LS	\$5,637,000	\$5,637,000
PROJECT COST					\$32,507,000

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	\$4,348,000	\$108,700
2	PIPELINES	1.0	%	\$22,522,000	\$225,220
3	WATER TREATMENT PLANTS	1.0	LS	\$1,127,000	\$1,127,000
ANNUAL OPERATION AND MAINTENANCE COST					\$1,460,920

**Table 2
Reclaimed Water from COH - Combined Alternative Cost Estimate**

OPINION OF PROBABLE CONSTRUCTION COST						December 14, 2014
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL	
PROJECT COST SUMMARY						
1	CONSTRUCTION (CAPITAL) COST	1	LS	\$41,193,000	\$41,193,000	
2	ENGINEERING, FINANCIAL, AND LEGAL SERVICES AND CONTINGENCIES	1	LS	\$13,155,150	\$13,155,150	
3	LAND AND EASEMENTS	1	LS	\$5,210,000	\$5,210,000	
4	ENVIRONMENTAL - STUDIES AND MITIGATION	1	LS	\$5,210,000	\$5,210,000	
5	INTEREST DURING CONSTRUCTION	1	LS	\$2,071,894	\$2,071,894	
PROJECT COST					\$66,840,044	

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2010	2020	2030	2040	2050	2060
1	DEBT SERVICE	\$0	\$5,593,130	\$5,593,130	\$0	\$0	\$0
2	OPERATION AND MAINTENANCE (O&M)	\$0	\$1,637,180	\$1,637,180	\$1,637,180	\$1,637,180	\$1,637,180
3	PUMPING ENERGY COSTS	\$0	\$681,871	\$681,871	\$681,871	\$681,871	\$681,871
4	PURCHASE COST OF WATER	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL ANNUAL COST		\$0	\$7,912,181	\$7,912,181	\$2,319,051	\$2,319,051	\$2,319,051

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		2010	2020	2030	2040	2050	2060
1	ANNUAL COST	\$0	\$7,912,181	\$7,912,181	\$2,319,051	\$2,319,051	\$2,319,051
2	YIELD	-	56,896	56,896	56,896	56,896	56,896
3	UNIT COST	\$0	\$139	\$139	\$41	\$41	\$41
TOTAL UNIT COST							\$80

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	\$10,308,000	\$10,308,000
2	PIPELINES	1	LS	\$25,248,000	\$25,248,000
3	WATER TREATMENT PLANTS	1	LS	\$5,637,000	\$5,637,000
PROJECT COST					\$41,193,000

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	\$10,308,000	\$257,700
2	PIPELINES	1.0	%	\$25,248,000	\$252,480
3	WATER TREATMENT PLANTS	1.0	LS	\$1,127,000	\$1,127,000
ANNUAL OPERATION AND MAINTENANCE COST					\$1,637,180

ISSUES AND CONSIDERATIONS

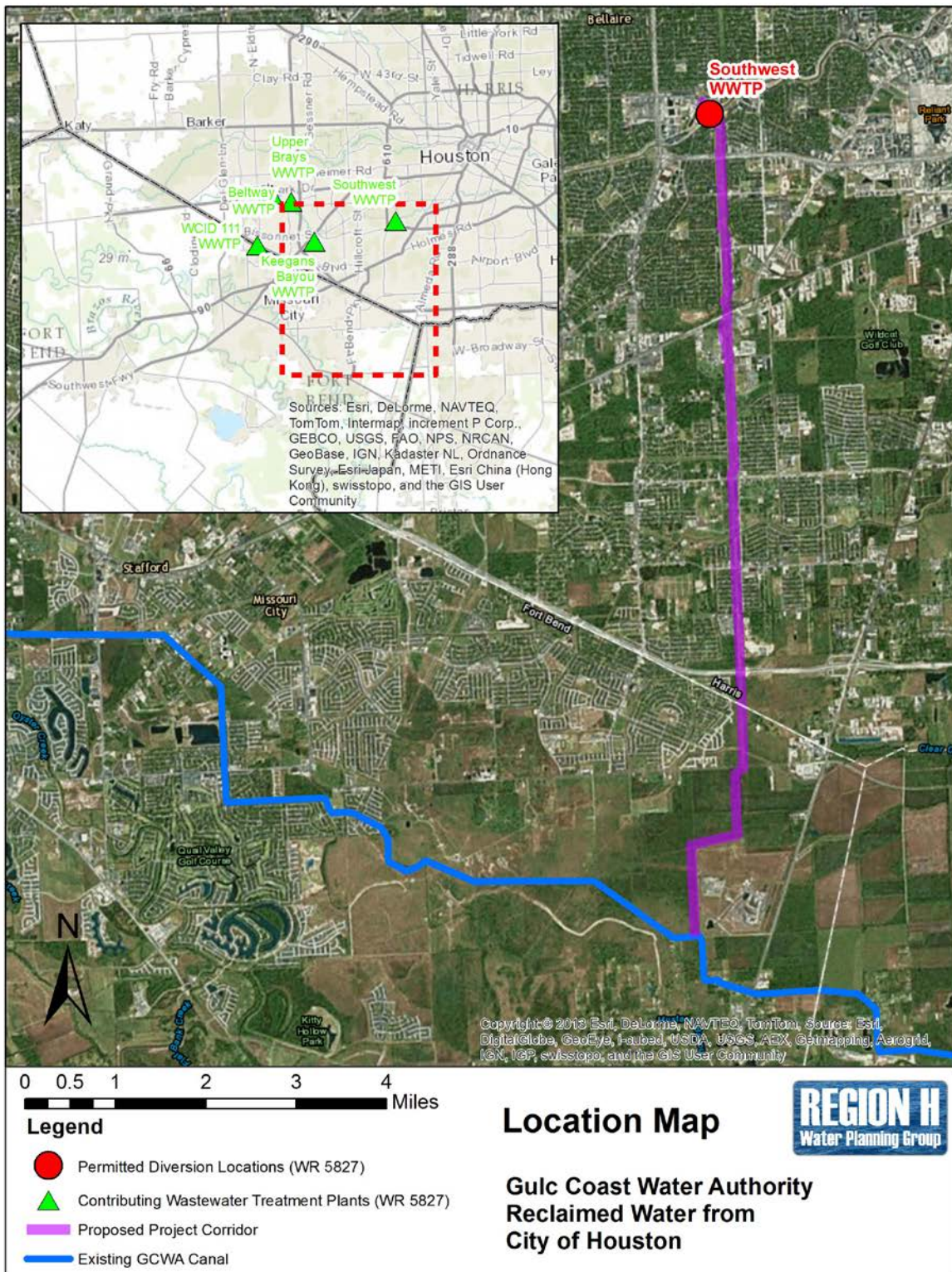
A preliminary environmental review of the project was conducted to identify possible obstacles to project development. Based on a review of the United States Fish and Wildlife Service (USFWS) Online Endangered Species list, five species may be present in the vicinity of the project area. These include the whooping crane (*Grus americana*), Texas prairie dawn-flower (*Hymenoxys texana*), West Indian Manatee (*Trichechus manatus*), Least tern (*Sterna antillarum*), and Piping Plover (*Charadrius melodus*). Care would be required in development of the project to protect these resources during construction and operation.

Three water bodies (Brays Bayou, Sims Bayou, and Clear Creek) were identified as waters of the United States (US) and would be regulated by the US Army Corps of Engineers (USACE) and this determination may possibly apply to others, smaller water sources within the scope of the project as well as numerous wetlands identified in the proposed corridor. Construction of an intake in Brays Bayou as well as the various crossings identified may be covered under Nationwide Permit (NWP) 12. A determination will be required in order to assess the need for a pre-construction notification (PCN) for activities related to the conveyance system. Furthermore, the named streams may also be State owned riverbeds, which may also require an easement from the General Land Office (GLO) prior to proceeding with construction.

Projects sponsored by public entities that affect a cumulative area greater than five acres or that disturb more than 5,000 cubic yards require advance consultation with the THC according to Section 191.0525 (d) of the Antiquities Code of Texas. Because the proposed project may exceed these thresholds, coordination with THC is likely required.

Proposed project activities at the project site would all occur within Floodways and Zone X and Zone AE of existing floodplains (Flood Insurance Rate Map {FIRM} 48201C1005L and 48201C0865L). Activities within these areas may require a permit from or coordination with the local floodplain administrator and must comply with applicable FEMA-approved state or local floodway and floodplain requirements.

Figure 1
Location Map



Attachment K:

Amended Table 4C-1: WWP-Level Project Costs

Region H
Table 4C-1: WWP-Level Project Cost

WMS	Total Capital Cost	Total Annual Costs (\$/year)						Source	Notes
		2010	2020	2030	2040	2050	2060		
Contractual Strategies									
BRA to Brazosport Water Authority Contract - Allens Creek	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
BRA to GCWA Contract - Allens Creek	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
BRA to GCWA Contract - Brazos Main Stem System	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
BRA to GCWA Contract - Fort Bend OCR	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
BRA to GCWA Contract - SysOps Supply	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
BRA to NRG Contract - Fort Bend OCR	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
BRA to Richmond-Rosenberg Contract - Allens Creek	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
BRA to Richmond-Rosenberg Contract - Fort Bend OCR	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
BRA to Sugar Land - Allens Creek	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
BRA to Sugar Land - Fort Bend OCR	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
BRA to Sugar Land - SysOps Supply	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
COH to Baytown Area Water Authority - Lake Livingston	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
COH to BRA Contract - Allens Creek	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
COH to CHCRWA Contract - Lake Houston	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
COH to CHCRWA Contract - Lake Livingston	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
COH to City of Pasadena Contract - Lake Livingston	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
COH to GCWA Contract	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2016 RWP analysis	Costs listed under GCWA Reclaimed Water from COH WMS.
COH to NFBWA Contract - Lake Livingston	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
COH to NHCWRWA Contract - Houston Indirect Reuse	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
COH to NHCWRWA Contract - Lake Houston	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
COH to NHCWRWA Contract - Lake Livingston	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
COH to North Channel Water Authority Contract - Lake Livingston	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
COH to SJRA Contract - Lake Conroe	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
COH to WHCRWA Contract - Lake Livingston	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
GCWA to City of Galveston Contract - Brazos Main Stem System	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
GCWA to City of Galveston Contract - Brazos Run-of-River	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
GCWA to City of Galveston Contract - San Jacinto-Brazos Run-of-River	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
GCWA to Fort Bend County WCID #2 Contract - SysOps Supply	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
GCWA to Galveston County WCID #1 Contract - Allens Creek	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
GCWA to Galveston County WCID #1 Contract - Brazos Main Stem System	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
GCWA to Galveston County WCID #1 Contract - Brazos Run-of-River	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
GCWA to Galveston County WCID #1 Contract - San Jacinto-Brazos Run-of-River	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
GCWA to Missouri City Contract - Allens Creek	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
GCWA to Missouri City Contract - Fort Bend OCR	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
GCWA to Missouri City Contract - SysOps Supply	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
SJRA to COH Contract - Lake Houston	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H 2011 RWP	No cost as infrastructure reflected under other strategies. Raw water cost not assumed.
TRA to Houston Transfer	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H RWP Tech Memo	Strategy cost associated with Luce Bayou
TRA to SJRA Transfer	\$302,781,597	\$0	\$0	\$0	\$37,101,862	\$37,101,862	\$10,703,983	Region H RWP Tech Memo	Cost associated with development of conveyance infrastructure.
Groundwater Reduction Plans									
CHCRWA GRP	\$0	\$0	\$0	\$0	\$0	\$0	\$0	No data available	No data available
COH GRP	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Region H RWP Tech Memo - Treatment	No cost as volume and treatment / distribution is associated with other strategies.
Fort Bend WCID #2 GRP	\$24,828,857	\$0	\$1,310,164	\$2,312,320	\$2,387,576	\$1,768,681	\$1,149,785	FBC WCID 2 GRP	Annual O&M includes electric cost
NFBWA GRP	\$0	\$0	\$0	\$0	\$0	\$0	\$0	NFBWA GRP	No cost as volume and treatment / distribution is associated with other strategies.
NHCWRWA GRP	\$0	\$0	\$0	\$0	\$0	\$0	\$0	NHCWRWA GRP	No cost as volume and treatment / distribution is associated with other strategies.
Missouri City GRP	\$92,070,990	\$0	\$5,750,635	\$10,328,943	\$5,859,820	\$2,301,775	\$2,301,775	Missouri City GRP	Annual O&M cost assumed as 2.5% of project capital cost. No annual energy cost assumed due to limited information.
Richmond Rosenberg GRP (WFB SWTP)	\$117,220,150	\$0	\$6,652,597	\$13,441,309	\$16,083,787	\$13,471,435	\$17,440,442	West FBC Regional SWTP PER	
SJRA WRAP	\$900,000,000	\$0	\$42,630,132	\$62,823,352	\$52,130,132	\$52,142,749	\$34,705,838	SJRA WRAP Part 2	Annual costs beyond debt service estimated from SJRA WRAP Part II. O&M costs include electricity.
Sugar Land GRP	\$161,360,049	\$0	\$17,561,104	\$17,561,104	\$3,493,000	\$3,493,000	\$3,493,000	Sugar Land CIP, Sugar Land GRP	Assuming O&M constant after 2014. No annual energy cost assumed due to limited information.
WHCRWA GRP	\$0	\$0	\$0	\$0	\$0	\$0	\$0	WHCRWA Summary	No cost as volume and treatment / distribution is associated with other strategies.
Reservoir Strategies									
GCWA Reclaimed Water from COH	\$66,840,044	\$0	\$7,912,181	\$7,912,181	\$2,319,051	\$2,319,051	\$2,319,051	Region H 2016 RWP analysis	
Allens Creek Reservoir	\$222,752,400	\$0	\$18,706,144	\$18,706,144	\$18,706,144	\$18,706,144	\$3,901,678	Region H RWP Tech Memo	
Brazoria Off-Channel Reservoir	\$173,898,602	\$0	\$0	\$0	\$0	\$0	\$28,951,707		
Dow Off-Channel Reservoir and Pump Station Expansion	\$226,837,000	\$0	\$20,306,000	\$20,306,000	\$20,306,000	\$14,405,000	\$14,405,000	Dow and HDR, Inc.	
Fort Bend Off-Channel Reservoir	\$202,514,788	\$0	\$0	\$0	\$0	\$43,566,686	\$43,566,686		
GCWA Off-Channel Reservoir	\$197,448,012	\$0	\$0	\$32,678,970	\$32,678,970	\$32,678,970	\$32,678,970	Region H 2011 RWP	
Reuse Strategies									
Wastewater Reuse for Industry	\$332,051,761	\$0	\$0	\$0	\$0	\$0	\$60,010,614	Region H RWP Tech Memo	
Permit / Other Strategies									
BRA System Operations Permit	\$0	\$0	\$0	\$0	\$0	\$0	\$0	HDR, Inc.	
Freeport Desalination	\$255,699,000	\$0	\$0	\$0	\$28,685,479	\$28,685,479	\$6,392,475	Region H 2011 RWP	Assuming O&M as 2.5 percent of capital cost. No annual energy cost assumed due to limited information.
Houston Bayous Permit	\$20,956,000	\$0	\$1,827,040	\$1,827,040	\$0	\$0	\$0	Region H RWP Tech Memo	
Infrastructure Strategies									
BWA Brackish Groundwater	\$30,570,395	\$0	\$5,735,790	\$5,735,790	\$3,177,681	\$3,177,681	\$3,177,681	CDM Smith	Based on anticipated operation.
BWA Plant Expansion	\$14,359,419	\$0	\$3,274,279	\$3,274,279	\$2,072,693	\$2,072,693	\$2,072,693	SDM Smith	Based on peak capacity.
Brazos Saltwater Barrier	\$44,470,739	\$0	\$4,988,930	\$4,988,930	\$1,111,768	\$1,111,768	\$1,111,768	Region H RWP Tech Memo	Annual O&M cost assumed as 2.5% of project capital cost. No annual energy cost assumed due to limited information.
CHCRWA Transmission	\$0	\$0	\$0	\$0	\$0	\$0	\$0	No data available	No data available
CHCRWA Internal Distribution	\$0	\$0	\$0	\$0	\$0	\$0	\$0	No data available	No data available
CLCND West Chambers County System	\$20,380,000	\$0	\$1,980,621	\$1,980,621	\$203,800	\$203,800	\$203,800	CLCND Funding App	Annual O&M cost assumed as 1.0% of project capital cost. No annual energy cost assumed due to limited information.
COH Treatment Expansion	\$2,045,672,161	\$7,670,034	\$121,707,226	\$168,015,257	\$109,009,300	\$89,583,305	\$89,598,340	Estimated using Reg H procedures	Energy costs not assumed due to limited data.
COH Distribution Expansion	\$261,040,000	\$0	\$22,293,166	\$25,369,057	\$5,369,791	\$2,610,400	\$2,610,400	No data available	Not enough data available to estimate costs at this time.
Huntsville WTP	\$61,023,906	\$10,120,710	\$10,120,710	\$4,800,368	\$4,800,368	\$4,800,368	\$4,800,368	Standard Region H assumptions	Annual O&M cost assumed as 2.5% of project capital cost. Assumes 10 MGD plant and pump station capacity.
Luce Bayou	\$253,916,914	\$0	\$31,798,394	\$31,798,394	\$9,660,760	\$9,660,760	\$9,660,760	Luce Bayou Alternatives Analysis	O&M and electric scaled using CCI
NFBWA 2025 Shared Transmission (w/ WHCRWA)	\$213,000,000	\$0	\$1,220,584	\$13,600,791	\$17,349,727	\$4,969,520	\$0	NFBWA Table from BGE	O&M costs not included as they include part of COH infrastructure O&M. No annual energy cost assumed due to limited information.
NFBWA Internal Distribution	\$225,000,000	\$6,451,657	\$7,759,425	\$10,549,331	\$10,113,409	\$1,743,692	\$1,743,692	NFBWA Table from BGE	O&M costs not included as they include part of COH infrastructure O&M. No annual energy cost assumed due to limited information.
NHCWRWA Internal 2010 Distribution	\$153,149,640	\$14,883,780	\$14,883,780	\$1,531,496	\$1,531,496	\$1,531,496	\$1,531,496		
NHCWRWA Internal 2020 Distribution	\$345,292,192	\$0	\$33,557,069	\$33,557,069	\$3,452,922	\$3,452,922	\$3,452,922		
NHCWRWA Internal 2030 Distribution	\$37,439,584	\$0	\$0	\$3,638,549	\$3,638,549	\$374,396	\$374,396		
NHCWRWA Transmission 2010	\$80,690,624	\$7,841,883	\$7,841,883	\$806,906	\$806,906	\$806,906	\$806,906		
NHCWRWA Transmission 2020	\$172,558,512	\$0	\$16,770,023	\$16,770,023	\$1,725,585	\$1,725,585	\$1,725,585		
NHCWRWA Transmission 2030	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
WHCRWA Internal Distribution	\$552,472,000	\$13,149,945	\$46,238,371	\$41,894,891	\$12,211,165	\$5,524,720	\$5,524,720	WHCRWA Summary	Annual O&M cost assumed as 1.0% of project capital cost. No annual energy cost assumed due to limited information.
WHCRWA 2020 Shared Transmission (w/ NFBWA)	\$290,084,193	\$4,384,014	\$28,191,704	\$24,258,792	\$2,900,842	\$2,900,842	\$2,900,842	WHCRWA Summary	Annual O&M cost assumed as 1.0% of project capital cost. No annual energy cost assumed due to limited information.
Alternative Strategies									

Attachment L:

Amended Table 4C-2: WUG-Level Project Costs

Region H
Table 4C-2: WUG Level Project Costs

WUG Name	WUG Basin	WUG County	Annual Costs for Municipal Conservation						Annual Costs for Irrigation Conservation						Project-Specific Annual Costs						Total Annual Cost							
			2010	2020	2030	2040	2050	2060	2010	2020	2030	2040	2050	2060	2010	2020	2030	2040	2050	2060	2010	2020	2030	2040	2050	2060		
HUNTSVILLE	TRINITY	WALKER	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
HUNTSVILLE	SAN JACINTO	WALKER	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	SAN JACINTO-BRAZOS	BRAZORIA	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414	
IRVING	BRAZOS	AUSTIN	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	BRAZOS-COLORADO	AUSTIN	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	SAN JACINTO-BRAZOS	BRAZORIA	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	BRAZOS	BRAZORIA	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
IRVING	BRAZOS-COLORADO	BRAZORIA	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
IRVING	NECHES-TRINITY	CHAMBERS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	TRINITY	CHAMBERS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	TRINITY-SAN JACINTO	CHAMBERS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	SAN JACINTO	FORT BEND	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	SAN JACINTO	FORT BEND	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	BRAZOS	FORT BEND	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	BRAZOS-COLORADO	FORT BEND	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	SAN JACINTO-BRAZOS	GALVESTON	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	TRINITY-SAN JACINTO	HARRIS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	SAN JACINTO	HARRIS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	NECHES-TRINITY	LIBERTY	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	TRINITY	LIBERTY	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	TRINITY-SAN JACINTO	LIBERTY	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	NECHES-TRINITY	LIBERTY	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	TRINITY	LIBERTY	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	TRINITY-SAN JACINTO	LIBERTY	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	SAN JACINTO	HARRIS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	TRINITY	MONTGOMERY	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	TRINITY	WALKER	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	SAN JACINTO	WALKER	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	TRINITY	WALKER	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	TRINITY	WALKER	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	TRINITY	WALKER	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	SAN JACINTO	WALKER	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
IRVING	TRINITY	WALKER	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
JACINTO CITY	SAN JACINTO	HARRIS	\$0	\$12,141	\$18,536	\$20,661	\$21,726	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
JACINTO CITY	SAN JACINTO-BRAZOS	GALVESTON	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
JAMAICA BEACH	SAN JACINTO	HARRIS	\$34,152	\$45,521	\$44,121	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
JERRYVILLE	SAN JACINTO	HARRIS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
JERRYVILLE	TRINITY	LEON	\$2,020	\$2,222	\$2,222	\$2,020	\$2,222	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
JERRYVILLE	LEON	LEON	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
JONES CREEK	BRAZOS-COLORADO	BRAZORIA	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
KATY	SAN JACINTO	FORT BEND	\$3,864	\$5,112	\$6,020	\$8,094	\$10,211	\$12,264	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
KATY	HARRIS	WALKER	\$4,244	\$5,584	\$6,716	\$9,156	\$11,436	\$14,096	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
KATY	SAN JACINTO	WALKER	\$3,664	\$5,336	\$7,456	\$9,784	\$12,352	\$15,544	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
KENNESAW	SAN JACINTO-BRAZOS	GALVESTON	\$3,036	\$3,036	\$3,036	\$4,048	\$4,048	\$4,048	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
KENNESAW	TRINITY	LIBERTY	\$0	\$1,212	\$1,414	\$1,616	\$1,818	\$2,020	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
LA PORTE	SAN JACINTO-BRAZOS	GALVESTON	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
LA PORTE	HARRIS	WALKER	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
LA PORTE	SAN JACINTO	HARRIS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
LAKE JACKSON	SAN JACINTO-BRAZOS	BRAZORIA	\$18,836	\$17,152	\$12,944	\$12,064	\$14,064	\$15,232	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
LAKE JACKSON	TRINITY	LIBERTY	\$0	\$1,496	\$1,704	\$1,912	\$2,120	\$2,328	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
LAKE JACKSON	TRINITY	LEON	\$0	\$11,504	\$12,208	\$13,632	\$14,960	\$16,400	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
LAKE JACKSON	SAN JACINTO	HARRIS	\$1,728	\$1,848	\$1,968	\$2,088	\$2,208	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
LAKE JACKSON	SAN JACINTO-BRAZOS	WALKER	\$2,768	\$3,024	\$3,624	\$4,024	\$4,424	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
LAKE JACKSON	TRINITY	LIBERTY	\$0	\$4,912	\$5,408	\$5,904	\$6,400	\$6,896	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
LAKE JACKSON	SAN JACINTO	HARRIS	\$0	\$1,728	\$1,848	\$1,968	\$2,088	\$2,208	\$0	\$0	\$0	\$0																

Region H
Table 4C-2: WUG-Level Project Costs

Table with columns for WUG Name, WUG County, WUG-County- Basin, Pump Stations, Connection Costs, Treatment Plants, Wells, Other Capital Costs, Debt Service, Operations and Maintenance, and Energy. The table lists various projects across different WUGs and counties, detailing their associated costs from 2010 to 2050.

WUG Name	wug_basin	WUG County	Annual Costs for Municipal Conservation						Annual Costs for Irrigation Conservation						Project-Specific Annual Costs						Total Annual Cost						
			2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015	
MONTGOMERY COUNTY MUD #19	San Jacinto	Montgomery	\$6,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000							\$6,413	\$6,433	\$120,245	\$109,000	\$60,719	\$41,000	\$6,413	\$6,433	\$120,245	\$109,000	\$60,719	\$41,000	
MONTGOMERY COUNTY MUD #8	San Jacinto	Montgomery	\$15,500	\$30,215	\$24,569	\$26,613	\$25,692	\$26,520							\$1,004,778	\$1,004,778	\$481,689	\$481,689	\$481,689	\$481,689	\$1,004,778	\$1,004,778	\$481,689	\$481,689	\$481,689	\$481,689	
MONTGOMERY COUNTY MUD #9	San Jacinto	Montgomery	\$6,886	\$12,120	\$10,762	\$10,762	\$11,106	\$11,106							\$1,004,778	\$1,004,778	\$481,689	\$481,689	\$481,689	\$481,689	\$1,004,778	\$1,004,778	\$481,689	\$481,689	\$481,689	\$481,689	
MONTGOMERY COUNTY MUD #2	San Jacinto	Montgomery	\$6,262	\$6,262	\$6,262	\$6,262	\$6,262	\$6,262							\$43,076	\$43,076	\$83,303	\$84,432	\$77,462	\$80,762	\$43,076	\$43,076	\$83,303	\$84,432	\$77,462	\$80,762	
MONTGOMERY COUNTY MUD #3	San Jacinto	Montgomery	\$8,078	\$8,235	\$8,235	\$11,821	\$11,821	\$11,821							\$41,414	\$41,414	\$78,616	\$78,616	\$78,616	\$78,616	\$41,414	\$41,414	\$78,616	\$78,616	\$78,616	\$78,616	
MONTGOMERY COUNTY MUD #4	San Jacinto	Montgomery	\$18,038	\$18,038	\$17,727	\$17,416	\$17,416	\$17,416							\$81,381	\$151,841	\$154,913	\$232,575	\$221,523	\$113,527	\$81,381	\$151,841	\$154,913	\$232,575	\$221,523	\$113,527	
MONTGOMERY COUNTY MUD #1	San Jacinto	Brazos	\$9,300	\$9,641	\$10,574	\$12,129	\$13,995	\$14,483							\$41,217	\$81,271	\$96,550	\$109,178	\$136,497	\$113,647	\$41,217	\$81,271	\$96,550	\$109,178	\$136,497	\$113,647	
NASSAU BAY	San Jacinto	Brazos	\$0	\$0	\$0	\$0	\$0	\$0							\$0	\$0	\$0	\$0	\$0								
NEEDVILLE	San Jacinto	Fort Bend	\$0	\$0	\$0	\$0	\$0	\$0							\$0	\$0	\$0	\$0	\$0								
NEEDVILLE	San Jacinto	Brazos	\$0	\$0	\$0	\$0	\$0	\$0							\$0	\$0	\$0	\$0	\$0								
NEEDVILLE	San Jacinto	Montgomery	\$14,697	\$32,589	\$42,600	\$53,679	\$69,438	\$87,758							\$115,507	\$239,496	\$345,474	\$469,895	\$654,777	\$886,538	\$115,507	\$239,496	\$345,474	\$469,895	\$654,777	\$886,538	
NEW CANEY MUD	San Jacinto	Walker	\$0	\$0	\$0	\$0	\$0	\$0							\$0	\$0	\$0	\$0	\$0								
NEW WEAVERLY	San Jacinto	Walker	\$0	\$0	\$0	\$0	\$0	\$0							\$0	\$0	\$0	\$0	\$0								
NORMA	San Jacinto	Harris	\$1,301,062	\$1,526,796	\$1,710,960	\$1,910,122	\$1,949,512	\$1,896,978							\$1,301,062	\$5,399,275	\$28,000,874	\$28,000,874	\$44,733,069	\$44,733,069	\$1,301,062	\$5,399,275	\$28,000,874	\$28,000,874	\$44,733,069	\$44,733,069	
NORMANGE	Trinity	Trinity	\$0	\$1,414	\$1,414	\$1,414	\$1,414	\$1,414							\$0	\$0	\$0	\$0	\$0								
NORMANGE	Trinity	Trinity	\$0	\$0	\$0	\$0	\$0	\$0							\$0	\$0	\$0	\$0	\$0								
NORMANGE	Trinity	Madison	\$202	\$202	\$202	\$202	\$202	\$202							\$202	\$202	\$202	\$202	\$202								
NORTH BELT LID	San Jacinto	Harris	\$6,381	\$11,196	\$18,864	\$31,851	\$18,864	\$21,148							\$6,381	\$11,196	\$18,864	\$31,851	\$21,148								
NORTH GREEN MUD	San Jacinto	Harris	\$6,511	\$7,153	\$7,466	\$8,098	\$8,708	\$9,298							\$6,511	\$7,153	\$7,466	\$8,098	\$8,708								
NORTHWEST HARRIS COUNTY MUD #23	San Jacinto	Harris	\$10,865	\$13,573	\$16,172	\$18,660	\$21,459	\$23,947							\$64,385	\$130,531	\$202,060	\$274,762	\$333,106	\$382,574							
NORTHWEST PARK MUD	San Jacinto	Harris	\$39,162	\$46,221	\$49,221	\$48,369	\$44,963	\$43,963							\$207,646	\$246,676	\$241,956	\$238,707	\$249,612	\$258,612							
OAK RIDGE NORTH	San Jacinto	Montgomery	\$12,761	\$13,999	\$16,483	\$19,904	\$23,947	\$29,234							\$56,392	\$117,200	\$243,889	\$214,604	\$137,914	\$186,478							
OLD RIVER-WINFREE	Trinity	Chambers	\$3,762	\$4,042	\$4,354	\$4,665	\$4,976	\$5,287							\$65,191	\$301,396	\$283,454	\$126,319	\$134,289	\$145,620							
ONALASKA WSC	Trinity	Polk	\$0	\$0	\$0	\$0	\$0	\$0							\$0	\$0	\$0	\$0	\$0								
ONALASKA WSC	Trinity	Polk	\$0	\$0	\$0	\$0	\$0	\$0							\$0	\$0	\$0	\$0	\$0								
ONALASKA WSC	Trinity	Polk	\$0	\$0	\$0	\$0	\$0	\$0							\$0	\$0	\$0	\$0	\$0								
ONALASKA WSC	Trinity	Polk	\$0	\$0	\$0	\$0	\$0	\$0							\$0	\$0	\$0	\$0	\$0								
ORBIT SYSTEMS INC	San Jacinto	Brazos	\$0	\$9,997	\$9,641	\$10,574	\$11,818	\$13,062							\$0	\$13,940	\$58,707	\$88,027	\$80,027	\$96,896							
ORBIT SYSTEMS INC	San Jacinto	Brazos	\$0	\$0	\$0	\$0	\$0	\$0							\$0	\$0	\$0	\$0	\$0								
ORBIT SYSTEMS INC	San Jacinto	Brazos	\$0	\$0	\$0	\$0	\$0	\$0							\$0	\$0	\$0	\$0	\$0								
ORBIT SYSTEMS INC	San Jacinto	Brazos	\$0	\$0	\$0	\$0	\$0	\$0							\$0	\$0	\$0	\$0	\$0								
ORBIT SYSTEMS INC	San Jacinto	Brazos	\$0	\$0	\$0	\$0	\$0	\$0							\$0	\$0	\$0	\$0	\$0								
PANORAMA VILLAGE	San Jacinto	Montgomery	\$7,772	\$7,676	\$7,676	\$8,292	\$8,686	\$9,080							\$50,534	\$101,521	\$197,017	\$167,272	\$95,172	\$73,209							
PANORAMA VILLAGE	San Jacinto	Harris	\$3,434	\$3,232	\$3,232	\$3,232	\$3,000	\$3,000							\$69,689	\$96,030	\$147,012	\$119,414	\$113,008	\$113,008							
PASADENA	San Jacinto	Harris	\$715,862	\$235,278	\$253,257	\$272,214	\$292,662	\$181,666							\$715,862	\$290,938	\$358,362	\$347,540	\$340,878	\$383,882							
PASADENA	San Jacinto	Brazos	\$0	\$0	\$0	\$0	\$0	\$0							\$0	\$0	\$0	\$0	\$0								
PAYTON VILLAGE	San Jacinto	Montgomery	\$1,010	\$1,010	\$1,212	\$1,616	\$1,616	\$1,616							\$6,704	\$13,157	\$15,972	\$18,533	\$23,646	\$31,563							
PEARLAND	San Jacinto	Brazos	\$0	\$0	\$0	\$0	\$0	\$0							\$27,481,870	\$27,521,499	\$13,713,987	\$14,107,370	\$14,239,289	\$14,289,229	\$27,521,499	\$28,227,086	\$20,636,341	\$18,602,003	\$16,511,055	\$20,284,009	
PEARLAND	San Jacinto	Harris	\$1,004	\$3,634	\$4,499	\$4,499	\$4,499	\$4,499							\$399,160	\$403,264	\$279,018	\$279,018	\$279,018	\$279,018							
PECAN GROVE MUD #1	Brazos	Fort Bend	\$34,469	\$34,608	\$34,932	\$35,368	\$36,423	\$37,974							\$399,302	\$391,262	\$197,303	\$197,303	\$197,303	\$197,303							
PECAN GROVE MUD #1	Brazos	Fort Bend	\$0	\$0	\$0	\$0	\$0	\$0							\$0	\$0	\$0	\$0	\$0								
PEE ISLAND	San Jacinto	Brazos	\$0	\$1,616	\$2,000	\$2,424	\$2,828	\$3,310							\$0	\$12,624	\$24,796	\$31,768	\$42,605	\$56,689							
PINE TRAILS UTILITY	San Jacinto	Harris	\$11,416	\$18,660	\$19,904	\$21,148	\$22,392	\$23,636							\$0	\$69,811	\$86,172	\$92,460	\$83,504	\$89,135	\$76,336						
PIONEER POINT VILLAGE	San Jacinto	Harris	\$23,664	\$23,664	\$23,664	\$23,664	\$23,664	\$23,664							\$0	\$23,664	\$23,664	\$23,664	\$23,664	\$23,664							
PLANTATION MUD	San Jacinto	Fort Bend	\$10,574	\$10,263	\$9,262	\$8,261	\$7,260	\$6,259							\$0	\$10,574	\$10,263	\$9,262	\$8,261	\$7,260	\$6,259						
PLUM GROVE	San Jacinto	Liberty	\$0	\$2,000	\$2,222	\$2,444	\$2,666	\$3,000							\$0	\$15,000	\$27,272	\$33,015	\$33,015	\$33,015							
POINT AQUARIUS MUD	San Jacinto	San Jacinto	\$18,864	\$18,736	\$18,426	\$17,932	\$17,264	\$16,520							\$67,780	\$142,448	\$249,361	\$376,642	\$540,929	\$719,046							
POINT BLANK	Trinity	Trinity	\$0	\$1,212	\$1,212	\$1,212	\$1,212	\$1,212							\$0	\$1,212	\$1,212	\$1,212	\$1,212	\$1,212							
PORTER WISC	San Jacinto	Montgomery	\$26,169	\$26,181	\$26,423	\$26,168	\$24,730	\$24,730							\$148,517	\$323,223	\$446,418	\$575,510	\$690,216	\$815,570							
PRAIRIE VIEW	San Jacinto	Walker	\$0	\$2,488	\$2,788	\$3,110	\$3,454	\$3,820							\$0	\$2,488	\$2,788	\$3,110	\$3,454	\$3,820							
PRAIRIE VIEW	San Jacinto	Walker	\$0	\$2,488	\$2,788	\$3,110	\$3,454	\$3,820								\$0	\$2,488	\$2,788	\$3,110	\$3,454	\$3,820						
RAYFORD ROAD MUD	San Jacinto	Montgomery	\$39,088	\$39,885	\$42,872	\$46,872	\$50,872	\$54,872							\$18,372	\$343,149	\$606,522	\$803,911	\$1,006,441	\$1,208,970							
RICHMOND	San Jacinto	Fort Bend	\$0	\$0	\$0	\$0	\$0	\$0							\$0	\$0	\$0	\$0	\$0								
RICHMOND	San Jacinto	Brazos	\$12,449	\$13,062	\$13,694	\$14,346	\$14,916	\$15,498							\$44,946	\$118,746	\$195,479	\$343,698	\$505,299	\$687,252							
RIVER PLANTATION MUD	San Jacinto	Montgomery	\$15,820	\$14,928	\$14,008	\$13,008	\$12,008	\$11,008							\$19,429	\$191,981	\$219,981	\$219,981	\$219,981	\$219,981							
REVERE WISC	San Jacinto	Trinity	\$0	\$3,421	\$4,043	\$4,665	\$5,287	\$5,909							\$0	\$14,420	\$27,358	\$44,589	\$60,363	\$80,549							
RIVERSIDE WISC	San Jacinto	Walker	\$0	\$1,548	\$1,548	\$1,548	\$1,548	\$1,548							\$0	\$1,548	\$1,548	\$1,548	\$1,548	\$1,548							
ROLLING FORD LID	San Jacinto	Harris	\$7,878	\$8,088	\$8,484	\$9,000	\$9,484	\$9,968							\$51,104	\$109,877	\$183,118	\$253,235	\$346,472	\$469,888							

Attachment M:

Amended Appendix 4E: Environmental Flows Modeling for New WMS

Section 1- Introduction

The *Environmental Flows Study* completed during the 1st biennium of the 2011 Regional Water plan (RWP) planning process revealed impacts to volume, timing, and location of bay and estuary inflows caused by water management strategy (WMS) implementation. Model results indicated that implementation of individual WMS would not have a substantial impact on net bay and estuary (B&E) inflow; however, the combined effect of multiple WMS resulted in some impacts to B&E flows in terms of volume.

The 1st biennium study examined strategies recommended by the 2006 Region H RWP and the 2007 State water Plan (SWP); the 2011 RWP contains 37 WMS strategies which were not included in the 2006 RWP. As such, the Region H Regional Planning Group elected to re-run the water availability models from the 1st biennium *Environmental Flows Study* to test the environmental impacts of new WMS on environmental flows. In order to determine the effects of WMS implementation, WAM models were developed for each WMS for any basin in which the WMS was active. Strategies were modeled in a manner similar to that used in the *Environmental Flows Study*, with WMS simulated using the Water Rights Analysis Package (WRAP) software package. Strategies were modeled on an individual basis and results were examined to determine attainment of B&E inflow targets and impacts of individual WMS to instream flows.

Section 2- Model Development

The Water Rights Analysis Package (WRAP [Wurbs 2007]) was developed as a tool for modeling water rights allocations and river and reservoir operations on a monthly time-step. In addition to this basic objective, the nature of the application allows for the modeling of various environmental conditions, especially the determination of instream flows and bay and estuary (B&E) flows as a result of operations within the basin. This process is made simpler by the constant maintenance of Water Availability Models (WAMs) for each basin in the State of Texas by the Texas Commission on Environmental Quality (TCEQ). These WAMs can then be modified as necessary and executed by WRAP to determine impacts from various changes. Currently, TCEQ maintains two versions of the WAMs for permitting purposes: 1) a full-diversion model with no return flows, known as the WAM Run 3, and 2) a current conditions model based on historical water use, known as the WAM Run 8. The period of record for both models contains the critical drought period for each basin.

2.1 Base Model

Models carried out for this study were based on the Scenario D model from the first biennium *Environmental Flows Study*. In order to develop the original D₀ base model in the 1st biennium study, changes were made to the TCEQ Run 3 model. Because the Run 3 model includes almost no return flows, Constant Inflow (CI) and Return Flow (RF) cards for each basin were imported from the Run 8 model if present in the Run 8. CI cards imported from Run 8 reflect flows from a current conditions diversion level. However, since the majority of CI cards represent groundwater inputs to the system, no adjustment was required. The exception was the San Jacinto Basin, which includes considerable surface water inflows. For the San Jacinto model, CI cards were scaled up to represent Full Authorized Diversion conditions.

In order to create a Full Authorized Diversions With Return Flows model, a program was developed to extract Run 8 return flows and insert them into the Run 3 model. The program scanned the Run 8 and Run 3 models and, for each model, developed a table of several parameters included on the WR (Water Right) cards. These included the control point, use, priority number, return flow parameters (Run 8 only), and water right identifier. The two tables were then compared and, for diversions with matching parameters, the Run 8 return flow data was copied into the corresponding Run 3 diversion. Non-matching records, or records for which no change was necessary, were not altered.

Year 2060 SV/SA (Storage Volume/Surface Area) records (if available) giving surface area and volume relationships for reservoirs replaced the existing Year 2000 SV/SA records to account for the loss of reservoir storage volume from the effects of sedimentation over time. For the Neches Trinity, Trinity-San Jacinto, and San Jacinto models, no other changes required consideration. Two of the basins, the Trinity and the Brazos/San Jacinto-Brazos, required modification due to the presence of WMS in portions of the basins located in areas outside of Region H.

For the Trinity model, upstream strategies from Region C were included. Sections of code related to these strategies were copied from a file representing Region C's WMS for the TWDB Streamflow Assessment Study found in the 2007 SWP. This file was provided by TWDB. In addition to altering the Strategy D DAT file, changes were also made to the DIS file due to the addition of several control points. For the Brazos/San Jacinto-Brazos model, changes were made based on Region G's 2001 WMS (Brazos G Regional Water Planning Group 2001) as modeled in the same TWDB study. As with the Trinity model, changes for Strategy D were made to both the DAT and DIS files. The resultant models, identified as D₀ models, represent Year 2060 conditions with Full Authorized Diversions and expected return flows, upstream WMS, and no term water rights. However, the D₀ model contained no Region H strategies.

2.2 2011 RWP WMS Models

Nineteen of the new WMS for the 2011 RWP were deemed suitable for modeling. The primary reason for a majority of unmodeled strategies was that the WMS generated no new yield but rather simply facilitated implementation of another strategy (either from the 2006 or 2011 RWP). Examples of this situation include major WWP treatment and transmission projects. The 19 strategies which were modeled are listed in Table 2-1 below, which describes the modeling methodology used for each WMS.

Table 1-1.
WMS Methodology

Model ID	WMS Name	Modeling Methodology
IGW	Interim Strategies	Add CI cards to reflect return flows from points of use.
NWL	New Groundwater Wells for Livestock	Add CI cards to reflect return flows from points of use.
FRU	Fulshear Reuse	Reduce return flows (CI cards) at participating WUGs.
COH	COH GRP	Return flows from WUGs getting more groundwater. No change at converting WUGs (change return flow source from GW to SW only)
CMC	City of Missouri City GRP	Return flows from WUGs getting more groundwater or ASR. For reuse divert WWTP discharge with appropriate return flow.
M25	Fort Bend MUD 25 GRP	For direct reuse reduce CI card for WWTP discharge.
NFB	NFBWA GRP	Return flows from WUGs getting more groundwater. No change at converting WUGs (change return flow source from GW to SW only)
NHC	NHCRWA GRP	Return flows from WUGs getting more groundwater. No change at converting WUGs (change return flow source from GW to SW only)
SJW	SJRA WRAP	Return flows from WUGs getting more groundwater or Lake Conroe water.
SLG	Sugar Land GRP	Return flows from WUGs getting more groundwater. For reuse divert WWTP discharge with appropriate return flow.
WHC	WHCRWA GRP	Return flows from WUGs getting more groundwater. No change at converting WUGs (change return flow source from GW to SW only)
WCS	CLCND West Chambers System	Reflect return flows from points of use.
GOC	GCWA Off-channel Reservoir	Add off-channel diversion and reservoir
MCR	Montgomery MUD 8/9 Indirect Reuse	Reuse diversion with appropriate return flows.
GCR	GCWA Reclaimed Water from COH	Add CI cards to reflect return flows from points of use.
RMI	Wastewater Reclamation for Mun. Irrigation	Reduce return flows (CI cards) at participating WUGs.
FBO	Fort Bend County Off-Channel Reservoir	Add off-channel diversion and reservoir.
BSW	BWA Brackish Groundwater	Add CI cards to reflect return flows from points of use.
BCO	Brazoria County Off-Channel Reservoir	Add off-channel diversion and reservoir.
BII	Brazoria Co Interruptible Supplies for Irrigation	Add interruptible diversions

Section 3 – WMS Impacts to Environmental Flows

3.1 B&E Inflows

WRAP strategy model output was used to determine effects of WMS implementation on B&E flows into Galveston Bay for the Year 2060 condition. Targets were examined primarily in terms of frequency of target attainment (FTA) for B&E inflow targets recommended by the TWDB and Texas Parks and Wildlife Department. There are three sets of targets designed for maintaining fisheries. These are:

- Max H – sequence of monthly inflows for maximum B&E fisheries harvest
- Min Q – sequence of monthly inflows that minimizes the annual volume needed to maintain the B&E fisheries harvest
- Min Q-Sal – sequence of monthly inflows that maintains B&E salinity constraint

Monthly values for all three annual targets for the Galveston Bay system are given in *Table ES-2* below. In general, Max H represents a target condition for ultimate production while Min Q-Sal represents a base condition that must be maintained on a more reliable basis.

Table 3-1
Monthly Galveston Bay Inflow Targets

Month	Max H	Min Q	Min Q-Sal
1	150,500	150,500	150,490
2	155,200	216,700	216,700
3	652,800	363,900	363,900
4	632,500	352,600	267,270
5	1,273,700	679,700	309,970
6	839,700	448,100	413,560
7	211,500	232,700	211,500
8	140,000	154,000	140,000
9	103,000	330,200	102,960
10	78,600	251,900	78,600
11	351,500	351,500	164,390
12	626,800	626,800	93,870
TOTAL	5,215,800	4,158,600	2,513,210

Region H formally adopted GBFIG-proposed frequencies for meeting TWDB flow targets during the 2001 cycle of Regional Water Planning. GBFIG proposed a 50 percent frequency of attainment for Max H, 60 percent for Min Q, and 75 percent for Min Q-Sal (2006 Region H RWP). GBFIG-proposed frequencies were presented to the Region H Planning Group during the 2001 Regional Water Planning cycle and were adopted by the Region H Planning Group for the 2001 RWP. For additional information and documentation, please see the 2001 and 2006 Region H RWPs. However, the

GBFIG recommendations do not explicitly address how to measure frequency of attaining these targets, nor do they define a desired frequency for the seasonality (i.e., monthly distribution) of freshwater inflows. For this study, the recommended annual frequency was used as a placeholder for the evaluation of seasonal variations (i.e., monthly distribution). Targets were assumed to be attained for a time period in which the flow met or exceeded the target.

There are several considerations that should be taken into account when interpreting the FTA results. A concern with the approach taken is the validity of assuming that annual GBFIG targets are applicable on a seasonal or monthly basis. Sub-annual time scales are clearly of importance; it is mathematically possible to meet an annual flow target while flows for one or more months could be low enough to be ecologically inadequate. Whether FTA is more critical for some seasons or months than others has not yet been established. The application of the annual GBFIG FTA to monthly targets was made due to a lack of a more reasonable alternative and should be studied further.

While the purpose of this study is not to evaluate B&E needs or develop new flow targets or FTA, the underlying assumption that B&E flow needs are met if the desired FTA is achieved must be considered critically. One potential concern is that this approach does not consider a bracket of flows, but only if the flow equals or exceeds the desired B&E flow. This does not account for the possibility that, in some circumstances, excessive flows may also result in less than optimum conditions. It is important to remember that the State's Max H, Min Q, and Min Q-Sal flow regimes are not made up of individual flow targets but rather represent optimal harvest when all 12 months in a year are at or near the monthly target. However, Espey Consultants (2008) has noted that the pattern of flows defined by Max H does not occur historically; in order to meet the 50% frequency on Max H, the monthly Max H targets would have to be bracketed by $\pm 1,045$ percent.

Seasonal FTA is shown in *Table 3-2* below, with monthly FTA shown in *Table 3-3*. Changes from the base model are shown in bold text.

**This Page Intentionally
Left Blank.**

Table 3-2
Seasonal Frequency of Target Attainment for B&E Flow Targets

Max H																					
Season	Base	BCO	BII	BSW	CMC	COH	FBO	FRU	GCR	GOC	IGW	M25	MCR	NFB	NHC	NWL	RMI	SJW	SLG	WCS	WHC
Spring	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%	44%
Summer	70%	70%	70%	70%	70%	71%	70%	70%	71%	70%	70%	70%	71%	70%	70%	70%	71%	70%	70%	71%	70%
Winter	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%

Min Q																					
Season	Base	BCO	BII	BSW	CMC	COH	FBO	FRU	GCR	GOC	IGW	M25	MCR	NFB	NHC	NWL	RMI	SJW	SLG	WCS	WHC
Spring	64%	64%	64%	64%	64%	65%	64%	64%	65%	65%	64%	64%	65%	65%	64%	64%	65%	64%	64%	65%	64%
Summer	40%	40%	40%	40%	40%	41%	40%	40%	41%	40%	40%	40%	41%	40%	40%	40%	41%	40%	40%	41%	40%
Winter	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%

Min Q-Sal																					
Season	Base	BCO	BII	BSW	CMC	COH	FBO	FRU	GCR	GOC	IGW	M25	MCR	NFB	NHC	NWL	RMI	SJW	SLG	WCS	WHC
Spring	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%
Summer	70%	70%	70%	70%	70%	71%	70%	70%	71%	70%	70%	70%	71%	70%	70%	70%	71%	70%	70%	71%	70%
Winter	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%

Table 3-3a
Monthly Frequency of Target Attainment for B&E Flow Targets – Max H

Max H																					
Month	Base	BCO	BII	BSW	CMC	COH	FBO	FRU	GCR	GOC	IGW	M25	MCR	NFB	NHC	NWL	RMI	SJW	SLG	WCS	WHC
Jan	84%	84%	84%	84%	84%	85%	84%	84%	85%	84%	84%	84%	84%	84%	84%	84%	84%	85%	84%	84%	84%
Feb	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%
Mar	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Apr	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%
May	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%
Jun	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%
Jul	47%	47%	47%	47%	47%	47%	47%	47%	48%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
Aug	65%	65%	65%	65%	65%	66%	65%	65%	66%	65%	65%	65%	65%	65%	65%	65%	64%	65%	65%	65%	65%
Sep	91%	91%	91%	91%	91%	92%	91%	91%	92%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	92%
Oct	78%	78%	78%	78%	78%	80%	79%	78%	81%	78%	78%	78%	78%	78%	78%	78%	78%	80%	78%	78%	79%
Nov	47%	47%	47%	47%	47%	48%	48%	47%	48%	47%	48%	47%	47%	47%	48%	47%	47%	48%	47%	47%	48%
Dec	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	46%	47%	47%	47%	47%

Table 3-3b
Monthly Frequency of Target Attainment for B&E Flow Targets – Min Q

Min Q																					
Month	Base	BCO	BII	BSW	CMC	COH	FBO	FRU	GCR	GOC	IGW	M25	MCR	NFB	NHC	NWL	RMI	SJW	SLG	WCS	WHC
Jan	84%	84%	84%	84%	84%	85%	84%	84%	85%	84%	84%	84%	84%	84%	84%	84%	84%	84%	85%	84%	84%
Feb	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
Mar	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%
Apr	69%	69%	69%	69%	69%	70%	69%	69%	70%	69%	70%	69%	69%	70%	69%	69%	69%	69%	70%	69%	69%
May	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%
Jun	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%	55%	56%	56%	56%
Jul	44%	44%	44%	44%	44%	45%	44%	44%	45%	44%	44%	44%	44%	45%	44%	44%	44%	44%	44%	44%	44%
Aug	51%	51%	51%	51%	51%	53%	51%	51%	54%	51%	51%	51%	51%	52%	51%	51%	51%	50%	53%	51%	51%
Sep	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
Oct	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
Nov	47%	47%	47%	47%	47%	48%	48%	47%	48%	47%	48%	47%	47%	48%	47%	48%	47%	47%	48%	47%	47%
Dec	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	46%	47%	47%	47%

Table 3-3c
Monthly Frequency of Target Attainment for B&E Flow Targets – Min Q-Sal

Min Q-Sal																					
Month	Base	BCO	BII	BSW	CMC	COH	FBO	FRU	GCR	GOC	IGW	M25	MCR	NFB	NHC	NWL	RMI	SJW	SLG	WCS	WHC
Jan	84%	84%	84%	84%	84%	85%	84%	84%	85%	84%	84%	84%	84%	84%	84%	84%	84%	84%	85%	84%	84%
Feb	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
Mar	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%
Apr	75%	75%	75%	75%	75%	76%	75%	75%	76%	75%	75%	75%	75%	75%	75%	75%	75%	75%	76%	75%	75%
May	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
Jun	58%	58%	58%	58%	58%	59%	58%	58%	59%	58%	58%	58%	58%	58%	58%	58%	58%	58%	59%	58%	58%
Jul	47%	47%	47%	47%	47%	47%	47%	47%	48%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
Aug	65%	65%	65%	65%	65%	66%	65%	65%	66%	65%	65%	65%	65%	65%	65%	65%	65%	64%	65%	65%	65%
Sep	91%	91%	91%	91%	91%	92%	91%	91%	92%	91%	91%	91%	91%	92%	91%	91%	91%	91%	91%	91%	91%
Oct	78%	78%	78%	78%	78%	80%	79%	78%	81%	78%	78%	78%	78%	79%	78%	78%	78%	78%	80%	78%	78%
Nov	73%	73%	73%	73%	73%	74%	74%	73%	74%	73%	73%	73%	73%	74%	73%	73%	73%	73%	73%	73%	73%
Dec	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%

As can be seen from the tables above, the WMS modeled have very little impact on frequency of target attainment. For the adopted goal frequencies of attainment (50 percent for Max H, 60 percent for Min Q, and 75 percent for Min Q-sal), the base model itself fails to reach the desired FTA for a number of months and seasons. At a seasonal level, none of the new WMS examined alters FTA more than 0.7 percent. At the monthly level, changes were noted in greatest amounts for COH GRP, Wastewater Reuse for Municipal Irrigation, GCWA Reclaimed Water from COH, SJRA WRAP, and WHCRWA GRP; these changes were shown to occur primarily between August and October. However, FTA changes by less than four percent from the base model (typically no change). This indicates that on an individual basis the WMS have little impact on B&E flows. A similar conclusion was drawn from the results of the first biennium *Environmental Flows Study*.

3.2 Instream Flows

A list of 26 segments with the potential to be impacted by Region H WMS was developed from a compilation of segments studied in the TWDB Streamflow Assessment found in the 2002 SWP. Regulated flows at the 26 segments were determined for the base (D_0) models as well as for all WMS models. Based on monthly results for the model simulation period, 10th percentile flows were calculated to investigate low flow conditions. For each WMS, 10th percentile flows at each of the 26 segments were compared to the D_0 models. For each WMS, the stream segment with the greatest (absolute) percentage difference from the base model was considered to be the most critical segment for that strategy (see *Exhibit 2*). For the 18 strategy models, six segments were identified in the Brazos, San Jacinto-Brazos and San Jacinto Basins as being particularly influenced by Region H WMS. A summary of the most impacted segments is presented in *Table 4-1*.

Table 4-1
Impacts of WMS Implementation on Critical Stream Segments

WRAP Identifier	Basin	Strategy	10th Percentile Flows		
			D_0 (ac-ft)	Strategy (ac-ft)	Change (%)
CON111	Brazos	Braz. Int. Irrigation	47,571	44,972	-5.5
		GCWA Off-Channel		44,972	-5.5
		BWA Brackish GW		45,510	-4.3
		Sugar Land GRP		44,623	-6.2
BRBR59	Brazos	Brazoria OCR	49,304	47,695	-3.3
		Missouri City GRP		46,698	-5.3
		Fulshear Reuse		47,854	-2.9
		FBC MUD 25 Reuse		48,063	-2.5
		GCWA Reclaimed		46,088	6.5
		NFBWA GRP		47,213	-4.2
		New Wells for Livestock		46,424	-5.8
		Reclamation Mun. Irr.		47,248	-4.2
532801	Brazos	Fort Bend OCR	41,101	40,513	-1.4
SJGBC3	San Jacinto-Brazos	Interim Strategies	1,955	2,113	8.0
A5191P	San Jacinto	WHCRWA GRP	59,845	60,532	1.2
SPSP	San Jacinto	NHCRWA GRP	1,460	1,727	18.2
		SJRA WRAP		3,311	126.3
1009	San Jacinto	COH GRP	1,996	2,116	6.1

In the San Jacinto and San Jacinto-Brazos basins, the WMS showed increases in 10th percentile flow at critical segments, primarily due to increased return flows from points of use from WUGs increasing their usage of groundwater over time. Note that at the same time that these WUGs are increasing their groundwater use, other WUGs participating in the same GRPs will be converting to surface water, so that the total percentage of water usage in the GRP group will be within subsidence district limits. Increased return flows from WUGs converting from groundwater to surface water were not modeled as return flows would for those WUGs would simply shift from groundwater-based to surface water-based. Ultimately, the changes in 10th percentile flow caused by GRPs is largely an artifact of increasing demand. The increase in 10th percentile flows for Interim Strategies is also caused by increased groundwater-based return flows from point-of-use WUGs.

The most highly impacted segments in the Brazos basin all showed decreases in 10th percentile flows, although changes tended to be relatively small (6.2 percent or less). This reduction in flows is not surprising for reclamation / reuse strategies, as flows that would formerly move downstream are reduced. The reduction in flow caused by Brazoria County Interruptible Supplies for Irrigation is also reasonable, as a greater volume of water is being diverted beyond the firm yield of existing permits (possibly during lower-flow periods). Similarly, the GCWA Off-Channel Reservoir, Fort Bend OCR, and Brazoria County OCR would firm up interruptible portions of flow, resulting in greater total diversions from the stream system. The reduction in flow caused by the Missouri City and Sugar Land GRPs may initially seem counterintuitive, as the remaining GRPs listed resulted in positive increases in streamflow. However, please note that these two GRPs also include a reuse component which could lower 10th percentile flows at some locations.

Section 4 - Conclusions

As shown in the sections above, the impacts of new individual WMS as detailed in the 2011 Region H RWP are not anticipated to create major impacts to B&E flows, nor to substantially reduce low (10th percentile) flows at critical stream segments. Frequencies of attaining B&E flow targets at GBFIG-established frequencies was almost unchanged, with changes noted for only a few strategies; even for those strategies, changes were within two percentage points of the base model. Both positive and negative changes to 10th percentile flows at critical segments were found, with positive changes occurring in the San Jacinto and San Jacinto-Brazos basins and negative changes in the Brazos basin. Overall, the negative changes were relatively small, ranging from 2.5 to 6.2 percent reduction in 10th percentile flow at the critical segments. The impact to critical stream segment low flows should be considered when evaluating WMS, particularly for projects consisting wholly or partly of reuse. Overall, however, the small magnitude of change for critical segments and the limited impacts on B&E inflow suggests that the seventeen WMS are not likely to individually create substantial alterations to B&E inflows or critical stream segment low flows.

Whether these strategies will have an additive effect when implemented together is unknown; based on the results of the 1st biennium *Environmental Flows Study*, it is possible that greater impacts would be realized with when the projects are operating simultaneously. More study would be required to determine if this is the case for new WMS.

**This Page Intentionally
Left Blank.**

Attachment N:

Amended excerpts from Chapter 5: Impacts of Management Strategies on Water Quality and Impacts of Moving Water from Rural and Agricultural Areas

LLWSSSC Surface Water Project
Luce Bayou Transfer
NFBWA Internal Distribution
NFBWA Shared Transmission Line
NHCERWA Internal 2010 Distribution
NHCERWA Internal 2020 Distribution
NHCERWA Internal 2030 Distribution
NHCERWA Transmission 2010
NHCERWA Transmission 2020
NHCERWA Transmission 2030
Pearland SWTP
Sealy GW Treatment Expansion
WHCERWA Internal Distribution
WHCERWA Transmission Line

Reservoir Strategies:

Allens Creek Reservoir
Brazoria County Off-channel Reservoir
Dow Off-Channel Reservoir
Fort Bend County Off-channel Reservoir
GCWA Off-channel Reservoir

Reuse Strategies:

Fulshear Reuse
GCWA Reclaimed Water from City of Houston
Houston Indirect Reuse
Montgomery MUD 8/9 Indirect Reuse
NHCERWA Indirect Reuse
Wastewater Reuse for Industry
Wastewater Reclamation for Mun. Irrigation

Permit Strategies:

BRA System Operations Permit
Houston Bayous Permit

Other Strategies:

Brazoria Co. Interruptible Supplies for Irr.
Freeport Desalination Plant
Brazos Saltwater Barrier

Alternative Water Management Strategies

Montgomery MUD 8/9 Brackish Water Desalination
Sabine to Region H Transfer
Little River Off-channel Reservoir

The following paragraphs discuss the impacts of each management strategy on the chosen water quality parameters.

Increased Groundwater Usage, including Expanded Use of Groundwater, Interim Groundwater, and New Groundwater Wells, is not expected to have significant environmental effects. Groundwater within the Region is generally of good quality and available at the point of use. Increases in well pumping will also contribute to return flows in all river basins in Region H. The return flows will increase in proportion to increased groundwater use and significantly contribute to flows into Galveston Bay. Increased and interim groundwater pumping in the region will continue to be monitored by groundwater regulatory agencies since excessive pumping can lead to land subsidence and exacerbate flooding and drainage problems.

operated as “scalping reservoirs”. During times of high flow, water quality in the Brazos River is often poor in terms of suspended solids due to increased sediment loads. At the same time, that water is of better quality in terms of dissolved solids concentrations since the salt being introduced into the Brazos in its upper reaches is diluted. The water that is diverted and stored in reservoirs would allow sediments to settle and accordingly water released from the reservoir would potentially have less sediment concentration. However, reduced sediment loads may have negative impacts on habitats relying on sediments downstream of the proposed reservoirs. Nutrients such as nitrogen and phosphorous are often attached to fine sediment particles that settle in reservoirs reducing nutrient loads to downstream aquatic species. Water that is released from the reservoirs during low flow conditions would have a beneficial effect by diluting the low flow salt concentration in the river. The GCWA Off-channel Reservoir is not expected to create any new water quality issues. The reservoir will allow the GCWA to use supplies from existing water right permits more efficiently.

New Contracts from Existing Supplies, including Expand/Increase Current Contracts, Reallocation of Existing Supplies, CLCND West Chambers System, Brazoria County Interruptible Irrigation, the TRA to Houston Contract, the TRA to SJRA Contract, and Groundwater Reduction Plans (GRPs) are not expected to create any new water quality issues. Fully utilizing existing water supplies may amplify some existing concerns, particularly contaminant concentrations due to reduced opportunities for in-stream dilution. The continued return of flows via wastewater treatment facility discharges will provide some mitigation of that effect. Typical municipal return flows are 60 percent of the total quantity diverted for use.

The Luce Bayou Interbasin Transfer will potentially improve the quality of Lake Houston, due to the blending with water from the Trinity River. However, recent studies performed by the Luce Bayou program have not indicated that this will be the case. Transfers such as this allow an increased opportunity for invasive species migration from the source to receiving waters. Additionally, the transfer will potentially reduce flow in the Trinity River below Dayton, because the Lake Livingston water rights are not fully utilized today. The effects of this reduced flow in the Trinity are mitigated by the existence of the Wallisville Saltwater Barrier at the mouth of the river, which maintains a minimum river level for navigation and prevents the migration of brackish water upstream.

Wastewater Reuse by Houston, GCWA, NHCRWA and Fort Bend MUD 25, Montgomery County MUDs 8&9, Wastewater Reuse for Industry, and reuse strategies implemented as part of a Groundwater Reduction Plan (GRP) will potentially reduce in-stream flows, thus concentrating any in-stream contaminants. However, the reuse process should remove a portion of the waste load discharged from these facilities, either through the secondary treatment process or simply by the rerouting of effluent. A concern for this strategy would be the disposal method for any liquid wastes from the secondary treatment. In the case of industrial reuse, the reverse-osmosis discharge water would be injected into the bottom of the Houston Ship Channel, into an already brackish zone. The Houston Ship Channel is dredged to a depth of 45-feet (five times the depth of Galveston Bay) with fresh water flowing to the bay at the top and salt water returning on the tides at the bottom. The reverse-osmosis discharge and resultant mixing would be in the salt water layer at the bottom of this channel, increasing the salinity in the brackish zone. Further investigation will be required to determine the full environmental impacts of the reverse osmosis discharge. This reuse is not projected to occur until a time when the overall water use of the region has increased. Wastewater return flows will increase proportionally, so that the reuse of this portion will not constitute a significant reduction below current return flows.

Infrastructure and transmission line expansions including the COH infrastructure expansion, CHCRWA, NFBWA, NHCRWA, and WHCRWA transmission lines, SJRA WRAP and Water Treatment Plant strategies for Brazosport Water Authority, Pearland, Huntsville, Harris County MUD #50, Sealy and the Lake Livingston Water Supply and Sewer Service Company (LLWSSSC) are not expected to create any new water quality issues. The water management strategies are associated with the transmission of existing supplies to new and increased contractual demands of each wholesale water provider.

Attachment O:

Summary of database entries anticipated for DB12

DB12 Entries: Dow Off-Channel Reservoir and Pump Station Expansion

WMS Project

Sponsor Region:	H
WMS Project ID:	H52-DOWOCR
WMS Project Name:	DOW OFF-CHANNEL RESERVOIR AND PUMP STATION EXPANSION
WMS Description:	Dow off-channel Reservoir .
WMS Type:	N : NEW SURFACE WATER OR NEW GROUNDWATER SOURCE
WMS Infrastructure:	NO INFRASTRUCTURE
Additional RWPGs:	None
Included in State Water Plan:	Y

Source(s)

Source Region	Source Name	County Name	Basin Name	Source ID	Source Type
H	ZOS RIVER RUN-OF-RI	BAZORIA	BRAZOS	3461205328B	SW
Is Source Supply selected for Rollup?				Y	
Is Source Cost selected for Rollup?				Y	

County Name:	BRAZORIA	Water Quality Improvements	: NO WATER QUALITY IMPROVEME
County ID:	020	Online Data	2020
Basin Name:	BRAZOS	WMS Funding Date	2020
Basin ID:	12		
Include in State Water Plan?			Y
Include WMS Source Total Yield numbers in WMS Project Total Yield Rollup?			Y
Include WMS Source Cost numbers in WMS Project Cost Rollup?			Y

Sponsor Region:	WWP Name:					
H	DOW CHEMICAL USA					
	2010:	2020:	2030:	2040:	2050:	2060:
Total Strategy Supply Volume for this WWP:	0	80,000	80,000	80,000	80,000	80,000

Recommendation Type?	Is Used to Meet Need?					IBT?
Recommended	Y					N
Include WWP WMS Cost numbers in WMS Source Cost Rollup?						
	2010:	2020:	2030:	2040:	2050:	2060:
WWP WMS Annual Cost:	\$0	\$20,306,000	\$20,306,000	\$20,306,000	\$14,405,000	\$14,405,000
WWP Capital Costs:	\$226,837,000					
Term of Debt Service:	50					

DB12 Entries: Dow to BWA Contract

WMS Project

Sponsor Region:	H
WMS Project ID:	
WMS Project Name:	DOW TO BWA CONTRACT
WMS Description:	Dow Chemical to BWA contract
WMS Type:	N : NEW SURFACE WATER OR NEW GROUNDWATER SOURCE
WMS Infrastructure:	NO INFRASTRUCTURE
Additional RWPGs:	None
Included in State Water Plan:	Y

Source(s)

Source Region	Source Name	County Name	Basin Name	Source ID	Source Type
H	ZOS RIVER RUN-OF-RI	BAZORIA	BRAZOS	3461205328B	SW
Is Source Supply selected for Rollup?				Y	
Is Source Cost selected for Rollup?				Y	

County Name:	BRAZORIA	Water Quality Improvements	: NO WATER QUALITY IMPROVEME
County ID:	020	Online Data	2020
Basin Name:	BRAZOS	WMS Funding Date	2020
Basin ID:	12		
Include in State Water Plan?			Y
Include WMS Source Total Yield numbers in WMS Project Total Yield Rollup?			Y
Include WMS Source Cost numbers in WMS Project Cost Rollup?			Y

1.	Sponsor Region:	WWP Name:					
	H	BRAZOSPORT WATER AUTHORITY					
		2010:	2020:	2030:	2040:	2050:	2060:
	Total Strategy Supply Volume for this WWP:	0	8,569	8,569	8,569	8,569	8,569

Recommendation Type?	Is Used to Meet Need?						IBT?
Recommended	Y						N
Include WWP WMS Cost numbers in WMS Source Cost Rollup?		Y					
	2010:	2020:	2030:	2040:	2050:	2060:	
WWP WMS Annual Cost:	\$0	\$0	\$0	\$0	\$0	\$0	\$0
WWP Capital Costs:	\$0						
Term of Debt Service:	0						

DB12 Entries: Dow to WUG Contract

WMS Project

Sponsor Region:	H
WMS Project ID:	H07-WUGC23
WMS Project Name:	DOW TO WUG CONTRACT
WMS Description:	Dow Chemical to WUG contract
WMS Type:	N : NEW SURFACE WATER OR NEW GROUNDWATER SOURCE
WMS Infrastructure:	NO INFRASTRUCTURE
Additional RWPGs:	None
Included in State Water Plan:	Y

Source(s)

Source Region	Source Name	County Name	Basin Name	Source ID	Source Type
H	ZOS RIVER RUN-OF-RI	BAZORIA	BRAZOS	3461205328B	SW
Is Source Supply selected for Rollup?				Y	
Is Source Cost selected for Rollup?				Y	

County Name:	BRAZORIA	Water Quality Improvements	: NO WATER QUALITY IMPROVEME
County ID:	020	Online Data	2020
Basin Name:	BRAZOS	WMS Funding Date	2020
Basin ID:	12		
Include in State Water Plan?			Y
Include WMS Source Total Yield numbers in WMS Project Total Yield Rollup?			Y
Include WMS Source Cost numbers in WMS Project Cost Rollup?			Y

WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:	Basin Name:			
H	MANUFACTURING	NONE	081001020	BRAZORIA	BRAZOS			
Total Strategy Supply Volume for this WUG:			2010: 0	2020: 62,414	2030: 62,414	2040: 62,414	2050: 62,414	2060: 62,414
Is WUG selected for Rollup?			Y					
Is WUG Cost selected for Rollup?			Y					

Recommendation Type?	Is Used to Meet Need?	IBT?				
Recommended	Y	N				
Seller's Name:	Seller's Alpha:	WWP ID:				
DOW CHEMICAL USA	237200	250208165				
Recursive WMS Supply?:	Recursive WMS Project ID:					
N						
Include WUG WMS Cost numbers in WMS Source Cost Rollup?						
Y						
WUG WMS Annual Cost:	2010: \$0	2020: \$43,784,622	2030: \$50,808,631	2040: \$37,290,661	2050: \$33,783,225	2060: \$33,975,408
WUG Capital Costs:	\$321,962,428					
Term of Debt Service:	20					

WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:	Basin Name:			
H	MANUFACTURING	NONE	81001020	BRAZORIA	SAN JACINTO-BRAZOS			
Total Strategy Supply Volume for this WUG:			2010: 0	2020: 9,017	2030: 9,017	2040: 9,017	2050: 9,017	2060: 9,017
Is WUG selected for Rollup?			Y					
Is WUG Cost selected for Rollup?			Y					

Recommendation Type?	Is Used to Meet Need?	IBT?				
Recommended	Y	Y				
Seller's Name:	Seller's Alpha:	WWP ID:				
DOW CHEMICAL USA	237200	250208165				
Recursive WMS Supply?:	Recursive WMS Project ID:					
N						
Include WUG WMS Cost numbers in WMS Source Cost Rollup?						
Y						
WUG WMS Annual Cost:	2010: \$0	2020: \$8,523,262	2030: \$10,236,036	2040: \$7,162,096	2050: \$5,990,937	2060: \$6,554,803
WUG Capital Costs:	\$90,336,210					
Term of Debt Service:	20					

DB12 Entries: BWA to WUG Contract

WMS Project

Sponsor Region:	H
WMS Project ID:	H07-WUG03
WMS Project Name:	BWA TO WUG CONTRACT
WMS Description:	Contract with Brazosport Water Authority
WMS Type:	N : NEW SURFACE WATER OR NEW GROUNDWATER SOURCE
WMS Infrastructure:	OTHER INFRASATRUCTION
Additional RWPGs:	None
Included in State Water Plan:	Y

Source(s)

Source Region	Source Name	County Name	Basin Name	Source ID	Source Type
H	ZOS RIVER RUN-OF-R	BAZORIA	BRAZOS	3461205328B	SW
Is Source Supply selected for Rollup?				Y	
Is Source Cost selected for Rollup?				Y	

County Name:	BRAZORIA	Water Quality Improvements	: NO WATER QUALITY IMPROVEME
County ID:	020	Online Data	2020
Basin Name:	BRAZOS	WMS Funding Date	2020
Basin ID:	12		
Includes in State Water Plan			Y
Include WMS Source Total Yield numbers in WMS Project Total Yield Rollup?			Y
Include WMS Source Cost numbers in WMS Project Cost Rollup?			Y

WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:	Basin Name:			
H	ANGLETON	NONE	080018000	BRAZORIA	SAN JACINTO-BRAZOS			
Total Strategy Supply Volume for this WUG:			2010: 0	2020: 994	2030: 997	2040: 1,001	2050: 1,026	2060: 1,063
Is WUG selected for Rollup?			Y					
Is WUG Cost selected for Rollup?			Y					

Recommendation Type?	Is Used to Meet Need?	IBT?				
Recommended	Y	Y				
Seller's Name:	Seller's Alpha:	WWP ID:				
BRAZOSPORT WATER AUTHORITY	2000	120208093				
Recursive WMS Supply?:	Recursive WMS Project ID:					
N						
Include WUG WMS Cost numbers in WMS Source Cost Rollup?						
Y						
WUG WMS Annual Cost:	2010: \$0	2020: \$171,671	2030: \$173,000	2040: \$48,864	2050: \$59,318	2060: \$73,816
WUG Capital Costs:	\$1,738,499					
Term of Debt Service:	20					

WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:	Basin Name:			
H	BRAZORIA	NONE	080072000	BRAZORIA	BRAZOS			
Total Strategy Supply Volume for this WUG:			2010: 0	2020: 175	2030: 175	2040: 175	2050: 175	2060: 175
Is WUG selected for Rollup?			Y					
Is WUG Cost selected for Rollup?			Y					

Recommendation Type?	Is Used to Meet Need?	IBT?				
Recommended	Y	N				
Seller's Name:	Seller's Alpha:	WWP ID:				
BRAZOSPORT WATER AUTHORITY	2000	120208093				
Recursive WMS Supply?:	Recursive WMS Project ID:					
N						
Include WUG WMS Cost numbers in WMS Source Cost Rollup?						
Y						
WUG WMS Annual Cost:	2010: \$0	2020: \$43,623	2030: \$43,623	2040: \$8,599	2050: \$8,599	2060: \$8,599
WUG Capital Costs:	\$401,718					
Term of Debt Service:	20					

DB12 Entries: BWA to WUG Contract

3.	WUG Region:	WUG Name:	WUG Detail:	WUG ID:		County Name:		Basin Name:	
	H	CLUTE	NONE	080118000		BRAZORIA		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:	2060:
	Total Strategy Supply Volume for this WUG:			0	582	594	604	626	657
	Is WUG selected for Rollup?			Y					
	Is WUG Cost selected for Rollup?			Y					

Recommendation Type?		Is Used to Meet Need?				IBT?	
Recommended		N				Y	
Seller's Name:		Seller's Alpha:		WWP ID:		WUG ID:	
BRAZOSPORT WATER AUTHORITY		2000		120208093		N/A	
Recursive WMS Supply?:		Recursive WMS Project ID:					
N							
Include WUG WMS Cost numbers in WMS Source Cost Rollup?		Y					
		2010:	2020:	2030:	2040:	2050:	2060:
	WUG WMS Annual Cost:	\$0	\$122,878	\$129,159	\$39,529	\$44,692	\$54,466
	WUG Capital Costs:	\$1,409,074					
	Term of Debt Service:	20					

4.	WUG Region:	WUG Name:	WUG Detail:	WUG ID:		County Name:		Basin Name:	
	H	COUNTY-OTHER	NONE	080757020		BRAZORIA		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:	2060:
	Total Strategy Supply Volume for this WUG:			0	3,173	3,501	3,273	2,999	2,579
	Is WUG selected for Rollup?			Y					
	Is WUG Cost selected for Rollup?			Y					

Recommendation Type?		Is Used to Meet Need?				IBT?	
Recommended		N				Y	
Seller's Name:		Seller's Alpha:		WWP ID:		WUG ID:	
BRAZOSPORT WATER AUTHORITY		2000		120208093		N/A	
Recursive WMS Supply?:		Recursive WMS Project ID:					
N							
Include WUG WMS Cost numbers in WMS Source Cost Rollup?		Y					
		2010:	2020:	2030:	2040:	2050:	2060:
	WUG WMS Annual Cost:	\$0	\$247,490	\$316,781	\$209,124	\$185,634	\$173,563
	WUG Capital Costs:	\$3,394,515					
	Term of Debt Service:	20					

5.	WUG Region:	WUG Name:	WUG Detail:	WUG ID:		County Name:		Basin Name:	
	H	FREESPORT	NONE	080217000		BRAZORIA		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:	2060:
	Total Strategy Supply Volume for this WUG:			0	1,039	1,126	1,217	1,337	1,483
	Is WUG selected for Rollup?			Y					
	Is WUG Cost selected for Rollup?			Y					

Recommendation Type?		Is Used to Meet Need?				IBT?	
Recommended		N				Y	
Seller's Name:		Seller's Alpha:		WWP ID:		WUG ID:	
BRAZOSPORT WATER AUTHORITY		2000		120208093		N/A	
Recursive WMS Supply?:		Recursive WMS Project ID:					
N							
Include WUG WMS Cost numbers in WMS Source Cost Rollup?		Y					
		2010:	2020:	2030:	2040:	2050:	2060:
	WUG WMS Annual Cost:	\$0	\$209,181	\$246,904	\$124,246	\$136,844	\$155,999
	WUG Capital Costs:	\$3,334,813					
	Term of Debt Service:	20					

6.	WUG Region:	WUG Name:	WUG Detail:	WUG ID:		County Name:		Basin Name:	
	H	LAKE JACKSON	NONE	080338000		BRAZORIA		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:	2060:
	Total Strategy Supply Volume for this WUG:			0	1,532	1,595	1,709	1,865	2,049
	Is WUG selected for Rollup?			Y					
	Is WUG Cost selected for Rollup?			Y					

Recommendation Type?		Is Used to Meet Need?				IBT?	
Recommended		N				Y	
Seller's Name:		Seller's Alpha:		WWP ID:		WUG ID:	
BRAZOSPORT WATER AUTHORITY		2000		120208093		N/A	
Recursive WMS Supply?:		Recursive WMS Project ID:					
N							
Include WUG WMS Cost numbers in WMS Source Cost Rollup?		Y					
		2010:	2020:	2030:	2040:	2050:	2060:
	WUG WMS Annual Cost:	\$0	\$208,804	\$231,332	\$122,835	\$154,017	\$178,383
	WUG Capital Costs:	\$3,178,443					
	Term of Debt Service:	20					

DB12 Entries: BWA to WUG Contract

7.	WUG Region:	WUG Name:	WUG Detail:	WUG ID:		County Name:		Basin Name:	
	H	MANUFACTURING	NONE	081001020		BRAZORIA		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:	2060:
	Total Strategy Supply Volume for this WUG:			0	849	349	347	280	280
	Is WUG selected for Rollup?			Y					
	Is WUG Cost selected for Rollup?			Y					

Recommendation Type?		Is Used to Meet Need?				IBT?	
Recommended		N				Y	
Seller's Name:		Seller's Alpha:		WWP ID:		WUG ID:	
BRAZOSPORT WATER AUTHORITY		2000		120208093		N/A	
Recursive WMS Supply?:		Recursive WMS Project ID:					
N							
Include WUG WMS Cost numbers in WMS Source Cost Rollup?		Y					
		2010:	2020:	2030:	2040:	2050:	2060:
	WUG WMS Annual Cost:	\$0	\$166,838	\$154,561	\$28,706	\$56,180	\$56,180
	WUG Capital Costs:	\$1,729,257					
	Term of Debt Service:	20					

8.	WUG Region:	WUG Name:	WUG Detail:	WUG ID:		County Name:		Basin Name:	
	H	OYSTER CREEK	NONE	080730000		BRAZORIA		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:	2060:
	Total Strategy Supply Volume for this WUG:			0	71	77	85	95	107
	Is WUG selected for Rollup?			Y					
	Is WUG Cost selected for Rollup?			Y					

Recommendation Type?		Is Used to Meet Need?				IBT?	
Recommended		N				Y	
Seller's Name:		Seller's Alpha:		WWP ID:		WUG ID:	
BRAZOSPORT WATER AUTHORITY		2000		120208093		N/A	
Recursive WMS Supply?:		Recursive WMS Project ID:					
N							
Include WUG WMS Cost numbers in WMS Source Cost Rollup?		Y					
		2010:	2020:	2030:	2040:	2050:	2060:
	WUG WMS Annual Cost:	\$0	\$11,008	\$13,059	\$7,694	\$9,095	\$10,566
	WUG Capital Costs:	\$192,361					
	Term of Debt Service:	20					

9.	WUG Region:	WUG Name:	WUG Detail:	WUG ID:		County Name:		Basin Name:	
	H	RICHWOOD	NONE	080501000		BRAZORIA		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:	2060:
	Total Strategy Supply Volume for this WUG:			0	154	155	158	166	176
	Is WUG selected for Rollup?			Y					
	Is WUG Cost selected for Rollup?			Y					

Recommendation Type?		Is Used to Meet Need?				IBT?	
Recommended		N				Y	
Seller's Name:		Seller's Alpha:		WWP ID:		WUG ID:	
BRAZOSPORT WATER AUTHORITY		2000		120208093		N/A	
Recursive WMS Supply?:		Recursive WMS Project ID:					
N							
Include WUG WMS Cost numbers in WMS Source Cost Rollup?		Y					
		2010:	2020:	2030:	2040:	2050:	2060:
	WUG WMS Annual Cost:	\$0	\$25,239	\$25,825	\$8,730	\$11,291	\$14,108
	WUG Capital Costs:	\$292,333					
	Term of Debt Service:	20					

DB12 Entries: GCWA Reclaimed Water from City of Houston

WMS Project

Sponsor Region:	H
WMS Project ID:	
WMS Project Name:	GCWA RECLAIMED WATER FROM COH
WMS Description:	Reclaimed wastewater from the COH Southwest WWTP.
WMS Type:	R : REUSE
WMS Infrastructure:	PIPELINE
Additional RWPGs:	None
Included in State Water Plan:	Y

Source(s)

Source Region	Source Name	County Name	Basin Name	Source ID	Source Type
H	ECT REUSE HARRIS CO	HARRIS	SAN JACINTO	3510101	R
Is Source Supply selected for Rollup?				Y	
Is Source Cost selected for Rollup?				Y	

County Name:	HARRIS	Water Quality Improvements	WATER QUALITY IMPRO
County ID:	101	Online Data	2020
Basin Name:	SAN JACINTO	WMS Funding Date	2020
Basin ID:	10		
Include in State Water Plan?			Y
Include WMS Source Total Yield numbers in WMS Project Total Yield Rollup?			Y
Include WMS Source Cost numbers in WMS Project Cost Rollup?			Y

1.	Sponsor Region:	H					
	WWP Name:	GULF COSAT WATER AUTHORITY					
	Total Strategy Supply Volume for this WWP:	2010:	2020:	2030:	2040:	2050:	2060:
		0	56,896	56,896	56,896	56,896	56,896

Recommendation Type?	Recommended					Is Used to Meet Need?	Y					IBT?	Y
Include WWP WMS Cost numbers in WMS Source Cost Rollup?	Y												
WWP WMS Annual Cost:	2010:	2020:	2030:	2040:	2050:	2060:	\$0	\$7,912,181	\$7,912,181	\$2,319,051	\$2,319,051	\$2,319,051	
WWP Capital Costs:	\$66,840,044												
Term of Debt Service:	20												

DB12 Entries: COH to GCWA Contract

WMS Project

Sponsor Region:	H
WMS Project ID:	
WMS Project Name:	COH TO GCWA CONTRACT
WMS Description:	COH to GCWA contract
WMS Type:	R : REUSE
WMS Infrastructure:	NO INFRASTRUCTURE
Additional RWPGs:	None
Included in State Water Plan:	Y

Source(s)

Source Region	Source Name	County Name	Basin Name	Source ID	Source Type
H	ECT REUSE HARRIS CO	HARRIS	SAN JACINTO	3510101	R
Is Source Supply selected for Rollup?				Y	
Is Source Cost selected for Rollup?				Y	

County Name:	HARRIS	Water Quality Improvements	: NO WATER QUALITY IMPROVEME
County ID:	101	Online Data	2020
Basin Name:	SAN JACINTO	WMS Funding Date	2020
Basin ID:	10		
Include in State Water Plan?			Y
Include WMS Source Total Yield numbers in WMS Project Total Yield Rollup?			Y
Include WMS Source Cost numbers in WMS Project Cost Rollup?			Y

1.	Sponsor Region:	WWP Name:					
	H	GULF COAST WATER AUTHORITY					
		2010:	2020:	2030:	2040:	2050:	2060:
	Total Strategy Supply Volume for this WWP:	0	56,896	56,896	56,896	56,896	56,896

Recommendation Type?	Is Used to Meet Need?						IBT?
Recommended	Y						Y
Include WWP WMS Cost numbers in WMS Source Cost Rollup?		Y					
	2010:	2020:	2030:	2040:	2050:	2060:	
WWP WMS Annual Cost:	\$0	\$0	\$0	\$0	\$0	\$0	\$0
WWP Capital Costs:	\$0						
Term of Debt Service:	0						

DB12 Entries: GCWA to WUG Contracts

WMS Project

Sponsor Region:	H
WMS Project ID:	H07-WUGC10
WMS Project Name:	BGC
WMS Description:	Contract with Gulf Coast Water Authority
WMS Type:	R : REUSE
WMS Infrastructure:	PIPELINE
Additional RWPGs:	None
Included in State Water Plan:	Y

Source(s)

Source Region	Source Name	County Name	Basin Name	Source ID	Source Type
H	ECT REUSE HARRIS CO	HARRIS	SAN JACINTO	3510101	R
Is Source Supply selected for Rollup?				Y	
Is Source Cost selected for Rollup?				Y	

County Name:	HARRIS	Water Quality Improvements	WATER QUALITY IMPRO
County ID:	101	Online Data	2020
Basin Name:	SAN JACINTO	WMS Funding Date	2020
Basin ID:	10		
Includes in State Water Plan			Y
Include WMS Source Total Yield numbers in WMS Project Total Yield Rollup?			Y
Include WMS Source Cost numbers in WMS Project Cost Rollup?			Y

WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:	Basin Name:			
H	ALVIN	NONE	080013000	BRAZORIA	SAN JACINTO-BRAZOS			
			2010:	2020:	2030:	2040:	2050:	2060:
Total Strategy Supply Volume for this WUG:			0	0	41	84	152	229
Is WUG selected for Rollup?			Y					
Is WUG Cost selected for Rollup?			Y					

Recommendation Type?	Is Used to Meet Need?	IBT?				
Recommended	Y	Y				
Seller's Name:	Seller's Alpha:	WWP ID:	WUG ID:			
GULF COAST WATER AUTHORITY	325	120108170	N/A			
Recursive WMS Supply?:	Recursive WMS Project ID:					
N						
Include WUG WMS Cost numbers in WMS Source Cost Rollup?						
Y						
WUG WMS Annual Cost:	2010:	2020:	2030:	2040:	2050:	2060:
	\$0	\$0	\$56,995	\$116,753	\$171,891	\$237,423
WUG Capital Costs:	\$2,498,222					
Term of Debt Service:	20					

WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:	Basin Name:			
H	BACLIFF MUD	NONE	084012000	GALVESTON	SAN JACINTO-BRAZOS			
			2010:	2020:	2030:	2040:	2050:	2060:
Total Strategy Supply Volume for this WUG:			0	838	828	813	794	772
Is WUG selected for Rollup?			Y					
Is WUG Cost selected for Rollup?			Y					

Recommendation Type?	Is Used to Meet Need?	IBT?				
Recommended	Y	Y				
Seller's Name:	Seller's Alpha:	WWP ID:	WUG ID:			
GULF COAST WATER AUTHORITY	325	120108170	N/A			
Recursive WMS Supply?:	Recursive WMS Project ID:					
N						
Include WUG WMS Cost numbers in WMS Source Cost Rollup?						
Y						
WUG WMS Annual Cost:	2010:	2020:	2030:	2040:	2050:	2060:
	\$0	\$158,825	\$158,579	\$39,705	\$39,238	\$38,698
WUG Capital Costs:	\$1,359,254					
Term of Debt Service:	20					

WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:	Basin Name:			
H	BAYOU VISTA	NONE	080759000	GALVESTON	SAN JACINTO-BRAZOS			
			2010:	2020:	2030:	2040:	2050:	2060:
Total Strategy Supply Volume for this WUG:			0	217	215	211	206	200
Is WUG selected for Rollup?			Y					
Is WUG Cost selected for Rollup?			Y					

Recommendation Type?	Is Used to Meet Need?	IBT?				
Recommended	Y	Y				
Seller's Name:	Seller's Alpha:	WWP ID:	WUG ID:			
GULF COAST WATER AUTHORITY	325	120108170	N/A			
Recursive WMS Supply?:	Recursive WMS Project ID:					
N						
Include WUG WMS Cost numbers in WMS Source Cost Rollup?						
Y						
WUG WMS Annual Cost:	2010:	2020:	2030:	2040:	2050:	2060:
	\$0	\$51,861	\$51,812	\$10,510	\$10,387	\$10,240
WUG Capital Costs:	\$472,601					
Term of Debt Service:	20					

DB12 Entries: GCWA to WUG Contracts

4	WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:		Basin Name:	
	H	CLEAR LAKE SHORES	NONE	080764000	GALVESTON		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:
				0	101	101	99	97
	Total Strategy Supply Volume for this WUG:							94
	Is WUG selected for Rollup?			Y				
	Is WUG Cost selected for Rollup?			Y				

Recommendation Type?		Is Used to Meet Need?			IBT?		
Recommended		Y			Y		
Seller's Name:		Seller's Alpha:	WWP ID:		WUG ID:		
GULF COAST WATER AUTHORITY		325	120108170		N/A		
Recursive WMS Supply?:		Recursive WMS Project ID:					
N							
Include WUG WMS Cost numbers in WMS Source Cost Rollup?		Y					
		2010:	2020:	2030:	2040:	2050:	2060:
		\$0	\$29,073	\$29,073	\$4,918	\$4,869	\$4,795
	WUG WMS Annual Cost:						
	WUG Capital Costs:		\$276,494				
	Term of Debt Service:		20				

5	WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:		Basin Name:	
	H	COUNTY-OTHER	NONE	080757084	GALVESTON		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:
				0	1,228	1,213	1,191	1,164
	Total Strategy Supply Volume for this WUG:							1,130
	Is WUG selected for Rollup?			Y				
	Is WUG Cost selected for Rollup?			Y				

Recommendation Type?		Is Used to Meet Need?			IBT?		
Recommended		Y			Y		
Seller's Name:		Seller's Alpha:	WWP ID:		WUG ID:		
GULF COAST WATER AUTHORITY		325	120108170		N/A		
Recursive WMS Supply?:		Recursive WMS Project ID:					
N							
Include WUG WMS Cost numbers in WMS Source Cost Rollup?		Y					
		2010:	2020:	2030:	2040:	2050:	2060:
		\$0	\$246,029	\$245,660	\$58,741	\$58,078	\$57,243
	WUG WMS Annual Cost:						
	WUG Capital Costs:		\$2,137,743				
	Term of Debt Service:		20				

6	WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:		Basin Name:	
	H	VESTON COUNTY WCID	NONE	084136000	GALVESTON		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:
				0	1,292	1,276	1,253	1,224
	Total Strategy Supply Volume for this WUG:							1,189
	Is WUG selected for Rollup?			Y				
	Is WUG Cost selected for Rollup?			Y				

Recommendation Type?		Is Used to Meet Need?			IBT?		
Recommended		Y			Y		
Seller's Name:		Seller's Alpha:	WWP ID:		WUG ID:		
GULF COAST WATER AUTHORITY		325	120108170		N/A		
Recursive WMS Supply?:		Recursive WMS Project ID:					
N							
Include WUG WMS Cost numbers in WMS Source Cost Rollup?		Y					
		2010:	2020:	2030:	2040:	2050:	2060:
		\$0	\$258,054	\$257,661	\$61,757	\$61,045	\$60,186
	WUG WMS Annual Cost:						
	WUG Capital Costs:		\$2,240,523				
	Term of Debt Service:		20				

7	WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:		Basin Name:	
	H	HITCHCOCK	NONE	080279000	GALVESTON		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:
				0	801	791	777	759
	Total Strategy Supply Volume for this WUG:							737
	Is WUG selected for Rollup?			Y				
	Is WUG Cost selected for Rollup?			Y				

Recommendation Type?		Is Used to Meet Need?			IBT?		
Recommended		Y			Y		
Seller's Name:		Seller's Alpha:	WWP ID:		WUG ID:		
GULF COAST WATER AUTHORITY		325	120108170		N/A		
Recursive WMS Supply?:		Recursive WMS Project ID:					
N							
Include WUG WMS Cost numbers in WMS Source Cost Rollup?		Y					
		2010:	2020:	2030:	2040:	2050:	2060:
		\$0	\$164,988	\$164,742	\$38,501	\$38,059	\$37,519
	WUG WMS Annual Cost:						
	WUG Capital Costs:		\$1,444,037				
	Term of Debt Service:		20				

DB12 Entries: GCWA to WUG Contracts

8	WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:		Basin Name:	
	H	KEMAH	NONE	080316000	GALVESTON		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:
				0	114	122	122	121
	Total Strategy Supply Volume for this WUG:							120
	Is WUG selected for Rollup?			Y				
	Is WUG Cost selected for Rollup?			Y				

Recommendation Type?		Is Used to Meet Need?				IBT?
Recommended		Y				Y
Seller's Name:		Seller's Alpha:	WWP ID:		WUG ID:	
GULF COAST WATER AUTHORITY		325	120108170		N/A	
Recursive WMS Supply?:			Recursive WMS Project ID:			
N						
Include WUG WMS Cost numbers in WMS Source Cost Rollup?			Y			
	2010:	2020:	2030:	2040:	2050:	2060:
WUG WMS Annual Cost:	\$0	\$22,301	\$23,880	\$7,159	\$5,776	\$5,579
WUG Capital Costs:	\$201,986					
Term of Debt Service:	20					

9	WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:		Basin Name:	
	H	LA MARQUE	NONE	080342000	GALVESTON		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:
				0	1,342	1,326	1,302	1,272
	Total Strategy Supply Volume for this WUG:							1,235
	Is WUG selected for Rollup?			Y				
	Is WUG Cost selected for Rollup?			Y				

Recommendation Type?		Is Used to Meet Need?				IBT?
Recommended		Y				Y
Seller's Name:		Seller's Alpha:	WWP ID:		WUG ID:	
GULF COAST WATER AUTHORITY		325	120108170		N/A	
Recursive WMS Supply?:			Recursive WMS Project ID:			
N						
Include WUG WMS Cost numbers in WMS Source Cost Rollup?			Y			
	2010:	2020:	2030:	2040:	2050:	2060:
WUG WMS Annual Cost:	\$0	\$267,428	\$267,035	\$64,125	\$63,388	\$62,479
WUG Capital Costs:	\$2,320,604					
Term of Debt Service:	20					

10	WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:		Basin Name:	
	H	LEAGUE CITY	NONE	080350000	GALVESTON		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:
				0	2,890	3,001	2,975	2,940
	Total Strategy Supply Volume for this WUG:							2,894
	Is WUG selected for Rollup?			Y				
	Is WUG Cost selected for Rollup?			Y				

Recommendation Type?		Is Used to Meet Need?				IBT?
Recommended		Y				Y
Seller's Name:		Seller's Alpha:	WWP ID:		WUG ID:	
GULF COAST WATER AUTHORITY		325	120108170		N/A	
Recursive WMS Supply?:			Recursive WMS Project ID:			
N						
Include WUG WMS Cost numbers in WMS Source Cost Rollup?			Y			
	2010:	2020:	2030:	2040:	2050:	2060:
WUG WMS Annual Cost:	\$0	\$466,357	\$487,946	\$144,327	\$121,252	\$116,035
WUG Capital Costs:	\$3,886,338					
Term of Debt Service:	20					

11	WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:		Basin Name:	
	H	MANUFACTURING	NONE	081001084	GALVESTON		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:
				0	28,631	28,291	27,776	27,129
	Total Strategy Supply Volume for this WUG:							26,352
	Is WUG selected for Rollup?			Y				
	Is WUG Cost selected for Rollup?			Y				

Recommendation Type?		Is Used to Meet Need?				IBT?
Recommended		Y				Y
Seller's Name:		Seller's Alpha:	WWP ID:		WUG ID:	
GULF COAST WATER AUTHORITY		325	120108170		N/A	
Recursive WMS Supply?:			Recursive WMS Project ID:			
N						
Include WUG WMS Cost numbers in WMS Source Cost Rollup?			Y			
	2010:	2020:	2030:	2040:	2050:	2060:
WUG WMS Annual Cost:	\$0	#####	#####	#####	#####	#####
WUG Capital Costs:	\$124,034,330					
Term of Debt Service:	20					

DB12 Entries: GCWA to WUG Contracts

12	WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:	Basin Name:	
	H	MANVEL	NONE	080721000	BRAZORIA	SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:
				0	21	18	18
	Total Strategy Supply Volume for this WUG:					19	20
	Is WUG selected for Rollup?			Y			
	Is WUG Cost selected for Rollup?			Y			

Recommendation Type?		Is Used to Meet Need?				IBT?
Recommended		Y				Y
Seller's Name:		Seller's Alpha:	WWP ID:		WUG ID:	
GULF COAST WATER AUTHORITY		325	120108170		N/A	
Recursive WMS Supply?:		Recursive WMS Project ID:				
N						
Include WUG WMS Cost numbers in WMS Source Cost Rollup?		Y				
	2010:	2020:	2030:	2040:	2050:	2060:
WUG WMS Annual Cost:	\$0	\$29,222	\$29,123	\$9,052	\$9,084	\$7,757
WUG Capital Costs:	\$219,256					
Term of Debt Service:	20					

13	WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:	Basin Name:	
	H	PEARLAND	NONE	080457000	BRAZORIA	SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:
				0	6,342	6,498	7,004
	Total Strategy Supply Volume for this WUG:					7,655	8,470
	Is WUG selected for Rollup?			Y			
	Is WUG Cost selected for Rollup?			Y			

Recommendation Type?		Is Used to Meet Need?				IBT?
Recommended		Y				Y
Seller's Name:		Seller's Alpha:	WWP ID:		WUG ID:	
GULF COAST WATER AUTHORITY		325	120108170		N/A	
Recursive WMS Supply?:		Recursive WMS Project ID:				
N						
Include WUG WMS Cost numbers in WMS Source Cost Rollup?		Y				
	2010:	2020:	2030:	2040:	2050:	2060:
WUG WMS Annual Cost:	\$0	\$6,476,402	\$6,693,386	\$3,679,428	\$4,424,868	\$5,058,080
WUG Capital Costs:	\$65,464,844					
Term of Debt Service:	20					

14	WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:	Basin Name:	
	H	SAN LEON MUD	NONE	084329000	GALVESTON	SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:
				0	1,389	1,372	1,347
	Total Strategy Supply Volume for this WUG:					1,316	1,278
	Is WUG selected for Rollup?			Y			
	Is WUG Cost selected for Rollup?			Y			

Recommendation Type?		Is Used to Meet Need?				IBT?
Recommended		Y				Y
Seller's Name:		Seller's Alpha:	WWP ID:		WUG ID:	
GULF COAST WATER AUTHORITY		325	120108170		N/A	
Recursive WMS Supply?:		Recursive WMS Project ID:				
N						
Include WUG WMS Cost numbers in WMS Source Cost Rollup?		Y				
	2010:	2020:	2030:	2040:	2050:	2060:
WUG WMS Annual Cost:	\$0	\$253,721	\$253,304	\$64,493	\$63,732	\$62,799
WUG Capital Costs:	\$2,158,601					
Term of Debt Service:	20					

15	WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:	Basin Name:	
	H	SANTA FE	NONE	080743000	GALVESTON	SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:
				0	483	477	469
	Total Strategy Supply Volume for this WUG:					458	445
	Is WUG selected for Rollup?			Y			
	Is WUG Cost selected for Rollup?			Y			

Recommendation Type?		Is Used to Meet Need?				IBT?
Recommended		Y				Y
Seller's Name:		Seller's Alpha:	WWP ID:		WUG ID:	
GULF COAST WATER AUTHORITY		325	120108170		N/A	
Recursive WMS Supply?:		Recursive WMS Project ID:				
N						
Include WUG WMS Cost numbers in WMS Source Cost Rollup?		Y				
	2010:	2020:	2030:	2040:	2050:	2060:
WUG WMS Annual Cost:	\$0	\$103,718	\$103,571	\$23,309	\$23,039	\$22,720
WUG Capital Costs:	\$918,341					
Term of Debt Service:	20					

DB12 Entries: GCWA to WUG Contracts

16	WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:		Basin Name:	
	H	TEAM ELECTRIC POWE	NONE	081002084	GALVESTON		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:
				0	1,512	1,746	2,050	2,403
	Total Strategy Supply Volume for this WUG:							
								2,807
	Is WUG selected for Rollup?			Y				
	Is WUG Cost selected for Rollup?			Y				

Recommendation Type?		Is Used to Meet Need?				IBT?		
Recommended		Y				Y		
Seller's Name:		Seller's Alpha:	WWP ID:		WUG ID:			
GULF COAST WATER AUTHORITY		325	120108170		N/A			
Recursive WMS Supply?:			Recursive WMS Project ID:					
N								
Include WUG WMS Cost numbers in WMS Source Cost Rollup?			Y					
			2010:	2020:	2030:	2040:	2050:	2060:
WUG WMS Annual Cost:			\$0	\$299,155	\$345,202	\$179,005	\$213,747	\$248,156
WUG Capital Costs:			\$4,779,876					
Term of Debt Service:			20					

17	WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:		Basin Name:	
	H	TEXAS CITY	NONE	080602000	GALVESTON		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:
				0	9,258	9,148	8,981	8,773
	Total Strategy Supply Volume for this WUG:							
								8,521
	Is WUG selected for Rollup?			Y				
	Is WUG Cost selected for Rollup?			Y				

Recommendation Type?		Is Used to Meet Need?				IBT?		
Recommended		Y				Y		
Seller's Name:		Seller's Alpha:	WWP ID:		WUG ID:			
GULF COAST WATER AUTHORITY		325	120108170		N/A			
Recursive WMS Supply?:			Recursive WMS Project ID:					
N								
Include WUG WMS Cost numbers in WMS Source Cost Rollup?			Y					
			2010:	2020:	2030:	2040:	2050:	2060:
WUG WMS Annual Cost:			\$0	\$974,509	\$971,808	\$329,931	\$324,823	\$318,635
WUG Capital Costs:			\$7,315,253					
Term of Debt Service:			20					

18	WUG Region:	WUG Name:	WUG Detail:	WUG ID:	County Name:		Basin Name:	
	H	TIKI ISLAND	NONE	080973000	GALVESTON		SAN JACINTO-BRAZOS	
				2010:	2020:	2030:	2040:	2050:
				0	437	432	424	414
	Total Strategy Supply Volume for this WUG:							
								403
	Is WUG selected for Rollup?			Y				
	Is WUG Cost selected for Rollup?			Y				

Recommendation Type?		Is Used to Meet Need?				IBT?		
Recommended		Y				Y		
Seller's Name:		Seller's Alpha:	WWP ID:		WUG ID:			
GULF COAST WATER AUTHORITY		325	120108170		N/A			
Recursive WMS Supply?:			Recursive WMS Project ID:					
N								
Include WUG WMS Cost numbers in WMS Source Cost Rollup?			Y					
			2010:	2020:	2030:	2040:	2050:	2060:
WUG WMS Annual Cost:			\$0	\$94,791	\$94,668	\$21,092	\$20,847	\$20,577
WUG Capital Costs:			\$841,650					
Term of Debt Service:			20					

Attachment P:

Comments received regarding proposed major amendment by Dow Chemical Company

The public comment period for this amendment concluded January 12, 2015 with no comments being received by the Region H Water Planning Group or the project sponsor.

Attachment Q:

Comments received regarding proposed minor amendment by Gulf Coast Water Authority

The public comment period for this amendment concluded February 18, 2015 with no comments being received by the Region H Water Planning Group or the project sponsor.

Attachment R:

Revised project prioritization for 2011 Region H Regional Water Plan

Calculations reflected are from uniform standards adopted by SHC 11/14/2013 at 3pm and approved by TWDB 12/5/2013.

** Indicates that additional data may have to be collected by RWPG in order to score projects.

Alphabetized unique identifier	Sponsor Region	Sponsor	Recommended Water Management Strategy Name	Capital Cost	Strategy Supplies 2010	Strategy Supplies 2020	Strategy Supplies 2030	Strategy Supplies 2040	Strategy Supplies 2050	Strategy Supplies 2060	MAXIMUM SCORES --->		Criteria	
											WMS Supply Volume Listed with Another Strategy?	Rural/Agricultural Conservation?	Conservation/Reuse?	10
											Uniform Standard 1A - What is the decade the RWP shows the project comes online? [2060 = 0 points; 2050 = 2; 2040 = 4; 2030 = 6; 2020 = 8; 2010 = 10]			
H1	H	ALVIN	Contract with GCWA	\$6,517,726	0	0	99	208	383	595	Y		6	
H2	H	ALVIN	Municipal conservation - large water user group	\$0	0	170	218	226	237	252	N		8	
H3	H	AMES	Expanded use of groundwater	\$266,289	0	22	42	60	84	113	N		8	
H4	H	AMES	Municipal conservation - small water user group	\$0	0	9	10	11	12	14	N		8	
H5	H	ANGLETON	Contract with Brazosport Water Authority	\$497,284	137	98	103	112	160	231	N		10	
H6	H	ANGLETON	Expanded use of groundwater	\$167,312	0	46	58	54	61	71	N		8	
H7	H	ANGLETON	Municipal conservation - large water user group	\$0	141	141	142	143	146	152	N		10	
H8	H	ARCOLA	Municipal conservation - small water user group	\$0	22	24	26	29	31	35	N		10	
H9	H	ARCOLA	NFBWA Groundwater Reduction Plan participation	\$935,300	0	106	258	295	345	397	N		10	
H10	H	BACLIFF MUD	Contract with GCWA	\$1,162,319	0	630	630	630	630	630	N		8	
H11	H	BAILEY'S PRAIRIE	Expanded use of groundwater	\$37,706	0	3	5	7	11	16	N		8	
H12	H	BAILEY'S PRAIRIE	Municipal conservation - small water user group	\$0	0	0	0	1	1	1	N		4	
H13	H	BAYOU VISTA	Expanded use of groundwater	\$9,427	0	3	4	4	4	4	N		8	
H14	H	BAYTOWN	Expanded use of groundwater	\$91,907	0	11	22	26	32	39	N		8	
H15	H	BAYTOWN	Municipal conservation	\$0	588	1,183	1,194	1,203	1,228	1,263	N		10	
H16	H	BAYTOWN AREA WATER A	City of Houston to Baytown Area Water Authority contract	\$0	0	26	262	398	535	692	Y		8	
H17	H	BEACH CITY	Contract with CLCND	\$6,047,471	0	280	350	414	483	552	Y		8	
H18	H	BEACH CITY	Expanded use of groundwater	\$0	0	24	38	48	58	65	N		8	
H19	H	BEACH CITY	Interim strategies - temporary overdraft	\$75,409	32	0	0	0	0	0	N		10	
H20	H	BEACH CITY	Municipal conservation - small water user group	\$0	15	20	24	28	32	41	N		10	
H21	H	BEACH CITY	Reallocation of existing supplies	\$419,178	178	0	0	0	0	0	N		10	
H22	H	BEASLEY	Expanded use of groundwater	\$212,090	0	12	26	42	64	90	N		8	
H23	H	BEASLEY	Municipal conservation - small water user group	\$0	0	6	7	8	9	10	N		8	
H24	H	BELLAIRE	Contract with City of Houston	\$1,679,461	0	1,142	1,327	1,841	2,179	2,179	Y		8	
H25	H	BELLAIRE	Expanded use of groundwater	\$245,070	0	52	104	104	104	104	N		8	
H26	H	BELLAIRE	Municipal conservation - large water user group	\$0	237	253	270	287	305	325	N		10	
H27	H	BELLAIRE	Reallocation of existing supplies	\$2,839,606	1,440	489	496	259	172	467	N		10	
H28	H	BELLVILLE	Expanded use of groundwater	\$1,640,915	0	285	472	568	618	697	N		8	
H29	H	BELLVILLE	Municipal conservation - medium water user group	\$0	0	88	99	105	108	113	N		8	
H30	H	BLUE BELL MANOR UTILITY	City of Houston Groundwater Reduction Plan participation	\$972,541	140	363	413	407	402	402	N		10	
H31	H	BLUE BELL MANOR UTILITY	Municipal conservation - small water user group	\$0	32	31	31	30	30	30	N		10	
H32	H	BOLIVAR PENINSULAR SUD	Municipal conservation - medium water user group	\$0	67	72	74	75	75	76	N		10	
H33	H	BRAZORIA COUNTY MUD #	Expanded use of groundwater	\$3,874,222	0	300	650	955	1,294	1,648	N		8	
H34	H	BRAZORIA COUNTY MUD #	Municipal conservation - medium water user group	\$0	0	72	95	114	135	158	N		8	
H35	H	BRAZORIA COUNTY MUD #	Expanded use of groundwater	\$4,836,230	0	380	813	1,200	1,621	2,060	N		8	
H36	H	BRAZORIA COUNTY MUD #	Municipal conservation - medium water user group	\$0	0	95	122	147	173	201	N		8	
H37	H	BRAZORIA COUNTY MUD #	Expanded use of groundwater	\$2,791,390	0	217	468	687	931	1,186	N		8	
H38	H	BRAZORIA COUNTY MUD #	Municipal conservation - medium water user group	\$0	0	52	68	82	97	113	N		8	
H39	H	BRAZOS RIVER AUTHORITY	Allens Creek Reservoir	\$66,825,720	0	17,218	16,529	26,334	29,895	29,895	N		8	
H40	H	BRAZOS RIVER AUTHORITY	BRA system operations permit	\$0	0	6,621	18,870	25,350	25,350	25,350	N		8	
H41	H	BRAZOS RIVER AUTHORITY	BRA to Brazosport Water Authority contract	\$0	0	116	124	1,557	3,183	5,435	Y		8	
H42	H	BRAZOS RIVER AUTHORITY	BRA to Cities of Richmond-Rosenberg contract	\$0	0	0	0	1,091	3,060	5,645	Y		4	

H43	H	BRAZOS RIVER AUTHORITY	BRA to City of Sugar Land contract	\$0	0	1,027	2,947	3,616	3,875	4,756	Y			8
H44	H	BRAZOS RIVER AUTHORITY	BRA to GCWA contract	\$0	0	17,779	40,008	50,205	56,200	65,564	Y			8
H45	H	BRAZOS RIVER AUTHORITY	BRA to NRG Energy contract	\$0	0	0	0	0	0	8,500	Y			0
H46	H	BRAZOS RIVER AUTHORITY	Brazoria off-channel reservoir	\$173,898,602	0	0	0	0	0	24,000	N			0
H47	H	BRAZOS RIVER AUTHORITY	Brazos saltwater barrier	\$44,470,739	0	0	0	0	0	0	N			8
H48	H	BRAZOS RIVER AUTHORITY	City of Houston to BRA contract	\$0	0	27,498	25,201	57,886	69,755	69,755	Y			8
H49	H	BRAZOS RIVER AUTHORITY	Fort Bend off-channel reservoir	\$202,514,788	0	0	0	0	90	45,943	N			2
H50	H	BRAZOS RIVER AUTHORITY	Freeport desalination plant	\$255,699,000	0	0	0	0	33,600	33,600	N			2
H51	H	BRAZOSPORT WATER AUT	BRA to Brazosport Water Authority contract	\$0	0	116	124	1,557	3,183	5,435	Y			8
H52	H	BRITMOORE UTILITIES	Contract with City of Houston	\$473,016	0	0	339	479	570	570	Y			6
H53	H	BRITMOORE UTILITIES	Municipal conservation - small water user group	\$0	26	31	35	39	43	48	N			10
H54	H	BRITMOORE UTILITIES	Reallocation of existing supplies	\$804,698	115	354	127	67	45	121	N			10
H55	H	BROOKSHIRE	Expanded use of groundwater	\$2,471,440	0	124	304	506	754	1,050	N			8
H56	H	BROOKSHIRE	Municipal conservation - medium water user group	\$0	0	50	62	75	90	109	N			8
H57	H	BROOKSIDE VILLAGE	Expanded use of groundwater	\$292,211	0	14	39	63	91	124	N			8
H58	H	BROOKSIDE VILLAGE	Municipal conservation - small water user group	\$0	0	16	18	19	21	23	N			8
H59	H	BUFFALO	Expanded use of groundwater	\$124,896	0	36	53	49	44	47	N			8
H60	H	BUFFALO	Municipal conservation - small water user group	\$0	0	21	22	22	22	22	N			8
H61	H	BUNKER HILL VILLAGE	Contract with City of Houston	\$0	0	0	335	399	415	415	Y			6
H62	H	BUNKER HILL VILLAGE	Municipal conservation - medium water user group	\$0	90	89	88	87	87	87	N			10
H63	H	BUNKER HILL VILLAGE	Reallocation of existing supplies	\$909,963	478	469	125	56	33	33	N			10
H64	H	CANDLELIGHT HILLS SUBDI	Contract with City of Houston	\$479,858	0	0	331	470	561	561	Y			6
H65	H	CANDLELIGHT HILLS SUBDI	Municipal conservation - small water user group	\$0	25	29	34	38	43	47	N			10
H66	H	CANDLELIGHT HILLS SUBDI	Reallocation of existing supplies	\$786,078	110	342	123	66	44	123	N			10
H67	H	CENTERVILLE	Expanded use of groundwater	\$49,488	0	14	21	18	16	17	N			8
H68	H	CENTERVILLE	Municipal conservation - small water user group	\$0	0	11	12	11	11	11	N			8
H69	H	CENTRAL HARRIS COUNTY	CHCRWA Groundwater Reduction Plan	\$0	2,375	4,146	4,789	4,806	4,806	4,806	Y			10
H70	H	CENTRAL HARRIS COUNTY	CHCRWA internal distribution	\$0	2,375	4,146	4,789	4,806	4,806	4,806	Y			10
H71	H	CENTRAL HARRIS COUNTY	CHCRWA transmission line	\$0	2,375	4,146	4,789	4,806	4,806	4,806	Y			10
H72	H	CENTRAL HARRIS COUNTY	City of Houston to CHCRWA contract	\$0	0	1,771	2,414	2,431	2,431	2,431	Y			8
H73	H	CENTRAL HARRIS COUNTY	Contract with CHCRWA	\$2,048,820	0	977	862	720	631	546	N			8
H74	H	CENTRAL HARRIS COUNTY	Contract with CHCRWA	\$1,867,449	0	794	1,129	1,500	1,668	1,668	Y			8
H75	H	CENTRAL HARRIS COUNTY	Municipal conservation - small water user group	\$0	0	357	357	357	357	357	N			8
H76	H	CENTRAL HARRIS COUNTY	Reallocation of existing supplies	\$191,570	0	0	423	211	132	217	N			6
H77	H	CHAMBERS-LIBERTY COUN	CLCND West Chambers System	\$20,380,000	0	1,691	1,978	2,235	2,511	2,804	N			10
H78	H	CHIMNEY HILL MUD	Contract with City of Houston	\$261,212	0	0	27	27	118	118	Y			6
H79	H	CHIMNEY HILL MUD	Municipal conservation - medium water user group	\$0	0	26	37	37	36	36	N			8
H80	H	CHIMNEY HILL MUD	Reallocation of existing supplies	\$47,715	0	0	10	4	2	0	N			6
H81	H	CLEAR BROOK CITY MUD V	Expanded use of groundwater	\$89,549	0	18	38	38	38	38	N			8
H82	H	CLEAR LAKE SHORES	Contract with GCWA	\$975,863	0	87	89	89	89	89	N			8
H83	H	CLEAR LAKE SHORES	Expanded use of groundwater	\$0	0	1	1	1	1	1	N			8
H84	H	CLEAR LAKE SHORES	Interim strategies - temporary overdraft	\$195,566	83	0	0	0	0	0	N			10
H85	H	CLEAR LAKE SHORES	Municipal conservation - small water user group	\$0	16	16	16	16	16	16	N			10
H86	H	CLEVELAND	Expanded use of groundwater	\$443,014	0	24	51	75	123	188	N			8
H87	H	CLEVELAND	Municipal conservation - medium water user group	\$0	0	24	51	75	87	91	N			8
H88	H	CLUTE	Contract with Brazosport Water Authority	\$349,878	0	0	24	42	84	144	N			6
H89	H	CLUTE	Expanded use of groundwater	\$103,689	0	0	14	20	32	44	N			6
H90	H	CLUTE	Municipal conservation - large water user group	\$0	34	67	80	82	86	90	N			10
H91	H	COLDSPRING	Expanded use of groundwater	\$186,170	0	30	54	68	75	79	N			8
H92	H	COLDSPRING	Municipal conservation - small water user group	\$0	0	13	14	15	15	15	N			8
H93	H	CONROE	Contract with SJRA	\$9,663,986	0	0	0	2,165	9,786	17,812	Y			4
H94	H	CONROE	Expanded use of groundwater	\$0	0	0	37	359	626	858	N			6
H95	H	CONROE	Interim strategies - temporary overdraft	\$4,159,924	1,870	0	0	0	0	0	N			10
H96	H	CONROE	Municipal conservation - large water user group	\$0	714	925	1,174	1,457	1,830	2,273	N			10
H97	H	CONROE	SJRA Water Resources Assessment Plan participation	\$32,378,451	0	12,849	16,769	15,216	13,490	12,274	Y			10
H98	H	CONSOLIDATED WSC	Expanded use of groundwater	\$2,357	0	1	1	0	0	0	N			8
H99	H	CONSUMERS WATER INC	Contract with City of Houston	\$697,026	0	0	352	522	661	661	Y			6
H100	H	CONSUMERS WATER INC	Interim strategies - temporary overdraft	\$89,547	38	0	0	0	0	0	N			10
H101	H	CONSUMERS WATER INC	Municipal conservation - medium water user group	\$0	37	45	57	68	81	96	N			10

H102	H	CONSUMERS WATER INC	Reallocation of existing supplies	\$823,058	96	336	131	74	52	173	N			10
H103	H	CONSUMERS WATER INC	SJRA Water Resources Assessment Plan participation	\$841,177	0	89	143	204	291	395	N			10
H104	H	COUNTY-OTHER, AUSTIN	Expanded use of groundwater	\$172,030	0	29	50	58	63	73	N			8
H105	H	COUNTY-OTHER, AUSTIN	Municipal conservation - small water user group	\$0	0	19	20	21	21	21	N			8
H106	H	COUNTY-OTHER, BRAZOR	Contract with Brazosport Water Authority	\$14,149,011	6,482	5,689	6,318	5,879	5,355	4,546	N			10
H107	H	COUNTY-OTHER, BRAZOR	Contract with Brazosport Water Authority	\$2,102,169	0	116	124	1,557	3,183	5,435	Y			8
H108	H	COUNTY-OTHER, BRAZOR	Expanded use of groundwater	\$6,545,334	0	1,945	2,687	2,793	2,758	2,722	N			8
H109	H	COUNTY-OTHER, BRAZOR	Municipal conservation - small water user group	\$0	801	869	951	1,017	1,098	1,187	N			10
H110	H	COUNTY-OTHER, BRAZOR	Wastewater reclamation for municipal irrigation	\$612,746	0	0	116	227	344	465	N			6
H111	H	COUNTY-OTHER, CHAMBE	Contract with CLCND	\$3,155,158	0	288	280	272	265	265	Y			8
H112	H	COUNTY-OTHER, CHAMBE	Interim strategies - temporary overdraft	\$454,446	193	0	0	0	0	0	N			10
H113	H	COUNTY-OTHER, CHAMBE	Municipal conservation - small water user group	\$0	26	25	24	22	22	21	N			10
H114	H	COUNTY-OTHER, CHAMBE	Reallocation of existing supplies	\$245,025	104	0	0	0	0	0	N			10
H115	H	COUNTY-OTHER, FORT BEN	City of Missouri City Groundwater Reduction Plan participation	\$4,467,355	0	198	944	1,523	1,724	1,788	N			10
H116	H	COUNTY-OTHER, FORT BEN	City of Sugar Land Groundwater Reduction Plan participation	\$4,470,689	0	131	979	1,829	2,105	1,997	N			10
H117	H	COUNTY-OTHER, FORT BEN	Contract with BRA	\$239,698,342	0	23	487	4,477	19,667	37,779	Y			8
H118	H	COUNTY-OTHER, FORT BEN	Contract with GCWA	\$34,290,507	0	0	0	1,950	1,950	1,950	Y			4
H119	H	COUNTY-OTHER, FORT BEN	Municipal conservation - small water user group	\$0	34	92	296	798	1,861	3,085	N			10
H120	H	COUNTY-OTHER, FORT BEN	Wastewater reclamation for municipal irrigation	\$8,973,765	0	0	477	1,616	4,045	6,810	N			6
H121	H	COUNTY-OTHER, GALVEST	Contract with GCWA	\$24,107,245	0	2,659	2,659	2,659	2,659	2,659	N			8
H122	H	COUNTY-OTHER, HARRIS	City of Houston indirect reuse	\$157,804,088	0	0	0	11,372	32,445	32,445	N			4
H123	H	COUNTY-OTHER, HARRIS	Contract with City of Houston	\$1,234,058	0	0	47	47	2,202	2,202	Y			6
H124	H	COUNTY-OTHER, HARRIS	Contract with SJRA	\$34,903,768	0	0	5,299	19,014	16,041	17,533	N			6
H125	H	COUNTY-OTHER, HARRIS	Municipal conservation - small water user group	\$0	0	0	823	1,890	3,350	4,892	N			6
H126	H	COUNTY-OTHER, HARRIS	Reallocation of existing supplies	\$7,549,158	203	0	17	181	1,937	13,715	N			10
H127	H	COUNTY-OTHER, HARRIS	Wastewater reclamation for municipal irrigation	\$11,663,259	0	0	1,008	3,001	5,818	8,780	N			6
H128	H	COUNTY-OTHER, LEON	Expanded use of groundwater	\$117,828	0	41	50	32	18	24	N			8
H129	H	COUNTY-OTHER, LEON	Municipal conservation - small water user group	\$0	0	41	47	32	18	24	N			8
H130	H	COUNTY-OTHER, LIBERTY	Expanded use of groundwater	\$7,110,457	0	422	988	1,582	2,221	3,023	N			8
H131	H	COUNTY-OTHER, LIBERTY	Municipal conservation - small water user group	\$0	0	279	312	345	382	428	N			8
H132	H	COUNTY-OTHER, MADISON	Expanded use of groundwater	\$426,512	0	65	113	78	112	181	N			8
H133	H	COUNTY-OTHER, MADISON	Municipal conservation - small water user group	\$0	0	56	59	60	62	64	N			8
H134	H	COUNTY-OTHER, MONTGC	Contract with SJRA	\$21,897,960	0	0	0	537	8,580	25,585	Y			4
H135	H	COUNTY-OTHER, MONTGC	Expanded use of groundwater	\$1,607,119	0	0	406	2,740	5,360	7,371	N			6
H136	H	COUNTY-OTHER, MONTGC	Interim strategies - temporary overdraft	\$8,156,834	3,989	0	0	0	0	0	N			10
H137	H	COUNTY-OTHER, MONTGC	Municipal conservation - small water user group	\$0	1,272	1,508	2,131	2,879	3,962	5,221	N			10
H138	H	COUNTY-OTHER, MONTGC	SJRA Water Resources Assessment Plan participation	\$32,798,932	0	10,308	16,122	19,183	13,789	5,335	N			10
H139	H	COUNTY-OTHER, MONTGC	SJRA Water Resources Assessment Plan participation	\$26,789,272	0	0	375	4,087	12,079	17,836	Y			8
H140	H	COUNTY-OTHER, MONTGC	Wastewater reclamation for municipal irrigation	\$13,460,649	0	0	1,752	3,838	6,787	10,215	N			6
H141	H	COUNTY-OTHER, POLK	Expanded use of groundwater	\$838,828	0	71	124	174	260	356	N			8
H142	H	COUNTY-OTHER, POLK	Municipal conservation - small water user group	\$0	0	91	97	100	104	110	N			8
H143	H	COUNTY-OTHER, SAN JACI	Expanded use of groundwater	\$1,246,221	0	280	452	347	279	261	N			8
H144	H	COUNTY-OTHER, SAN JACI	Municipal conservation - small water user group	\$0	0	54	58	61	62	63	N			8
H145	H	COUNTY-OTHER, TRINITY	Expanded use of groundwater	\$82,479	0	32	35	21	0	0	N			8
H146	H	COUNTY-OTHER, WALKER	Expanded use of groundwater	\$2,357	0	1	0	0	0	0	N			8
H147	H	COUNTY-OTHER, WALKER	Municipal conservation - small water user group	\$0	0	1	0	0	0	0	N			8
H148	H	COUNTY-OTHER, WALLER	Expanded use of groundwater	\$3,377,200	0	172	414	659	1,024	1,435	N			8
H149	H	COUNTY-OTHER, WALLER	Municipal conservation - small water user group	\$0	0	79	110	124	144	168	N			8
H150	H	CROSBY MUD	Expanded use of groundwater	\$63,627	0	14	27	27	27	27	N			8
H151	H	CROSBY MUD	Municipal conservation - medium water user group	\$0	0	0	0	0	0	11	N			0
H152	H	CRYSTAL SPRNGS WATER C	Contract with City of Houston	\$33,055	0	0	17	26	32	32	Y			6
H153	H	CRYSTAL SPRNGS WATER C	Expanded use of groundwater	\$91,897	0	0	0	8	45	72	N			4
H154	H	CRYSTAL SPRNGS WATER C	Interim strategies - temporary overdraft	\$242,671	103	0	0	0	0	0	N			10
H155	H	CRYSTAL SPRNGS WATER C	Municipal conservation - medium water user group	\$0	36	42	56	72	95	121	N			10
H156	H	CRYSTAL SPRNGS WATER C	Municipal conservation - small water user group	\$0	1	2	2	2	3	3	N			10
H157	H	CRYSTAL SPRNGS WATER C	Reallocation of existing supplies	\$141,596	5	17	7	4	3	9	N			10
H158	H	CRYSTAL SPRNGS WATER C	SJRA Water Resources Assessment Plan participation	\$3,058,693	0	257	439	663	982	1,371	N			10
H159	H	CUT AND SHOOT	Contract with SJRA	\$159,521	0	0	0	33	147	265	Y			4
H160	H	CUT AND SHOOT	Interim strategies - temporary overdraft	\$84,834	36	0	0	0	0	0	N			10

H161	H	CUT AND SHOOT	Municipal conservation - small water user group	\$0	12	13	16	19	24	29	N			10
H162	H	CUT AND SHOOT	SJRA Water Resources Assessment Plan participation	\$117,822	0	86	0	0	0	0	N			10
H163	H	CUT AND SHOOT	SJRA Water Resources Assessment Plan participation	\$705,001	0	0	261	233	203	183	Y			8
H164	H	DAISETTA	Expanded use of groundwater	\$42,421	0	3	5	7	11	18	N			8
H165	H	DAISETTA	Municipal conservation - small water user group	\$0	0	3	5	7	8	10	N			8
H166	H	DANBURY	Expanded use of groundwater	\$91,906	0	0	7	14	25	39	N			6
H167	H	DANBURY	Municipal conservation - small water user group	\$0	0	11	13	13	14	15	N			8
H168	H	DAYTON	Expanded use of groundwater	\$4,970,872	0	424	816	1,187	1,618	2,118	N			8
H169	H	DAYTON	Municipal conservation - medium water user group	\$0	0	129	152	174	200	230	N			8
H170	H	DEER PARK	Expanded use of groundwater	\$9,427	0	1	4	4	4	4	N			8
H171	H	DEER PARK	Municipal conservation	\$0	293	522	525	528	539	554	N			10
H172	H	DICKINSON	Contract with Galveston County WCID #1	\$1,807,960	0	766	909	940	975	1,014	N			8
H173	H	DICKINSON	Expanded use of groundwater	\$0	0	33	50	50	50	50	N			8
H174	H	DICKINSON	Interim strategies	\$1,146,303	489	0	0	0	0	0	N			10
H175	H	DICKINSON	Municipal conservation - large water user group	\$0	196	217	227	230	232	235	N			10
H176	H	DOW CHEMICAL USA	DOW off-channel Reservoir	\$226,837,000	0	80,000	80,000	80,000	80,000	80,000	N			8
H177	H	EAST PLANTATION UD	Contract with SJRA	\$544,862	0	0	0	91	426	794	Y			4
H178	H	EAST PLANTATION UD	Expanded use of groundwater	\$0	0	0	0	11	38	59	N			4
H179	H	EAST PLANTATION UD	Interim strategies - temporary overdraft	\$193,211	82	0	0	0	0	0	N			10
H180	H	EAST PLANTATION UD	Municipal conservation - small water user group	\$0	26	31	41	53	69	88	N			10
H181	H	EAST PLANTATION UD	SJRA Water Resources Assessment Plan participation	\$285,054	0	203	0	0	0	0	N			10
H182	H	EAST PLANTATION UD	SJRA Water Resources Assessment Plan participation	\$1,818,729	0	0	670	635	586	547	Y			8
H183	H	EL DORADO UD	City of Houston Groundwater Reduction Plan participation	\$1,239,025	130	325	403	440	481	526	N			10
H184	H	EL DORADO UD	Municipal conservation - medium water user group	\$0	9	30	32	35	37	40	N			10
H185	H	EL LAGO	Contract with City of Pasadena	\$55,583	0	0	206	258	276	276	Y			6
H186	H	EL LAGO	Municipal conservation - small water user group	\$0	30	29	28	28	28	28	N			10
H187	H	EL LAGO	Reallocation of existing supplies	\$573,047	248	270	77	36	22	33	N			10
H188	H	FAIRCHILDS	Contract with BRA	\$9,374,505	0	125	354	483	657	856	Y			8
H189	H	FAIRCHILDS	Municipal conservation - small water user group	\$0	0	29	36	44	54	66	N			8
H190	H	FIRST COLONY MUD #9	City of Missouri City Groundwater Reduction Plan participation	\$916,985	0	342	390	163	78	50	N			10
H191	H	FIRST COLONY MUD #9	Contract with City of Missouri City	\$1,586,729	0	0	403	668	801	876	Y			6
H192	H	FIRST COLONY MUD #9	Municipal conservation - medium water user group	\$0	0	85	87	90	93	96	N			8
H193	H	FLO COMMUNITY WSC	Expanded use of groundwater	\$376,981	0	107	160	156	141	149	N			8
H194	H	FLO COMMUNITY WSC	Municipal conservation - medium water user group	\$0	0	31	34	34	33	34	N			8
H195	H	FORT BEND COUNTY MUD	City of Sugar Land Groundwater Reduction Plan participation	\$654,698	0	80	278	127	64	37	N			10
H196	H	FORT BEND COUNTY MUD	Contract with City of Sugar Land	\$926,837	0	155	245	394	457	484	Y			8
H197	H	FORT BEND COUNTY MUD	Municipal conservation - small water user group	\$0	0	53	53	53	53	53	N			8
H198	H	FORT BEND COUNTY MUD	Contract with City of Sugar Land	\$634,307	0	141	312	312	312	312	Y			8
H199	H	FORT BEND COUNTY MUD	Municipal conservation - small water user group	\$0	0	32	32	32	32	32	N			8
H200	H	FORT BEND COUNTY MUD	City of Sugar Land Groundwater Reduction Plan participation	\$252,136	0	64	107	102	51	29	N			10
H201	H	FORT BEND COUNTY MUD	Contract with City of Sugar Land	\$811,605	0	186	417	417	417	417	Y			8
H202	H	FORT BEND COUNTY MUD	Municipal conservation - medium water user group	\$0	0	46	46	46	46	46	N			8
H203	H	FORT BEND COUNTY MUD	City of Missouri City Groundwater Reduction Plan participation	\$1,234,366	0	464	526	210	94	58	N			10
H204	H	FORT BEND COUNTY MUD	Contract with City of Missouri City	\$1,812,349	0	0	543	859	976	1,012	Y			6
H205	H	FORT BEND COUNTY MUD	Municipal conservation	\$0	71	141	141	141	141	141	N			10
H206	H	FORT BEND COUNTY MUD	Contract with BRA	\$41,171,973	0	0	1,025	1,769	2,775	3,924	Y			6
H207	H	FORT BEND COUNTY MUD	Fort Bend County MUD #25 Groundwater Reduction Plan - reuse	\$776,145	0	589	589	589	589	589	N			10
H208	H	FORT BEND COUNTY MUD	Municipal conservation - large water user group	\$0	101	141	191	241	309	387	N			10
H209	H	FORT BEND COUNTY MUD	City of Sugar Land Groundwater Reduction Plan participation	\$270,984	0	69	115	108	54	31	N			10
H210	H	FORT BEND COUNTY MUD	Contract with City of Sugar Land	\$852,071	0	197	441	441	441	441	Y			8
H211	H	FORT BEND COUNTY MUD	Municipal conservation - medium water user group	\$0	0	49	49	48	48	48	N			8
H212	H	FORT BEND COUNTY MUD	City of Sugar Land Groundwater Reduction Plan participation	\$188,518	0	50	74	80	40	23	N			10
H213	H	FORT BEND COUNTY MUD	Contract with City of Sugar Land	\$654,586	0	144	324	324	324	324	Y			8
H214	H	FORT BEND COUNTY MUD	Municipal conservation - medium water user group	\$0	0	36	36	36	36	36	N			8
H215	H	FORT BEND COUNTY MUD	City of Sugar Land Groundwater Reduction Plan participation	\$148,461	0	40	51	63	32	18	N			10
H216	H	FORT BEND COUNTY MUD	Contract with City of Sugar Land	\$546,336	0	117	260	260	260	260	Y			8
H217	H	FORT BEND COUNTY MUD	Municipal conservation - small water user group	\$0	0	27	26	26	26	26	N			8
H218	H	FORT BEND COUNTY MUD	Contract with BRA	\$20,877,667	0	253	734	1,042	1,451	1,918	Y			8
H219	H	FORT BEND COUNTY MUD	Municipal conservation - small water user group	\$0	43	57	75	93	117	144	N			10

H220	H	FORT BEND COUNTY WCID	Fort Bend County WCID #2 Groundwater Reduction Plan	\$24,828,857	0	2,296	5,753	5,753	5,753	5,753	Y			10
H221	H	FORT BEND COUNTY WCID	GCWA to Fort Bend County WCID #2 contract	\$0	0	491	1,092	1,092	1,092	1,092	Y			8
H222	H	FOUNTAINVIEW SUBDIVISI	Contract with City of Houston	\$300,428	0	0	237	326	384	384	Y			6
H223	H	FOUNTAINVIEW SUBDIVISI	Municipal conservation - small water user group	\$0	19	22	24	27	30	32	N			10
H224	H	FOUNTAINVIEW SUBDIVISI	Reallocation of existing supplies	\$594,472	83	250	89	46	30	81	N			10
H225	H	FREEPORT	Contract with Brazosport Water Authority	\$1,714,929	0	95	263	439	670	950	N			8
H226	H	FREEPORT	Expanded use of groundwater	\$801,151	0	54	173	245	297	340	N			8
H227	H	FREEPORT	Municipal conservation - large water user group	\$0	0	139	158	175	194	216	N			8
H228	H	FRIENDSWOOD	Expanded use of groundwater	\$94,262	0	28	40	38	40	40	N			8
H229	H	FULSHEAR	Fulshear reuse	\$566,625	0	287	430	430	430	430	N			8
H230	H	FULSHEAR	Municipal conservation - small water user group	\$0	12	25	31	37	46	55	N			10
H231	H	FULSHEAR	NFBWA Groundwater Reduction Plan participation	\$702,763	0	0	0	0	121	290	N			2
H232	H	GALENA PARK	Contract with City of Houston	\$112,338	0	0	24	35	66	66	Y			6
H233	H	GALENA PARK	Expanded use of groundwater	\$4,713	0	0	2	2	2	2	N			6
H234	H	GALENA PARK	Municipal conservation - large water user group	\$0	78	78	79	79	81	84	N			10
H235	H	GALENA PARK	Reallocation of existing supplies	\$188,211	22	25	9	5	5	49	N			10
H236	H	GALVESTON	Contract with City of Galveston	\$10,542,328	0	7,262	7,262	7,262	7,262	7,262	N			8
H237	H	GALVESTON	GCWA to City of Galveston contract	\$0	0	7,262	7,262	7,262	7,262	7,262	Y			8
H238	H	GALVESTON COUNTY MUD	Expanded use of groundwater	\$18,853	0	5	8	8	8	8	N			8
H239	H	GALVESTON COUNTY WCID	GCWA to Galveston County WCID #1 contract	\$0	0	766	909	940	975	1,014	Y			8
H240	H	GALVESTON COUNTY WCID	Contract with GCWA	\$21,443,918	0	2,287	2,287	2,287	2,287	2,287	N			8
H241	H	GALVESTON COUNTY WCID	Expanded use of groundwater	\$9,427	0	3	4	4	4	4	N			8
H242	H	GREEN TRAILS MUD	City of Houston Groundwater Reduction Plan participation	\$2,831,586	224	668	862	973	1,087	1,204	N			10
H243	H	GREEN TRAILS MUD	Municipal conservation - small water user group	\$0	51	57	64	71	77	84	N			10
H244	H	GULF COAST WATER AUTH	BRA to GCWA contract	\$0	0	17,779	40,008	50,205	56,200	65,564	Y			8
H245	H	GULF COAST WATER AUTH	GCWA off-channel reservoir	\$197,448,012	0	0	39,500	39,500	39,500	39,500	N			6
H246	H	H M W SUD	Contract with SJRA	\$1,237,343	0	0	0	261	1,164	2,091	Y			4
H247	H	H M W SUD	Interim strategies - temporary overdraft	\$663,391	282	0	0	0	0	0	N			10
H248	H	H M W SUD	Municipal conservation - large water user group	\$0	108	118	145	175	218	267	N			10
H249	H	H M W SUD	SJRA Water Resources Assessment Plan participation	\$915,989	0	672	0	0	0	0	N			10
H250	H	H M W SUD	SJRA Water Resources Assessment Plan participation	\$4,677,840	0	0	2,067	1,833	1,605	1,441	Y			8
H251	H	HARDIN	Expanded use of groundwater	\$233,300	0	19	36	55	75	99	N			8
H252	H	HARDIN	Municipal conservation - small water user group	\$0	0	9	10	11	12	13	N			8
H253	H	HARDIN WSC	Expanded use of groundwater	\$1,253,378	0	102	200	298	406	532	N			8
H254	H	HARDIN WSC	Municipal conservation - small water user group	\$0	0	37	43	48	54	61	N			8
H255	H	HARRIS COUNTY FWSD #4	Contract with NCWA	\$0	0	0	3	3	3	3	Y			6
H256	H	HARRIS COUNTY FWSD #4	Municipal conservation - medium water user group	\$0	25	24	23	23	17	17	N			10
H257	H	HARRIS COUNTY FWSD #4	Reallocation of existing supplies	\$147,390	25	14	1	0	0	0	N			10
H258	H	HARRIS COUNTY FWSD #5	Contract with NCWA	\$0	0	0	182	187	196	196	Y			6
H259	H	HARRIS COUNTY FWSD #5	Municipal conservation	\$0	127	173	172	169	169	169	N			10
H260	H	HARRIS COUNTY FWSD #5	Reallocation of existing supplies	\$717,885	363	266	68	26	15	15	N			10
H261	H	HARRIS COUNTY FWSD #6	Contract with NCWA	\$266,919	0	0	134	207	260	260	Y			6
H262	H	HARRIS COUNTY FWSD #6	Expanded use of groundwater	\$21,209	0	5	9	9	9	9	N			8
H263	H	HARRIS COUNTY FWSD #6	Municipal conservation - medium water user group	\$0	21	24	26	29	32	36	N			10
H264	H	HARRIS COUNTY FWSD #6	Reallocation of existing supplies	\$405,886	103	145	50	29	21	74	N			10
H265	H	HARRIS COUNTY MUD #11	City of Houston Groundwater Reduction Plan participation	\$1,279,090	102	303	389	437	487	543	N			10
H266	H	HARRIS COUNTY MUD #11	Municipal conservation - small water user group	\$0	23	26	29	32	35	38	N			10
H267	H	HARRIS COUNTY MUD #11	City of Houston Groundwater Reduction Plan participation	\$1,563,834	211	588	665	652	644	644	N			10
H268	H	HARRIS COUNTY MUD #11	Municipal conservation - medium water user group	\$0	52	55	54	52	52	52	N			10
H269	H	HARRIS COUNTY MUD #13	Municipal conservation - medium water user group	\$0	105	130	154	178	202	227	N			10
H270	H	HARRIS COUNTY MUD #13	WHCRWA Groundwater Reduction Plan participation	\$7,140,215	421	1,393	1,909	2,292	2,667	3,058	N			10
H271	H	HARRIS COUNTY MUD #15	Municipal conservation - medium water user group	\$0	76	76	75	75	75	75	N			10
H272	H	HARRIS COUNTY MUD #15	WHCRWA Groundwater Reduction Plan participation	\$2,188,073	306	811	932	925	925	925	N			10
H273	H	HARRIS COUNTY MUD #15	Municipal conservation - medium water user group	\$0	47	60	73	86	100	113	N			10
H274	H	HARRIS COUNTY MUD #15	WHCRWA Groundwater Reduction Plan participation	\$3,611,948	189	650	909	1,112	1,324	1,536	N			10
H275	H	HARRIS COUNTY MUD #15	City of Houston Groundwater Reduction Plan participation	\$6,514,003	295	1,069	1,559	1,961	2,373	2,782	N			10
H276	H	HARRIS COUNTY MUD #15	Municipal conservation - medium water user group	\$0	73	99	126	151	177	203	N			10
H277	H	HARRIS COUNTY MUD #15	City of Houston Groundwater Reduction Plan participation	\$2,685,245	163	532	721	860	995	1,141	N			10
H278	H	HARRIS COUNTY MUD #15	Municipal conservation - medium water user group	\$0	40	49	58	67	75	85	N			10

H279	H	HARRIS COUNTY MUD #15	Contract with City of Houston	\$106,157	0	0	18	18	18	18	Y			6
H280	H	HARRIS COUNTY MUD #15	Municipal conservation - medium water user group	\$0	0	7	35	34	34	34	N			8
H281	H	HARRIS COUNTY MUD #15	Reallocation of existing supplies	\$41,283	0	0	7	2	1	0	N			6
H282	H	HARRIS COUNTY MUD #18	Municipal conservation - medium water user group	\$0	37	44	51	59	66	74	N			10
H283	H	HARRIS COUNTY MUD #18	WHCRWA Groundwater Reduction Plan participation	\$2,349,383	148	475	640	758	874	998	N			10
H284	H	HARRIS COUNTY MUD #18	City of Houston Groundwater Reduction Plan participation	\$3,083,891	193	621	838	995	1,148	1,311	N			10
H285	H	HARRIS COUNTY MUD #18	Municipal conservation - medium water user group	\$0	48	58	68	77	87	98	N			10
H286	H	HARRIS COUNTY MUD #26	Contract with City of Houston	\$112,392	0	0	423	513	537	537	Y			6
H287	H	HARRIS COUNTY MUD #26	Municipal conservation - small water user group	\$0	48	48	48	48	48	48	N			10
H288	H	HARRIS COUNTY MUD #26	Reallocation of existing supplies	\$982,728	140	495	158	72	42	42	N			10
H289	H	HARRIS COUNTY MUD #34	Contract with City of Houston	\$183,537	0	0	756	916	959	959	Y			6
H290	H	HARRIS COUNTY MUD #34	Municipal conservation - medium water user group	\$0	84	84	84	83	83	83	N			10
H291	H	HARRIS COUNTY MUD #34	Reallocation of existing supplies	\$1,683,538	341	898	282	129	76	76	N			10
H292	H	HARRIS COUNTY MUD #46	Municipal conservation - medium water user group	\$0	50	49	48	48	48	48	N			10
H293	H	HARRIS COUNTY MUD #46	WHCRWA Groundwater Reduction Plan participation	\$1,407,012	201	526	598	593	593	593	N			10
H294	H	HARRIS COUNTY MUD #5	Contract with City of Houston	\$66,961	0	0	339	402	415	415	Y			6
H295	H	HARRIS COUNTY MUD #5	Municipal conservation - medium water user group	\$0	39	38	37	37	36	36	N			10
H296	H	HARRIS COUNTY MUD #5	Reallocation of existing supplies	\$826,178	157	411	126	57	33	33	N			10
H297	H	HARRIS COUNTY MUD #50	Contract with SJRA	\$0	0	0	0	0	28	72	N			2
H298	H	HARRIS COUNTY MUD #50	Harris County MUD #50 water treatment plant	\$6,131,600	560	560	560	560	588	632	Y			10
H299	H	HARRIS COUNTY MUD #50	Municipal conservation - medium water user group	\$0	0	0	27	44	46	49	N			6
H300	H	HARRIS COUNTY MUD #53	Contract with NCWA	\$2,143,945	0	0	896	1,448	1,880	1,880	Y			6
H301	H	HARRIS COUNTY MUD #53	Expanded use of groundwater	\$409,976	0	90	174	174	174	174	N			8
H302	H	HARRIS COUNTY MUD #53	Municipal conservation - large water user group	\$0	123	151	178	205	232	261	N			10
H303	H	HARRIS COUNTY MUD #53	Reallocation of existing supplies	\$2,099,015	587	920	335	204	149	574	N			10
H304	H	HARRIS COUNTY MUD #8	Contract with City of Houston	\$307,696	0	0	130	205	271	271	Y			6
H305	H	HARRIS COUNTY MUD #8	Expanded use of groundwater	\$54,201	0	12	23	23	23	23	N			8
H306	H	HARRIS COUNTY MUD #8	Municipal conservation - medium water user group	\$0	42	45	48	52	55	60	N			10
H307	H	HARRIS COUNTY MUD #8	Reallocation of existing supplies	\$407,603	96	140	49	29	21	88	N			10
H308	H	HARRIS COUNTY UD #14	City of Houston Groundwater Reduction Plan participation	\$1,556,495	143	409	511	559	609	661	N			10
H309	H	HARRIS COUNTY UD #14	Municipal conservation - small water user group	\$0	32	35	38	41	44	47	N			10
H310	H	HARRIS COUNTY UD #15	City of Houston Groundwater Reduction Plan participation	\$1,337,944	104	312	403	455	509	568	N			10
H311	H	HARRIS COUNTY UD #15	Municipal conservation - small water user group	\$0	24	27	30	33	36	40	N			10
H312	H	HARRIS COUNTY WCID #1	Contract with Baytown Area Water Authority	\$900,444	0	0	191	349	496	496	Y			6
H313	H	HARRIS COUNTY WCID #1	Municipal conservation - large water user group	\$0	0	75	84	93	102	111	N			8
H314	H	HARRIS COUNTY WCID #1	Reallocation of existing supplies	\$378,303	0	26	71	49	39	196	N			8
H315	H	HARRIS COUNTY WCID #13	City of Houston Groundwater Reduction Plan participation	\$1,301,473	181	480	553	546	550	550	N			10
H316	H	HARRIS COUNTY WCID #13	Municipal conservation - medium water user group	\$0	45	45	45	44	44	44	N			10
H317	H	HARRIS COUNTY WCID #21	Contract with NCWA	\$284,811	0	0	254	341	411	411	Y			6
H318	H	HARRIS COUNTY WCID #21	Expanded use of groundwater	\$21,209	0	5	9	9	9	9	N			8
H319	H	HARRIS COUNTY WCID #21	Municipal conservation - large water user group	\$0	90	93	96	98	102	107	N			10
H320	H	HARRIS COUNTY WCID #21	Reallocation of existing supplies	\$690,297	272	313	95	48	32	102	N			10
H321	H	HARRIS COUNTY WCID #36	Contract with NCWA	\$550,440	0	0	246	384	500	500	Y			6
H322	H	HARRIS COUNTY WCID #36	Expanded use of groundwater	\$94,262	0	27	40	40	40	40	N			8
H323	H	HARRIS COUNTY WCID #36	Municipal conservation - large water user group	\$0	85	92	98	105	112	120	N			10
H324	H	HARRIS COUNTY WCID #36	Reallocation of existing supplies	\$675,184	190	268	92	54	40	160	N			10
H325	H	HARRIS COUNTY WCID #50	Contract with City of Pasadena	\$311,281	0	0	437	578	657	657	Y			6
H326	H	HARRIS COUNTY WCID #50	Expanded use of groundwater	\$25,922	0	5	11	11	11	11	N			8
H327	H	HARRIS COUNTY WCID #50	Municipal conservation - medium water user group	\$0	36	40	43	46	49	53	N			10
H328	H	HARRIS COUNTY WCID #50	Reallocation of existing supplies	\$1,097,660	508	557	163	81	52	115	N			10
H329	H	HARRIS COUNTY WCID #76	Contract with City of Houston	\$29,815	0	0	154	183	189	189	Y			6
H330	H	HARRIS COUNTY WCID #76	Municipal conservation - small water user group	\$0	16	16	16	15	15	15	N			10
H331	H	HARRIS COUNTY WCID #76	Reallocation of existing supplies	\$433,621	73	187	57	26	15	15	N			10
H332	H	HARRIS COUNTY WCID #84	Contract with NCWA	\$24,187	0	0	146	176	191	191	Y			6
H333	H	HARRIS COUNTY WCID #84	Expanded use of groundwater	\$2,357	0	0	1	1	1	1	N			6
H334	H	HARRIS COUNTY WCID #84	Municipal conservation - small water user group	\$0	33	34	34	34	34	34	N			10
H335	H	HARRIS COUNTY WCID #84	Reallocation of existing supplies	\$446,950	199	200	55	25	15	25	N			10
H336	H	HEDWIG VILLAGE	Contract with City of Houston	\$17,663	0	0	336	409	431	431	Y			6
H337	H	HEDWIG VILLAGE	Municipal conservation - small water user group	\$0	46	46	45	45	45	45	N			10

H338	H	HEDWIG VILLAGE	Reallocation of existing supplies	\$881,106	458	459	125	58	34	40	N			10
H339	H	HEMPSTEAD	Expanded use of groundwater	\$8,233,457	0	473	1,076	1,766	2,581	3,539	N			8
H340	H	HEMPSTEAD	Municipal conservation - medium water user group	\$0	0	122	161	204	256	317	N			8
H341	H	HILLCREST	Expanded use of groundwater	\$2,357	0	0	0	0	0	1	N			0
H342	H	HILLCREST	Municipal conservation - small water user group	\$0	0	1	1	2	5	7	N			8
H343	H	HILSHIRE VILLAGE	Contract with City of Houston	\$19,456	0	0	15	17	18	18	Y			6
H344	H	HILSHIRE VILLAGE	Municipal conservation - small water user group	\$0	0	10	10	10	10	10	N			8
H345	H	HILSHIRE VILLAGE	Reallocation of existing supplies	\$121,185	0	5	6	2	1	1	N			8
H346	H	HITCHCOCK	Contract with GCWA	\$1,993,269	0	182	182	182	182	182	N			8
H347	H	HITCHCOCK	Expanded use of groundwater	\$2,357	0	1	0	0	0	0	N			8
H348	H	HOLIDAY LAKES	Expanded use of groundwater	\$2,357	0	0	0	0	0	1	N			0
H349	H	HOLIDAY LAKES	Municipal conservation - small water user group	\$0	0	0	0	0	0	1	N			0
H350	H	HOUSTON	Allens Creek Reservoir	\$155,926,680	0	40,175	38,567	61,447	69,755	69,755	N			8
H351	H	HOUSTON	City of Houston bayous permit	\$20,956,000	0	0	0	0	0	0	N			10
H352	H	HOUSTON	City of Houston distribution expansion	\$261,040,000	0	280,000	128,000	64,000	48,000	48,000	Y			8
H353	H	HOUSTON	City of Houston indirect reuse	\$306,052,884	0	0	0	12,518	20,450	66,201	N			4
H354	H	HOUSTON	City of Houston to BRA contract	\$0	0	27,498	25,201	57,886	69,755	69,755	Y			8
H355	H	HOUSTON	City of Houston to NFBWA contract	\$0	0	444	17,971	31,161	41,172	50,442	Y			8
H356	H	HOUSTON	City of Houston treatment expansion	\$2,045,672,161	16,000	280,000	128,000	64,000	48,000	48,000	Y			10
H357	H	HOUSTON	Expanded use of groundwater	\$2,421,029	0	7,667	14,820	14,952	15,128	15,336	N			8
H358	H	HOUSTON	Luce Bayou transfer	\$253,916,914	0	128,259	206,276	207,629	205,171	270,742	Y			8
H359	H	HOUSTON	Municipal conservation - large water user group	\$0	24,667	27,210	29,610	32,083	34,730	37,603	N			10
H360	H	HOUSTON	SJRA to City of Houston contract	\$0	0	0	1,356	5,300	3,875	2,428	Y			6
H361	H	HOUSTON	TRA to City of Houston contract	\$0	0	0	116,738	123,524	123,524	123,524	N			6
H362	H	HOUSTON	Wastewater reuse for industry	\$332,051,761	0	0	0	0	0	67,200	N			0
H363	H	HUMBLE	Contract with City of Houston	\$4,504,288	0	1,718	2,355	3,196	3,708	3,708	Y			8
H364	H	HUMBLE	Municipal conservation - large water user group	\$0	232	258	283	308	334	362	N			10
H365	H	HUMBLE	Reallocation of existing supplies	\$2,942,206	820	820	879	450	293	707	N			10
H366	H	HUNTERS CREEK VILLAGE	Contract with City of Houston	\$567,874	0	0	809	1,068	1,216	1,216	Y			6
H367	H	HUNTERS CREEK VILLAGE	Expanded use of groundwater	\$110,758	0	24	47	47	47	47	N			8
H368	H	HUNTERS CREEK VILLAGE	Municipal conservation - medium water user group	\$0	104	111	118	125	132	139	N			10
H369	H	HUNTERS CREEK VILLAGE	Reallocation of existing supplies	\$1,928,245	955	1,034	302	150	96	210	N			10
H370	H	HUNTSVILLE	City of Huntsville water treatment plant	\$61,023,906	11,200	11,200	11,200	11,200	11,200	11,200	Y			10
H371	H	IOWA COLONY	Expanded use of groundwater	\$91,907	0	3	11	20	29	39	N			8
H372	H	IOWA COLONY	Municipal conservation - small water user group	\$0	0	7	7	7	8	9	N			8
H373	H	IRRIGATION, BRAZORIA	Brazoria County interruptible supplies for irrigation	\$0	98,189	86,759	64,000	64,000	64,000	64,000	N			10
H374	H	IRRIGATION, BRAZORIA	Contract with GCWA	\$0	0	0	13,628	13,628	13,821	15,465	Y			6
H375	H	IRRIGATION, BRAZORIA	Expanded use of groundwater	\$3,277,008	0	0	4,748	2,105	1,912	268	N			6
H376	H	IRRIGATION, BRAZORIA	Irrigation conservation	\$198,255	18,792	18,792	18,792	18,792	18,792	18,792	N			10
H377	H	IRRIGATION, CHAMBERS	Irrigation conservation	\$279,330	24,018	24,018	24,018	24,018	24,018	24,018	N			10
H378	H	IRRIGATION, CHAMBERS	Reallocation of existing supplies	\$0	20,376	20,600	20,734	20,857	20,975	21,076	N			10
H379	H	IRRIGATION, FORT BEND	Irrigation conservation	\$61,711	5,197	5,197	5,197	5,197	5,197	5,197	N			10
H380	H	IRRIGATION, GALVESTON	Brazoria County interruptible supplies for irrigation	\$0	6,788	0	0	0	0	0	N			10
H381	H	IRRIGATION, GALVESTON	Contract with GCWA	\$0	0	6,788	6,788	6,788	6,788	6,788	N			8
H382	H	IRRIGATION, GALVESTON	Irrigation conservation	\$29,422	2,392	2,392	2,392	2,392	2,392	2,392	N			10
H383	H	IRRIGATION, LIBERTY	Expanded use of groundwater	\$53,837	0	12	24	35	47	78	N			8
H384	H	IRRIGATION, LIBERTY	Irrigation conservation	\$188,718	20,876	20,876	20,876	20,876	20,876	20,876	N			10
H385	H	IRRIGATION, LIBERTY	Reallocation of existing supplies	\$0	6,657	6,697	6,732	6,767	6,805	6,833	N			10
H386	H	IRRIGATION, WALLER	Expanded use of groundwater	\$327,148	0	474	0	13	0	0	N			8
H387	H	IRRIGATION, WALLER	Irrigation conservation	\$0	0	0	0	0	6,606	6,606	N			2
H388	H	JACINTO CITY	Contract with City of Houston	\$171,541	0	0	0	0	25	25	Y			2
H389	H	JACINTO CITY	Expanded use of groundwater	\$51,844	0	9	22	22	22	22	N			8
H390	H	JACINTO CITY	Municipal conservation - large water user group	\$0	0	0	57	92	97	102	N			6
H391	H	JACINTO CITY	Reallocation of existing supplies	\$116,988	0	0	0	0	2	83	N			2
H392	H	JAMAICA BEACH	Expanded use of groundwater	\$16,496	0	4	7	7	7	7	N			8
H393	H	JERSEY VILLAGE	Municipal conservation - medium water user group	\$0	0	112	129	147	164	182	N			8
H394	H	JERSEY VILLAGE	NHCRWA Groundwater Reduction Plan participation	\$2,809,145	0	364	767	1,043	1,315	1,600	N			8
H395	H	JEWETT	Expanded use of groundwater	\$127,253	0	35	54	53	49	52	N			8
H396	H	JEWETT	Municipal conservation - small water user group	\$0	0	13	15	15	13	15	N			8

H397	H	KATY	Municipal conservation - large water user group	\$0	238	295	354	416	479	550	N			10
H398	H	KATY	WHCRWA Groundwater Reduction Plan participation	\$16,214,279	889	2,958	4,112	5,017	5,971	7,008	N			10
H399	H	KEMAH	Contract with GCWA	\$523,817	0	208	230	237	241	247	N			8
H400	H	KEMAH	Expanded use of groundwater	\$0	0	4	7	7	7	7	N			8
H401	H	KEMAH	Interim strategies - temporary overdraft	\$402,715	171	0	0	0	0	0	N			10
H402	H	KEMAH	Municipal conservation - small water user group	\$0	15	18	19	20	20	20	N			10
H403	H	KENDLETON	Expanded use of groundwater	\$914,183	0	43	100	173	267	388	N			8
H404	H	KENDLETON	Municipal conservation - small water user group	\$0	0	11	14	18	23	30	N			8
H405	H	KENEFICK	Expanded use of groundwater	\$209,734	0	18	34	50	68	89	N			8
H406	H	KENEFICK	Municipal conservation - small water user group	\$0	0	6	7	8	9	10	N			8
H407	H	LA PORTE	Expanded use of groundwater	\$176,738	0	35	75	75	75	75	N			8
H408	H	LAKE JACKSON	Contract with Brazosport Water Authority	\$2,972,940	744	708	830	1,049	1,349	1,703	N			10
H409	H	LAKE JACKSON	Expanded use of groundwater	\$1,225,716	0	333	473	508	515	521	N			8
H410	H	LAKE JACKSON	Municipal conservation - large water user group	\$0	255	275	292	310	330	355	N			10
H411	H	LAKE LIVINGSTON WATER	Expanded use of groundwater	\$7,070	0	2	2	0	0	0	N			8
H412	H	LAKE LIVINGSTON WATER	Lake Livingston Water Supply and Sewer Service Corporation surface water project	\$3,087,974	954	954	954	954	954	954	Y			10
H413	H	LAKE LIVINGSTON WATER	Municipal conservation - large water user group	\$0	19	86	97	98	103	108	N			10
H414	H	LEAGUE CITY	Contract with GCWA	\$6,740,842	0	3,500	3,852	3,924	4,009	4,109	N			8
H415	H	LEAGUE CITY	Expanded use of groundwater	\$0	0	77	119	119	119	119	N			8
H416	H	LEAGUE CITY	Interim strategies - temporary overdraft	\$6,094,892	2,850	0	0	0	0	0	N			10
H417	H	LEAGUE CITY	Municipal conservation - large water user group	\$0	476	525	552	557	562	569	N			10
H418	H	LIBERTY	Expanded use of groundwater	\$280,423	0	18	23	34	69	119	N			8
H419	H	LIBERTY	Municipal conservation - medium water user group	\$0	0	18	23	34	69	97	N			8
H420	H	LIVESTOCK, BRAZORIA	Expanded use of groundwater	\$8,972	0	13	0	0	0	0	N			8
H421	H	LIVESTOCK, BRAZORIA	New groundwater wells for livestock	\$18,635	0	27	27	27	27	27	N			8
H422	H	LIVESTOCK, GALVESTON	Expanded use of groundwater	\$17,945	0	10	26	26	26	26	N			8
H423	H	LIVESTOCK, GALVESTON	Interim strategies	\$9,662	14	0	0	0	0	0	N			10
H424	H	LIVESTOCK, GALVESTON	New groundwater wells for livestock	\$0	0	14	14	14	14	14	N			8
H425	H	LONGHORN TOWN UD	City of Houston Groundwater Reduction Plan participation	\$3,756,206	167	574	857	1,105	1,351	1,597	N			10
H426	H	LONGHORN TOWN UD	Municipal conservation	\$0	12	26	33	41	49	56	N			10
H427	H	MADISONVILLE	Expanded use of groundwater	\$299,282	0	34	56	75	100	127	N			8
H428	H	MADISONVILLE	Municipal conservation - medium water user group	\$0	0	34	50	51	53	54	N			8
H429	H	MAGNOLIA	Expanded use of groundwater	\$225,644	0	11	39	61	82	99	N			8
H430	H	MAGNOLIA	Interim strategies - temporary overdraft	\$181,433	77	0	0	0	0	0	N			10
H431	H	MAGNOLIA	Municipal conservation - small water user group	\$0	24	34	44	56	72	91	N			10
H432	H	MAGNOLIA	SJRA Water Resources Assessment Plan participation	\$2,457,095	0	221	380	561	812	1,118	N			10
H433	H	MANUFACTURING, AUSTIN	Expanded use of groundwater	\$242,726	0	23	43	62	78	103	N			8
H434	H	MANUFACTURING, BRAZO	Contract with BRA	\$299,533,212	0	47,499	29,570	51,207	71,985	97,090	Y			8
H435	H	MANUFACTURING, BRAZO	Contract with Brazosport Water Authority	\$2,170,394	326	1,096	134	130	0	0	N			10
H436	H	MANUFACTURING, BRAZO	Contract with Dow	\$412,298,638	0	71,431	71,431	71,431	71,431	71,431	Y			8
H437	H	MANUFACTURING, BRAZO	Contract with GCWA	\$94,758,507	0	0	39,500	39,500	39,500	39,500	Y			6
H438	H	MANUFACTURING, BRAZO	Expanded use of groundwater	\$8,782,696	0	397	1,821	2,880	3,364	3,812	N			8
H439	H	MANUFACTURING, BRAZO	Interim strategies - temporary overdraft	\$41,388,791	24,916	0	0	0	0	0	N			10
H440	H	MANUFACTURING, BRAZO	Reallocation of existing supplies	\$146,209,754	13,694	13,694	13,694	13,694	13,694	13,694	N			10
H441	H	MANUFACTURING, CHAM	Contract with TRA	\$104,032,121	8,264	9,230	10,252	11,284	12,240	13,445	N			10
H442	H	MANUFACTURING, CHAM	Expanded use of groundwater	\$463,884	0	191	197	189	154	139	N			8
H443	H	MANUFACTURING, FORT B	Contract with BRA	\$20,181,897	0	623	1,698	1,799	1,867	1,719	Y			8
H444	H	MANUFACTURING, FORT B	Contract with Fort Bend County WCID #1	\$1,815,739	0	148	824	940	1,016	1,016	N			8
H445	H	MANUFACTURING, FORT B	Industrial conservation	\$0	0	558	558	558	558	558	N			8
H446	H	MANUFACTURING, GALVE	Expanded use of groundwater	\$1,420,055	0	232	604	604	604	604	N			8
H447	H	MANUFACTURING, HARRIS	City of Houston indirect reuse	\$44,811,089	0	0	0	14,250	16,080	16,080	N			4
H448	H	MANUFACTURING, HARRIS	Contract with City of Houston	\$91,710,759	0	8,611	12,358	9,181	9,181	9,181	Y			8
H449	H	MANUFACTURING, HARRIS	Contract with SJRA	\$230,022,461	23,008	27,754	31,791	35,763	38,736	37,244	N			10
H450	H	MANUFACTURING, HARRIS	Expanded use of groundwater	\$18,771,985	0	4,740	8,769	8,769	8,769	8,769	N			8
H451	H	MANUFACTURING, HARRIS	Reallocation of existing supplies	\$42,221,489	4,487	251	251	2,029	1,394	0	N			10
H452	H	MANUFACTURING, LEON	Expanded use of groundwater	\$1,411,137	0	128	253	379	493	599	N			8
H453	H	MANUFACTURING, LIBERT	Expanded use of groundwater	\$808,253	0	72	144	218	285	343	N			8
H454	H	MANUFACTURING, MADIS	Expanded use of groundwater	\$325,201	0	29	56	83	107	138	N			8
H455	H	MANUFACTURING, MONT	Interim strategies - temporary overdraft	\$1,099,885	469	0	0	0	0	0	N			10

H456	H	MANUFACTURING, MONT	SJRA Water Resources Assessment Plan participation	\$4,777,069	0	988	1,384	1,756	2,129	2,504	N			10
H457	H	MANUFACTURING, SAN JA	Expanded use of groundwater	\$47,131	0	4	8	12	15	20	N			8
H458	H	MANUFACTURING, WALLE	Expanded use of groundwater	\$6,024,477	0	719	1,500	1,777	2,154	2,571	N			8
H459	H	MANUFACTURING, WALLE	Expanded use of groundwater	\$129,613	0	12	23	34	44	55	N			8
H460	H	MANVEL	Contract with GCWA	\$559,334	0	49	44	45	48	51	Y			8
H461	H	MANVEL	Expanded use of groundwater	\$58,914	0	23	25	22	18	15	N			8
H462	H	MANVEL	Municipal conservation - large water user group	\$0	0	30	30	29	28	28	N			8
H463	H	MASON CREEK UD	City of Houston Groundwater Reduction Plan participation	\$3,946,995	566	1,487	1,696	1,682	1,674	1,674	N			10
H464	H	MASON CREEK UD	Municipal conservation - medium water user group	\$0	140	138	137	135	135	135	N			10
H465	H	MEADOWS	Contract with Fort Bend County WCID #2	\$2,049,847	0	491	1,092	1,092	1,092	1,092	Y			8
H466	H	MEADOWS	Municipal conservation - medium water user group	\$0	123	122	121	119	119	119	N			10
H467	H	MERCY WSC	Expanded use of groundwater	\$570,266	0	79	142	187	217	242	N			8
H468	H	MERCY WSC	Municipal conservation - small water user group	\$0	0	27	31	33	35	36	N			8
H469	H	MINING, AUSTIN	Expanded use of groundwater	\$37,706	0	5	8	11	14	16	N			8
H470	H	MINING, BRAZORIA	Contract with BRA	\$15,168,210	0	623	785	962	1,173	1,387	Y			8
H471	H	MINING, BRAZORIA	Expanded use of groundwater	\$756,326	0	168	241	296	317	321	N			8
H472	H	MINING, CHAMBERS	Contract with TRA	\$145,447,351	5,559	7,853	9,720	11,604	13,492	15,227	N			10
H473	H	MINING, CHAMBERS	Expanded use of groundwater	\$1,602,345	0	301	338	416	514	592	N			8
H474	H	MINING, CHAMBERS	Reallocation of existing supplies	\$1,858,825	149	664	655	652	652	649	N			10
H475	H	MINING, FORT BEND	Contract with BRA	\$6,288,364	0	266	548	557	567	574	Y			8
H476	H	MINING, FORT BEND	Contract with GCWA	\$7,991,054	0	86	703	717	729	739	Y			8
H477	H	MINING, FORT BEND	Expanded use of groundwater	\$21,209	0	4	4	6	7	9	N			8
H478	H	MINING, GALVESTON	Contract with GCWA	\$372,927	0	21	24	28	31	34	N			8
H479	H	MINING, GALVESTON	Contract with LNVA	\$405,835	16	23	26	29	33	37	N			10
H480	H	MINING, GALVESTON	Expanded use of groundwater	\$2,357	0	1	2	2	2	2	N			8
H481	H	MINING, GALVESTON	Interim strategies - temporary overdraft	\$35,348	15	0	0	0	0	0	N			10
H482	H	MINING, HARRIS	Contract with City of Houston	\$3,322,367	0	0	266	407	515	515	Y			6
H483	H	MINING, HARRIS	Expanded use of groundwater	\$58,914	0	16	25	25	25	25	N			8
H484	H	MINING, HARRIS	Reallocation of existing supplies	\$3,704,430	143	279	99	57	41	126	N			10
H485	H	MINING, LIBERTY	Expanded use of groundwater	\$709,291	0	67	124	178	237	300	N			8
H486	H	MINING, MONTGOMERY	Interim strategies - temporary overdraft	\$259,154	110	0	0	0	0	0	N			10
H487	H	MINING, MONTGOMERY	SJRA Water Resources Assessment Plan participation	\$742,228	0	216	279	331	382	425	N			10
H488	H	MINING, POLK	Expanded use of groundwater	\$14,141	0	2	3	4	5	6	N			8
H489	H	MISSOURI CITY	City of Missouri City Groundwater Reduction Plan	\$24,003,201	0	395	4,644	8,362	8,362	12,775	Y			10
H490	H	MISSOURI CITY	City of Missouri City Groundwater Reduction Plan - aquifer storage and recovery	\$58,967,437	0	4,147	4,147	4,147	4,147	4,147	N			10
H491	H	MISSOURI CITY	City of Missouri City Groundwater Reduction Plan - reuse	\$9,100,352	0	640	640	640	640	640	N			10
H492	H	MISSOURI CITY	Contract with City of Missouri City	\$0	0	395	4,644	8,362	8,362	12,775	Y			8
H493	H	MISSOURI CITY	GCWA to City of Missouri City contract	\$0	0	713	6,330	10,661	10,911	15,435	Y			8
H494	H	MISSOURI CITY	Municipal conservation - large water user group	\$0	83	1,243	1,481	1,727	1,914	2,312	N			10
H495	H	MONT BELVIEU	Contract with CLCND	\$19,160,183	0	945	1,159	1,351	1,552	1,762	Y			8
H496	H	MONT BELVIEU	Expanded use of groundwater	\$0	0	52	94	125	155	183	N			8
H497	H	MONT BELVIEU	Interim strategies - temporary overdraft	\$1,208,870	516	0	0	0	0	0	N			10
H498	H	MONT BELVIEU	Municipal conservation - small water user group	\$0	54	71	86	99	113	126	N			10
H499	H	MONT BELVIEU	Reallocation of existing supplies	\$477,951	203	0	0	0	0	0	N			10
H500	H	MONTGOMERY	Contract with SJRA	\$1,892,736	0	0	0	0	835	1,467	Y			2
H501	H	MONTGOMERY	Expanded use of groundwater	\$1,682,732	0	396	513	583	596	587	N			8
H502	H	MONTGOMERY	Interim strategies - temporary overdraft	\$101,329	43	0	0	0	0	0	N			10
H503	H	MONTGOMERY	Municipal conservation - small water user group	\$0	14	57	83	109	136	162	N			10
H504	H	MONTGOMERY	SJRA Water Resources Assessment Plan participation	\$2,122,045	0	374	710	1,087	0	0	N			10
H505	H	MONTGOMERY	SJRA Water Resources Assessment Plan participation	\$2,270,976	0	0	0	0	1,151	1,011	Y			4
H506	H	MONTGOMERY COUNTY M	Contract with SJRA	\$3,792,506	0	0	0	461	2,265	4,354	Y			4
H507	H	MONTGOMERY COUNTY M	Expanded use of groundwater	\$266,435	0	0	215	473	704	880	N			6
H508	H	MONTGOMERY COUNTY M	Interim strategies - temporary overdraft	\$747,724	318	0	0	0	0	0	N			10
H509	H	MONTGOMERY COUNTY M	Municipal conservation - medium water user group	\$0	112	142	210	290	397	520	N			10
H510	H	MONTGOMERY COUNTY M	SJRA Water Resources Assessment Plan participation	\$3,331,489	0	865	1,655	0	0	0	N			10
H511	H	MONTGOMERY COUNTY M	SJRA Water Resources Assessment Plan participation	\$8,059,544	0	0	0	3,236	3,122	3,000	Y			6
H512	H	MONTGOMERY COUNTY M	Contract with SJRA	\$0	0	0	0	42	152	222	Y			4
H513	H	MONTGOMERY COUNTY M	Interim strategies - temporary overdraft	\$188,499	80	0	0	0	0	0	N			10
H514	H	MONTGOMERY COUNTY M	Municipal conservation - small water user group	\$0	25	25	25	25	25	25	N			10

H515	H	MONTGOMERY COUNTY M	SJRA Water Resources Assessment Plan participation	\$204,988	0	167	0	0	0	0	N			10
H516	H	MONTGOMERY COUNTY M	SJRA Water Resources Assessment Plan participation	\$796,560	0	0	410	296	209	153	Y			8
H517	H	MONTGOMERY COUNTY M	Contract with SJRA	\$278,454	0	0	0	149	361	493	Y			4
H518	H	MONTGOMERY COUNTY M	Interim strategies - temporary overdraft	\$336,839	143	0	0	0	0	0	N			10
H519	H	MONTGOMERY COUNTY M	Montgomery MUD #8/9 indirect reuse	\$5,837,866	0	332	401	534	534	534	N			10
H520	H	MONTGOMERY COUNTY M	Municipal conservation - medium water user group	\$0	50	65	79	83	82	82	N			10
H521	H	MONTGOMERY COUNTY M	SJRA Water Resources Assessment Plan participation	\$40,062	0	16	160	0	0	0	N			10
H522	H	MONTGOMERY COUNTY M	SJRA Water Resources Assessment Plan participation	\$1,150,799	0	51	63	583	407	295	Y			10
H523	H	MONTGOMERY COUNTY M	Contract with SJRA	\$336,693	0	0	0	160	400	558	Y			4
H524	H	MONTGOMERY COUNTY M	Expanded use of groundwater	\$23,144	0	6	31	0	0	0	N			8
H525	H	MONTGOMERY COUNTY M	Interim strategies - temporary overdraft	\$325,071	138	0	0	0	0	0	N			10
H526	H	MONTGOMERY COUNTY M	Montgomery MUD #8/9 indirect reuse	\$6,407,821	0	325	415	586	586	586	N			10
H527	H	MONTGOMERY COUNTY M	Municipal conservation - small water user group	\$0	44	60	76	83	85	86	N			10
H528	H	MONTGOMERY COUNTY M	SJRA Water Resources Assessment Plan participation	\$127,663	0	19	171	0	0	0	N			10
H529	H	MONTGOMERY COUNTY M	SJRA Water Resources Assessment Plan participation	\$1,267,983	0	51	64	633	453	335	Y			10
H530	H	MONTGOMERY COUNTY U	Interim strategies - temporary overdraft	\$228,540	97	0	0	0	0	0	N			10
H531	H	MONTGOMERY COUNTY U	Municipal conservation - small water user group	\$0	31	31	30	30	30	30	N			10
H532	H	MONTGOMERY COUNTY U	SJRA Water Resources Assessment Plan participation	\$640,909	0	203	259	298	337	369	N			10
H533	H	MONTGOMERY COUNTY U	Contract with SJRA	\$319,774	0	0	0	60	248	423	Y			4
H534	H	MONTGOMERY COUNTY U	Interim strategies - temporary overdraft	\$193,211	82	0	0	0	0	0	N			10
H535	H	MONTGOMERY COUNTY U	Municipal conservation - medium water user group	\$0	29	30	33	37	43	51	N			10
H536	H	MONTGOMERY COUNTY U	SJRA Water Resources Assessment Plan participation	\$428,815	0	184	264	0	0	0	N			10
H537	H	MONTGOMERY COUNTY U	SJRA Water Resources Assessment Plan participation	\$992,750	0	0	0	418	342	292	Y			6
H538	H	MONTGOMERY COUNTY U	Contract with SJRA	\$229,664	0	0	0	90	322	473	Y			4
H539	H	MONTGOMERY COUNTY U	Interim strategies - temporary overdraft	\$393,307	167	0	0	0	0	0	N			10
H540	H	MONTGOMERY COUNTY U	Municipal conservation - medium water user group	\$0	58	58	57	56	56	56	N			10
H541	H	MONTGOMERY COUNTY U	SJRA Water Resources Assessment Plan participation	\$671,240	0	353	452	0	0	0	N			10
H542	H	MONTGOMERY COUNTY U	SJRA Water Resources Assessment Plan participation	\$1,215,621	0	0	0	630	445	326	Y			6
H543	H	MONTGOMERY COUNTY V	Interim strategies - temporary overdraft	\$197,922	84	0	0	0	0	0	N			10
H544	H	MONTGOMERY COUNTY V	Municipal conservation - medium water user group	\$0	30	31	34	39	45	53	N			10
H545	H	MONTGOMERY COUNTY V	SJRA Water Resources Assessment Plan participation	\$1,215,683	0	189	272	358	470	600	N			10
H546	H	NEEDVILLE	Expanded use of groundwater	\$1,665,869	0	96	215	337	506	707	N			8
H547	H	NEEDVILLE	Municipal conservation - medium water user group	\$0	0	18	22	26	31	38	N			8
H548	H	NEW CANEY MUD	Expanded use of groundwater	\$40,876	0	0	0	0	5	55	N			2
H549	H	NEW CANEY MUD	Interim strategies - temporary overdraft	\$625,873	266	0	0	0	0	0	N			10
H550	H	NEW CANEY MUD	Municipal conservation	\$0	69	153	200	252	326	412	N			10
H551	H	NEW CANEY MUD	SJRA Water Resources Assessment Plan participation	\$6,131,759	0	546	944	1,396	2,058	2,854	N			10
H552	H	NEW WAVERLY	Expanded use of groundwater	\$58,915	0	17	25	18	17	17	N			8
H553	H	NEW WAVERLY	Municipal conservation - small water user group	\$0	0	13	13	13	13	13	N			8
H554	H	NORMANGEE	Expanded use of groundwater	\$63,628	0	17	26	23	22	24	N			8
H555	H	NORMANGEE	Municipal conservation - small water user group	\$0	1	10	11	11	11	11	N			10
H556	H	NORTH BELT UD	City of Houston Groundwater Reduction Plan participation	\$2,180,544	112	384	541	666	796	926	N			10
H557	H	NORTH BELT UD	Municipal conservation - medium water user group	\$0	27	36	44	51	60	68	N			10
H558	H	NORTH CHANNEL WATER	City of Houston to NCWA contract	\$0	1,954	2,392	2,869	3,511	4,157	4,912	Y			10
H559	H	NORTH FORT BEND WATER	City of Houston to NFBWA contract	\$0	0	444	17,971	31,161	41,172	50,442	Y			8
H560	H	NORTH FORT BEND WATER	Contract with NFBWA	\$44,964,481	0	444	13,085	27,315	38,155	38,155	Y			8
H561	H	NORTH FORT BEND WATER	Expanded use of groundwater	\$12,395,510	0	6,590	2,725	2,725	2,725	2,725	N			8
H562	H	NORTH FORT BEND WATER	Municipal conservation - small water user group	\$0	0	1,693	4,062	4,893	5,557	6,155	N			8
H563	H	NORTH FORT BEND WATER	NFBWA Groundwater Reduction Plan	\$0	35,009	61,021	70,363	84,943	96,103	106,402	Y			10
H564	H	NORTH FORT BEND WATER	NFBWA internal distribution	\$225,000,000	35,009	61,021	70,363	84,943	96,103	106,402	Y			10
H565	H	NORTH FORT BEND WATER	NFBWA shared transmission line	\$213,000,000	0	21,878	39,405	52,595	62,606	71,876	Y			10
H566	H	NORTH FORT BEND WATER	Reallocation of existing supplies	\$10,783,239	0	0	4,886	3,846	3,017	12,287	N			6
H567	H	NORTH FORT BEND WATER	Wastewater reclamation for municipal irrigation	\$6,796,870	0	0	1,590	2,980	4,129	5,158	N			6
H568	H	NORTH GREEN MUD	City of Houston Groundwater Reduction Plan participation	\$876,399	84	242	300	321	345	372	N			10
H569	H	NORTH GREEN MUD	Municipal conservation - medium water user group	\$0	21	23	24	26	28	30	N			10
H570	H	NORTH HARRIS COUNTY R	City of Houston indirect reuse	\$147,080,973	0	0	0	18,130	31,629	0	N			4
H571	H	NORTH HARRIS COUNTY R	City of Houston to NHCRWA contract	\$0	0	56,453	83,041	83,041	78,041	83,041	Y			8
H572	H	NORTH HARRIS COUNTY R	Contract with NHCRWA	\$42,207,965	0	56,453	83,041	64,491	34,726	27,478	N			8
H573	H	NORTH HARRIS COUNTY R	Municipal conservation - small water user group	\$0	6,441	7,598	8,480	8,961	9,156	9,389	N			10

H574	H	NORTH HARRIS COUNTY R	NHCRWA Groundwater Reduction Plan	\$0	34,714	91,167	117,755	99,625	81,126	117,755	Y			10
H575	H	NORTH HARRIS COUNTY R	NHCRWA indirect reuse	\$66,778,694	0	0	0	7,300	16,300	16,300	N			4
H576	H	NORTH HARRIS COUNTY R	NHCRWA internal 2010 distribution	\$153,149,640	34,714	34,714	34,714	34,714	34,714	34,714	Y			10
H577	H	NORTH HARRIS COUNTY R	NHCRWA internal 2020 distribution	\$345,292,192	0	91,167	91,167	91,167	91,167	91,167	Y			10
H578	H	NORTH HARRIS COUNTY R	NHCRWA internal 2030 distribution	\$37,439,584	0	0	117,755	117,755	117,755	117,755	Y			10
H579	H	NORTH HARRIS COUNTY R	NHCRWA transmission 2010	\$80,690,624	34,714	34,714	34,714	34,714	34,714	34,714	Y			10
H580	H	NORTH HARRIS COUNTY R	NHCRWA transmission 2020	\$172,558,512	0	91,167	91,167	91,167	91,167	91,167	Y			10
H581	H	NORTH HARRIS COUNTY R	NHCRWA transmission 2030	\$0	0	0	117,755	117,755	117,755	117,755	Y			10
H582	H	NORTH HARRIS COUNTY R	Reallocation of existing supplies	\$0	0	0	0	420	11,686	55,563	N			4
H583	H	NORTH HARRIS COUNTY R	Wastewater reclamation for municipal irrigation	\$4,314,260	0	0	1,595	2,473	2,886	3,274	N			6
H584	H	NORTHWEST HARRIS COU	Municipal conservation - medium water user group	\$0	35	43	52	60	69	77	N			10
H585	H	NORTHWEST HARRIS COU	NHCRWA Groundwater Reduction Plan participation	\$2,462,367	141	467	646	770	908	1,046	N			10
H586	H	NORTHWEST PARK MUD	City of Houston Groundwater Reduction Plan participation	\$5,783,544	662	2,179	2,525	2,474	2,450	2,450	N			10
H587	H	NORTHWEST PARK MUD	Municipal conservation - large water user group	\$0	184	217	217	213	211	211	N			10
H588	H	NRG	BRA to NRG Energy contract	\$0	0	0	0	0	0	8,500	Y			0
H589	H	OAK RIDGE NORTH	Contract with SJRA	\$441,765	0	0	0	101	442	784	Y			4
H590	H	OAK RIDGE NORTH	Interim strategies - temporary overdraft	\$270,927	115	0	0	0	0	0	N			10
H591	H	OAK RIDGE NORTH	Municipal conservation - medium water user group	\$0	41	45	53	64	77	94	N			10
H592	H	OAK RIDGE NORTH	SJRA Water Resources Assessment Plan participation	\$369,782	0	272	0	0	0	0	N			10
H593	H	OAK RIDGE NORTH	SJRA Water Resources Assessment Plan participation	\$1,888,616	0	0	816	709	609	541	Y			8
H594	H	OLD RIVER-WINFREE	Contract with CLCND	\$2,465,107	0	178	189	198	211	225	Y			8
H595	H	OLD RIVER-WINFREE	Expanded use of groundwater	\$0	0	0	0	0	1	3	N			2
H596	H	OLD RIVER-WINFREE	Interim strategies - temporary overdraft	\$381,545	162	0	0	0	0	0	N			10
H597	H	OLD RIVER-WINFREE	Municipal conservation - medium water user group	\$0	12	13	14	15	16	17	N			10
H598	H	ONALASKA	Expanded use of groundwater	\$320,489	0	40	71	92	113	136	N			8
H599	H	ONALASKA	Municipal conservation - small water user group	\$0	0	13	14	16	17	18	N			8
H600	H	ONALASKA WSC	Expanded use of groundwater	\$35,349	0	4	7	2	6	15	N			8
H601	H	ORBIT SYSTEMS INC	Contract with BRA	\$186,464	0	4	10	12	14	17	Y			8
H602	H	ORBIT SYSTEMS INC	Expanded use of groundwater	\$841,227	0	67	136	205	274	357	N			8
H603	H	ORBIT SYSTEMS INC	Municipal conservation - medium water user group	\$0	1	31	36	39	44	48	N			10
H604	H	OYSTER CREEK	Contract with Brazosport Water Authority	\$275,064	25	31	42	57	76	100	N			10
H605	H	OYSTER CREEK	Expanded use of groundwater	\$70,697	0	15	24	27	29	30	N			8
H606	H	OYSTER CREEK	Municipal conservation - small water user group	\$0	9	10	12	13	14	15	N			10
H607	H	PANORAMA VILLAGE	Contract with SJRA	\$37,261	0	0	0	71	265	406	Y			4
H608	H	PANORAMA VILLAGE	Interim strategies - temporary overdraft	\$268,573	114	0	0	0	0	0	N			10
H609	H	PANORAMA VILLAGE	Municipal conservation - small water user group	\$0	36	38	39	41	43	45	N			10
H610	H	PANORAMA VILLAGE	SJRA Water Resources Assessment Plan participation	\$322,717	0	251	0	0	0	0	N			10
H611	H	PANORAMA VILLAGE	SJRA Water Resources Assessment Plan participation	\$1,219,429	0	0	649	496	366	280	Y			8
H612	H	PARKWAY UD	Contract with City of Houston	\$0	0	0	156	184	190	190	Y			6
H613	H	PARKWAY UD	Municipal conservation - small water user group	\$0	17	16	16	16	15	15	N			10
H614	H	PARKWAY UD	Reallocation of existing supplies	\$486,037	225	221	58	26	15	17	N			10
H615	H	PASADENA	City of Houston to City of Pasadena contract	\$0	1,865	2,278	2,665	3,153	3,579	4,068	Y			10
H616	H	PASADENA	Expanded use of groundwater	\$833,945	0	185	354	354	354	354	N			8
H617	H	PASADENA	Municipal conservation - large water user group	\$0	1,298	1,415	1,522	1,636	1,759	1,897	N			10
H618	H	PATTON VILLAGE	Interim strategies - temporary overdraft	\$35,348	15	0	0	0	0	0	N			10
H619	H	PATTON VILLAGE	Municipal conservation - small water user group	\$0	5	5	6	6	8	9	N			10
H620	H	PATTON VILLAGE	SJRA Water Resources Assessment Plan participation	\$230,942	0	32	47	64	84	113	N			10
H621	H	PEARLAND	City of Pearland surface water treatment plant	\$265,000,000	6,720	6,720	6,720	13,420	13,420	13,420	Y			10
H622	H	PEARLAND	Contract with GCWA	\$0	0	0	539	2,068	4,156	6,913	Y			6
H623	H	PEARLAND	Expanded use of groundwater	\$4,916,347	0	14	448	1,169	1,719	2,101	N			8
H624	H	PEARLAND	Municipal conservation	\$0	224	556	652	742	843	948	N			10
H625	H	PEARLAND	Reallocation of existing supplies	\$0	0	0	201	294	329	0	N			6
H626	H	PECAN GROVE MUD #1	Municipal conservation	\$0	146	205	208	210	216	225	N			10
H627	H	PECAN GROVE MUD #1	Pecan Grove Groundwater Reduction Plan	\$15,960,000	866	866	1,731	1,731	1,731	1,731	Y			10
H628	H	PINE ISLAND	Expanded use of groundwater	\$443,019	0	29	60	93	137	188	N			8
H629	H	PINE ISLAND	Municipal conservation - small water user group	\$0	0	8	10	12	14	17	N			8
H630	H	PINE TRAILS UTILITY	Contract with NCWA	\$362,312	0	0	227	332	411	411	Y			6
H631	H	PINE TRAILS UTILITY	Expanded use of groundwater	\$61,271	0	14	26	26	26	26	N			8
H632	H	PINE TRAILS UTILITY	Municipal conservation - medium water user group	\$0	56	60	64	68	72	77	N			10

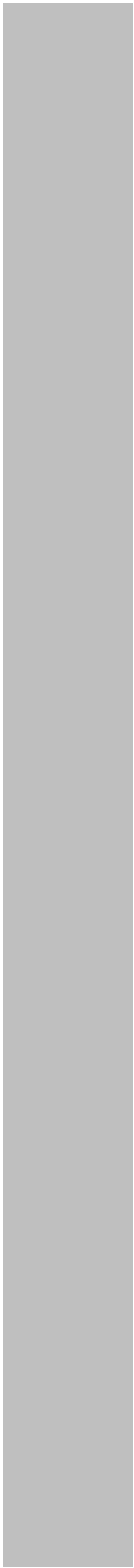
H633	H	PINE TRAILS UTILITY	Reallocation of existing supplies	\$627,231	215	266	85	47	33	110	N			10
H634	H	PINEY POINT VILLAGE	Contract with City of Houston	\$250,132	0	0	556	710	788	788	Y			6
H635	H	PINEY POINT VILLAGE	Expanded use of groundwater	\$40,062	0	8	17	17	17	17	N			8
H636	H	PINEY POINT VILLAGE	Municipal conservation - medium water user group	\$0	76	78	81	84	86	90	N			10
H637	H	PINEY POINT VILLAGE	Reallocation of existing supplies	\$1,371,563	697	731	207	100	62	114	N			10
H638	H	PLANTATION MUD	City of Sugar Land Groundwater Reduction Plan participation	\$374,615	0	46	159	71	35	20	N			10
H639	H	PLANTATION MUD	Contract with City of Sugar Land	\$557,185	0	87	135	217	251	266	Y			8
H640	H	PLANTATION MUD	Municipal conservation - medium water user group	\$0	34	33	32	32	32	32	N			10
H641	H	PLEAK	Expanded use of groundwater	\$1,505,149	0	63	180	298	457	639	N			8
H642	H	PLEAK	Municipal conservation - small water user group	\$0	0	36	43	50	59	70	N			8
H643	H	PLUM GROVE	Expanded use of groundwater	\$419,458	0	35	66	99	136	178	N			8
H644	H	PLUM GROVE	Municipal conservation - small water user group	\$0	0	10	11	13	15	18	N			8
H645	H	POINT AQUARIUS MUD	Expanded use of groundwater	\$509,502	0	0	48	127	201	257	N			6
H646	H	POINT AQUARIUS MUD	Interim strategies - temporary overdraft	\$292,116	124	0	0	0	0	0	N			10
H647	H	POINT AQUARIUS MUD	Municipal conservation - medium water user group	\$0	44	54	78	105	142	184	N			10
H648	H	POINT AQUARIUS MUD	SJRA Water Resources Assessment Plan participation	\$4,698,957	0	331	613	966	1,472	2,091	N			10
H649	H	POINT BLANK	Expanded use of groundwater	\$63,628	0	11	19	23	26	27	N			8
H650	H	POINT BLANK	Municipal conservation - small water user group	\$0	0	5	6	6	6	6	N			8
H651	H	PORTER WSC	Interim strategies - temporary overdraft	\$759,427	323	0	0	0	0	0	N			10
H652	H	PORTER WSC	Municipal conservation - large water user group	\$0	123	137	171	212	210	210	N			10
H653	H	PORTER WSC	SJRA Water Resources Assessment Plan participation	\$4,494,176	0	777	1,260	1,826	2,047	2,239	N			10
H654	H	PRAIRIE VIEW	Expanded use of groundwater	\$1,561,875	0	91	198	321	476	663	N			8
H655	H	PRAIRIE VIEW	Municipal conservation - medium water user group	\$0	0	80	87	94	103	114	N			8
H656	H	RAYFORD ROAD MUD	Contract with SJRA	\$0	0	0	0	214	769	1,127	Y			4
H657	H	RAYFORD ROAD MUD	Interim strategies - temporary overdraft	\$901,989	384	0	0	0	0	0	N			10
H658	H	RAYFORD ROAD MUD	Municipal conservation - large water user group	\$0	146	145	144	144	144	144	N			10
H659	H	RAYFORD ROAD MUD	SJRA Water Resources Assessment Plan participation	\$1,037,129	0	826	0	0	0	0	N			10
H660	H	RAYFORD ROAD MUD	SJRA Water Resources Assessment Plan participation	\$3,442,156	0	0	2,055	1,501	1,060	776	Y			8
H661	H	RICHMOND	Contract with Cities of Richmond-Rosenberg	\$0	0	0	0	0	0	248	Y			0
H662	H	RICHMOND	Municipal conservation	\$0	0	179	213	245	301	363	N			8
H663	H	RICHMOND-ROSENBERG	BRA to Cities of Richmond-Rosenberg contract	\$0	0	0	0	1,091	3,060	5,645	Y			4
H664	H	RICHMOND-ROSENBERG	Cities of Richmond-Rosenberg Groundwater Reduction Plan - West Fort Bend surface water treatment plant	\$117,220,150	0	7,500	7,500	7,500	7,500	7,500	N			10
H665	H	RICHWOOD	Contract with Brazosport Water Authority	\$234,194	36	33	36	42	56	76	N			10
H666	H	RICHWOOD	Expanded use of groundwater	\$54,202	0	15	20	21	22	23	N			8
H667	H	RICHWOOD	Municipal conservation - medium water user group	\$0	20	21	22	22	23	24	N			10
H668	H	RIVER PLANTATION MUD	Contract with SJRA	\$780,338	0	0	0	76	272	398	Y			4
H669	H	RIVER PLANTATION MUD	Expanded use of groundwater	\$0	0	0	16	0	0	0	N			6
H670	H	RIVER PLANTATION MUD	Interim strategies - temporary overdraft	\$332,132	141	0	0	0	0	0	N			10
H671	H	RIVER PLANTATION MUD	Municipal conservation - medium water user group	\$0	50	49	48	48	48	48	N			10
H672	H	RIVER PLANTATION MUD	River Plantation Groundwater Reduction Plan - reuse	\$484,926	168	368	368	368	368	368	N			10
H673	H	RIVERSIDE WSC	Expanded use of groundwater	\$697,523	0	29	68	169	224	296	N			8
H674	H	RIVERSIDE WSC	Municipal conservation - medium water user group	\$0	0	11	18	39	42	46	N			8
H675	H	ROLLING FORK PUD	Contract with City of Houston	\$234,202	0	0	408	515	565	565	Y			6
H676	H	ROLLING FORK PUD	Municipal conservation - small water user group	\$0	39	40	42	43	45	47	N			10
H677	H	ROLLING FORK PUD	Reallocation of existing supplies	\$957,246	173	470	152	74	45	76	N			10
H678	H	ROMAN FOREST	Expanded use of groundwater	\$795,583	0	65	142	198	250	293	N			8
H679	H	ROMAN FOREST	Interim strategies - temporary overdraft	\$219,120	93	0	0	0	0	0	N			10
H680	H	ROMAN FOREST	Municipal conservation - medium water user group	\$0	32	50	71	93	124	160	N			10
H681	H	ROMAN FOREST	SJRA Water Resources Assessment Plan participation	\$3,918,339	0	306	561	860	1,283	1,809	N			10
H682	H	ROSENBERG	Contract with Cities of Richmond-Rosenberg	\$0	0	0	0	1,091	3,060	5,397	Y			4
H683	H	ROSENBERG	Municipal conservation	\$0	150	497	616	738	904	1,101	N			10
H684	H	SAN FELIPE	Expanded use of groundwater	\$122,542	0	21	35	43	46	52	N			8
H685	H	SAN FELIPE	Municipal conservation - small water user group	\$0	0	8	9	9	9	10	N			8
H686	H	SAN JACINTO RIVER AUTH	City of Houston to SJRA contract	\$0	0	36,377	55,538	54,582	53,581	52,534	Y			8
H687	H	SAN JACINTO RIVER AUTH	SJRA Water Resources Assessment Plan	\$900,000,000	0	36,377	55,538	62,517	92,677	129,010	Y			10
H688	H	SAN JACINTO RIVER AUTH	TRA to SJRA contract	\$302,781,597	0	0	0	7,935	39,096	76,476	N			4
H689	H	SAN JACINTO WSC	Expanded use of groundwater	\$426,514	0	68	122	155	171	181	N			8
H690	H	SAN LEON MUD	Contract with GCWA	\$2,189,171	0	1,260	1,260	1,260	1,260	1,260	N			8
H691	H	SAN LEON MUD	Expanded use of groundwater	\$11,783	0	4	5	5	5	5	N			8

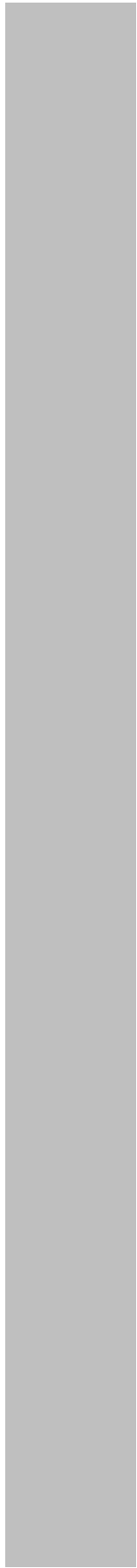
H692	H	SEABROOK	Contract with City of Pasadena	\$2,551,683	0	967	1,298	1,929	2,384	2,384	Y			8
H693	H	SEABROOK	Expanded use of groundwater	\$205,013	0	45	87	87	87	87	N			8
H694	H	SEABROOK	Municipal conservation - large water user group	\$0	153	182	208	237	264	293	N			10
H695	H	SEABROOK	Reallocation of existing supplies	\$2,564,531	1,109	484	484	271	188	603	N			10
H696	H	SEALY	City of Sealy groundwater treatment expansion	\$6,450,000	0	360	360	360	360	888	Y			10
H697	H	SEALY	Expanded use of groundwater	\$0	0	360	608	725	785	888	N			10
H698	H	SEALY	Municipal conservation - medium water user group	\$0	0	97	112	119	123	129	N			8
H699	H	SHENANDOAH	Contract with SJRA	\$917,145	0	0	0	258	1,091	1,892	Y			4
H700	H	SHENANDOAH	Interim strategies - temporary overdraft	\$698,545	297	0	0	0	0	0	N			10
H701	H	SHENANDOAH	Municipal conservation - medium water user group	\$0	104	121	141	162	191	226	N			10
H702	H	SHENANDOAH	SJRA Water Resources Assessment Plan participation	\$1,032,477	0	737	0	0	0	0	N			10
H703	H	SHENANDOAH	SJRA Water Resources Assessment Plan participation	\$4,431,902	0	0	2,144	1,808	1,504	1,304	Y			8
H704	H	SHEPHERD	Expanded use of groundwater	\$306,343	0	54	93	110	123	130	N			8
H705	H	SHEPHERD	Municipal conservation - small water user group	\$0	0	20	22	23	24	24	N			8
H706	H	SHOREACRES	Expanded use of groundwater	\$7,070	0	2	3	3	3	3	N			8
H707	H	SIENNA PLANTATION MUD	Contract with City of Missouri City	\$1,408,669	0	318	740	772	772	772	Y			8
H708	H	SIENNA PLANTATION MUD	Municipal conservation - medium water user group	\$0	63	72	72	72	72	72	N			10
H709	H	SIMONTON	Expanded use of groundwater	\$1,163,829	0	78	173	232	352	494	N			8
H710	H	SIMONTON	Municipal conservation - small water user group	\$0	0	0	0	38	45	54	N			4
H711	H	SOUTH HOUSTON	Expanded use of groundwater	\$110,758	0	21	47	47	47	47	N			8
H712	H	SOUTHERN MONTGOMER	Contract with SJRA	\$0	0	0	0	235	856	1,282	Y			4
H713	H	SOUTHERN MONTGOMER	Interim strategies - temporary overdraft	\$740,701	315	0	0	0	0	0	N			10
H714	H	SOUTHERN MONTGOMER	Municipal conservation - large water user group	\$0	121	152	153	158	160	164	N			10
H715	H	SOUTHERN MONTGOMER	SJRA Water Resources Assessment Plan participation	\$1,289,800	0	866	0	0	0	0	N			10
H716	H	SOUTHERN MONTGOMER	SJRA Water Resources Assessment Plan participation	\$3,650,254	0	0	2,190	1,650	1,179	884	Y			8
H717	H	SOUTHSIDE PLACE	Contract with City of Houston	\$132,307	0	0	17	39	67	67	Y			6
H718	H	SOUTHSIDE PLACE	Expanded use of groundwater	\$23,565	0	6	10	10	10	10	N			8
H719	H	SOUTHSIDE PLACE	Municipal conservation - small water user group	\$0	6	24	25	27	28	30	N			10
H720	H	SOUTHSIDE PLACE	Reallocation of existing supplies	\$142,789	0	3	6	6	5	33	N			8
H721	H	SOUTHWEST UTILITIES	Contract with City of Houston	\$549,865	0	0	475	645	752	752	Y			6
H722	H	SOUTHWEST UTILITIES	Expanded use of groundwater	\$44,775	0	2	4	7	12	19	N			8
H723	H	SOUTHWEST UTILITIES	Interim strategies - temporary overdraft	\$101,329	43	0	0	0	0	0	N			10
H724	H	SOUTHWEST UTILITIES	Municipal conservation - large water user group	\$0	42	47	53	57	63	68	N			10
H725	H	SOUTHWEST UTILITIES	Municipal conservation - medium water user group	\$0	15	20	26	32	38	47	N			10
H726	H	SOUTHWEST UTILITIES	Reallocation of existing supplies	\$1,085,554	171	509	178	91	59	151	N			10
H727	H	SOUTHWEST UTILITIES	SJRA Water Resources Assessment Plan participation	\$975,437	0	102	166	237	336	457	N			10
H728	H	SPLENDORA	Expanded use of groundwater	\$35,231	0	0	0	6	17	25	N			4
H729	H	SPLENDORA	Interim strategies - temporary overdraft	\$77,765	33	0	0	0	0	0	N			10
H730	H	SPLENDORA	Municipal conservation - small water user group	\$0	10	12	16	21	28	36	N			10
H731	H	SPLENDORA	SJRA Water Resources Assessment Plan participation	\$970,800	0	83	141	212	313	435	N			10
H732	H	SPRING CREEK UD	Contract with SJRA	\$574,559	0	0	0	97	455	846	Y			4
H733	H	SPRING CREEK UD	Expanded use of groundwater	\$0	0	0	0	0	17	37	N			2
H734	H	SPRING CREEK UD	Interim strategies - temporary overdraft	\$214,409	91	0	0	0	0	0	N			10
H735	H	SPRING CREEK UD	Municipal conservation - medium water user group	\$0	32	36	48	61	80	101	N			10
H736	H	SPRING CREEK UD	SJRA Water Resources Assessment Plan participation	\$313,303	0	224	0	0	0	0	N			10
H737	H	SPRING CREEK UD	SJRA Water Resources Assessment Plan participation	\$1,934,935	0	0	727	681	626	583	Y			8
H738	H	SPRING VALLEY	Contract with City of Houston	\$289,847	0	0	509	642	703	703	Y			6
H739	H	SPRING VALLEY	Municipal conservation - medium water user group	\$0	53	55	56	58	60	63	N			10
H740	H	SPRING VALLEY	Reallocation of existing supplies	\$1,164,476	213	585	190	90	56	94	N			10
H741	H	STAGECOACH	Expanded use of groundwater	\$70,154	0	0	7	15	24	36	N			6
H742	H	STAGECOACH	Interim strategies - temporary overdraft	\$32,992	14	0	0	0	0	0	N			10
H743	H	STAGECOACH	Municipal conservation - small water user group	\$0	4	6	8	11	15	20	N			10
H744	H	STAGECOACH	SJRA Water Resources Assessment Plan participation	\$568,408	0	39	68	107	165	249	N			10
H745	H	STANLEY LAKE MUD	Contract with SJRA	\$215,962	0	0	0	84	304	445	Y			4
H746	H	STANLEY LAKE MUD	Interim strategies - temporary overdraft	\$296,825	126	0	0	0	0	0	N			10
H747	H	STANLEY LAKE MUD	Municipal conservation - medium water user group	\$0	44	54	54	53	53	53	N			10
H748	H	STANLEY LAKE MUD	SJRA Water Resources Assessment Plan participation	\$699,426	0	329	423	0	0	0	N			10
H749	H	STANLEY LAKE MUD	SJRA Water Resources Assessment Plan participation	\$1,151,624	0	0	0	593	419	307	Y			6
H750	H	STEAM ELECTRIC POWER,	Contract with NRG Energy	\$0	0	0	0	0	0	8,500	Y			0

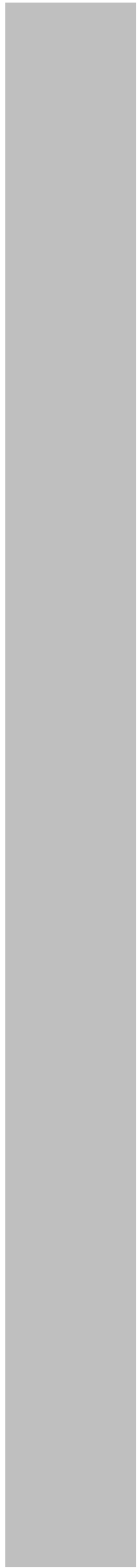
H751	H	STEAM ELECTRIC POWER,	Contract with GCWA	\$52,675,432	0	1,381	1,992	2,819	3,828	5,057	N			8
H752	H	STEAM ELECTRIC POWER,	Expanded use of groundwater	\$0	0	401	469	469	469	469	N			8
H753	H	STEAM ELECTRIC POWER,	Interim strategies - temporary overdraft	\$5,998,882	2,803	0	0	0	0	0	N			10
H754	H	STEAM ELECTRIC POWER,	City of Houston indirect reuse	\$66,073,816	0	0	0	10,150	14,075	14,075	N			4
H755	H	STEAM ELECTRIC POWER,	Contract with City of Houston	\$59,758,433	0	3,286	3,357	4,189	5,154	6,027	N			8
H756	H	STEAM ELECTRIC POWER,	Contract with City of Houston	\$74,955,232	0	3,510	7,093	5,451	5,451	5,451	Y			8
H757	H	STEAM ELECTRIC POWER,	Expanded use of groundwater	\$6,116,862	0	2,353	2,758	2,758	2,758	2,758	N			8
H758	H	STEAM ELECTRIC POWER,	Reallocation of existing supplies	\$18,645,352	400	400	394	1,445	1,220	3,909	N			10
H759	H	STEAM ELECTRIC POWER,	Expanded use of groundwater	\$12,020,322	0	1,278	1,995	2,869	3,934	5,233	N			8
H760	H	STEAM ELECTRIC POWER,	Expanded use of groundwater	\$3,686,708	0	1,037	811	728	588	502	N			8
H761	H	STEAM ELECTRIC POWER,	SJRA Water Resources Assessment Plan participation	\$6,989,246	0	0	0	0	1,593	4,307	N			4
H762	H	SUGAR LAND	BRA to City of Sugar Land contract	\$0	0	1,027	2,947	3,616	3,875	4,756	Y			8
H763	H	SUGAR LAND	City of Sugar Land Groundwater Reduction Plan	\$82,576,224	0	1,027	2,947	3,616	3,875	4,756	Y			10
H764	H	SUGAR LAND	City of Sugar Land Groundwater Reduction Plan - reuse	\$78,783,825	0	560	5,040	5,040	5,040	5,040	N			10
H765	H	SUGAR LAND	Contract with City of Sugar Land	\$0	0	0	813	1,251	1,413	2,252	Y			6
H766	H	SUGAR LAND	Municipal conservation - large water user group	\$0	0	1,542	1,581	1,574	1,574	1,574	N			8
H767	H	SUNBELT FWSD	City of Houston Groundwater Reduction Plan participation	\$13,356,470	0	0	2,418	4,018	5,005	5,967	N			6
H768	H	SUNBELT FWSD	Contract with City of Houston	\$3,661,924	0	2,842	1,459	553	246	0	N			8
H769	H	SUNBELT FWSD	Municipal conservation - large water user group	\$0	285	331	375	422	468	517	N			10
H770	H	SUNBELT FWSD	Reallocation of existing supplies	\$1,072,839	576	0	0	0	0	0	N			10
H771	H	SURFSIDE BEACH	Expanded use of groundwater	\$207,377	0	11	29	47	66	88	N			8
H772	H	SURFSIDE BEACH	Municipal conservation - small water user group	\$0	0	10	12	13	14	15	N			8
H773	H	SWEENY	Expanded use of groundwater	\$249,792	0	0	17	37	68	106	N			6
H774	H	SWEENY	Municipal conservation - medium water user group	\$0	0	30	40	41	43	45	N			8
H775	H	TEXAS CITY	Contract with GCWA	\$13,660,907	0	10,085	10,085	10,085	10,085	10,085	N			8
H776	H	THE WOODLANDS	Contract with SJRA	\$0	0	0	0	2,653	9,514	13,948	Y			4
H777	H	THE WOODLANDS	Expanded use of groundwater	\$0	0	4,038	2,033	0	0	0	N			8
H778	H	THE WOODLANDS	Interim strategies - temporary overdraft	\$5,296,115	2,438	0	0	0	0	0	N			10
H779	H	THE WOODLANDS	Municipal conservation - large water user group	\$0	930	1,686	1,796	1,788	1,779	1,779	N			10
H780	H	THE WOODLANDS	SJRA Water Resources Assessment Plan participation	\$26,522,191	0	23,426	25,536	18,663	13,118	9,607	Y			10
H781	H	TIKI ISLAND	Contract with GCWA	\$6,788,454	0	630	630	630	630	630	N			8
H782	H	TIKI ISLAND	Expanded use of groundwater	\$14,139	0	4	6	6	6	6	N			8
H783	H	TOMBALL	Municipal conservation - large water user group	\$0	166	209	244	306	353	420	N			10
H784	H	TOMBALL	NHCRWA Groundwater Reduction Plan participation	\$12,543,073	620	2,102	2,830	3,760	4,441	5,442	N			10
H785	H	TRAIL OF THE LAKES MUD	Municipal conservation - large water user group	\$0	90	87	86	85	85	85	N			10
H786	H	TRAIL OF THE LAKES MUD	WHCRWA Groundwater Reduction Plan participation	\$2,358,060	334	876	1,005	986	986	986	N			10
H787	H	TRINITY	Expanded use of groundwater	\$4,713	0	2	0	0	0	0	N			8
H788	H	VARNER CREEK UD	Expanded use of groundwater	\$697,489	0	45	108	166	228	296	N			8
H789	H	VARNER CREEK UD	Municipal conservation - small water user group	\$0	0	24	27	31	35	39	N			8
H790	H	WALKER COUNTY RURAL V	Expanded use of groundwater	\$344,031	0	78	119	119	131	146	N			8
H791	H	WALKER COUNTY RURAL V	Municipal conservation - medium water user group	\$0	0	54	55	53	53	53	N			8
H792	H	WALLER	Expanded use of groundwater	\$1,602,145	0	142	268	398	545	511	N			8
H793	H	WALLER	Municipal conservation - small water user group	\$0	7	36	43	49	57	67	N			10
H794	H	WALLER	Reallocation of existing supplies	\$448,989	0	0	0	0	0	203	N			0
H795	H	WALLIS	Expanded use of groundwater	\$84,837	0	16	24	29	31	36	N			8
H796	H	WALLIS	Municipal conservation - small water user group	\$0	0	11	11	11	12	12	N			8
H797	H	WEBSTER	Expanded use of groundwater	\$318,106	0	68	135	135	135	135	N			8
H798	H	WEST HARDIN WSC	Expanded use of groundwater	\$80,123	0	6	13	18	25	34	N			8
H799	H	WEST HARDIN WSC	Municipal conservation - small water user group	\$0	0	2	2	3	3	3	N			8
H800	H	WEST HARRIS COUNTY MU	City of Houston Groundwater Reduction Plan participation	\$979,608	135	360	416	406	401	401	N			10
H801	H	WEST HARRIS COUNTY MU	Municipal conservation - medium water user group	\$0	34	33	33	33	32	32	N			10
H802	H	WEST HARRIS COUNTY REC	City of Houston to WHCRWA contract	\$0	1,241	31,837	46,324	52,759	55,549	58,402	Y			10
H803	H	WEST HARRIS COUNTY REC	Contract with WHCRWA	\$44,753,636	0	31,837	46,324	40,241	43,031	38,961	Y			8
H804	H	WEST HARRIS COUNTY REC	Municipal conservation - small water user group	\$0	178	3,969	4,343	4,630	4,743	4,815	N			10
H805	H	WEST HARRIS COUNTY REC	Reallocation of existing supplies	\$5,414,850	1,241	0	0	12,518	12,518	19,441	N			10
H806	H	WEST HARRIS COUNTY REC	Wastewater reclamation for municipal irrigation	\$2,221,700	0	0	734	1,290	1,552	1,686	N			6
H807	H	WEST HARRIS COUNTY REC	WHCRWA Groundwater Reduction Plan	\$0	21,678	52,274	66,761	73,196	75,985	78,839	Y			10
H808	H	WEST HARRIS COUNTY REC	WHCRWA internal distribution	\$552,472,000	21,678	52,274	66,761	73,196	75,985	78,839	Y			10
H809	H	WEST HARRIS COUNTY REC	WHCRWA transmission line	\$290,084,193	21,678	52,274	66,761	73,196	75,985	78,839	Y			10

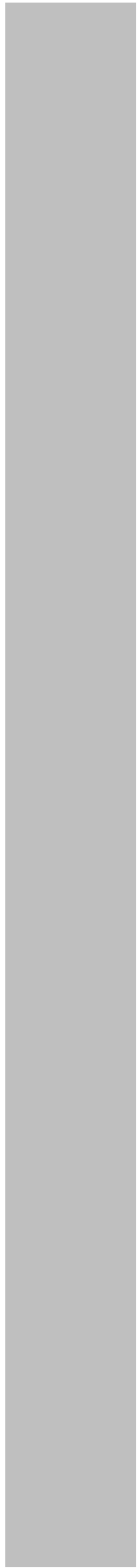
H810	H	WEST UNIVERSITY PL.	Contract with City of Houston	\$911,842	0	0	363	568	759	759	Y			6
H811	H	WEST UNIVERSITY PL.	Expanded use of groundwater	\$113,113	0	35	48	48	48	48	N			8
H812	H	WEST UNIVERSITY PL.	Municipal conservation - large water user group	\$0	197	208	218	228	240	253	N			10
H813	H	WEST UNIVERSITY PL.	Reallocation of existing supplies	\$914,543	231	359	136	80	60	256	N			10
H814	H	WILLIS	Contract with SJRA	\$521,648	0	0	0	97	442	811	Y			4
H815	H	WILLIS	Interim strategies - temporary overdraft	\$226,185	96	0	0	0	0	0	N			10
H816	H	WILLIS	Municipal conservation - medium water user group	\$0	34	39	49	61	77	97	N			10
H817	H	WILLIS	SJRA Water Resources Assessment Plan participation	\$329,778	0	236	0	0	0	0	N			10
H818	H	WILLIS	SJRA Water Resources Assessment Plan participation	\$1,887,989	0	0	742	681	608	559	Y			8
H819	H	WILLOW RUN SUBDIVISION	Contract with City of Houston	\$70,561	0	0	345	412	425	425	Y			6
H820	H	WILLOW RUN SUBDIVISION	Municipal conservation - medium water user group	\$0	40	39	38	37	37	37	N			10
H821	H	WILLOW RUN SUBDIVISION	Reallocation of existing supplies	\$837,787	159	417	129	58	34	34	N			10
H822	H	WINDFERN FOREST UD	Contract with City of Houston	\$111,403	0	0	496	596	624	624	Y			6
H823	H	WINDFERN FOREST UD	Municipal conservation - medium water user group	\$0	48	62	60	60	60	60	N			10
H824	H	WINDFERN FOREST UD	Reallocation of existing supplies	\$1,143,811	126	591	185	84	49	49	N			10
H825	H	WOODBANCH	Interim strategies - temporary overdraft	\$75,409	32	0	0	0	0	0	N			10
H826	H	WOODBANCH	Municipal conservation - small water user group	\$0	10	11	12	14	16	18	N			10
H827	H	WOODBANCH	SJRA Water Resources Assessment Plan participation	\$454,802	0	74	107	138	177	225	N			10
H828	H	WOODCREEK MUD	City of Houston Groundwater Reduction Plan participation	\$2,990,980	150	521	739	913	1,092	1,271	N			10
H829	H	WOODCREEK MUD	Municipal conservation - medium water user group	\$0	37	49	60	71	82	93	N			10
H830	H	ANGLETON	Contract with Brazosport Water Authority - Brackish RO	\$1,557,884	0	364	365	366	376	389	Y			10
H831	H	BRAZORIA	Contract with Brazosport Water Authority - Brackish RO	\$347,378	0	64	64	64	64	64	Y			10
H832	H	CLUTE	Contract with Brazosport Water Authority - Brackish RO	\$1,008,353	0	213	218	221	229	240	Y			10
H833	H	COUNTY-OTHER, BRAZORIA	Contract with Brazosport Water Authority - Brackish RO	\$4,710,866	0	1,161	1,280	1,198	1,098	945	Y			10
H834	H	FREEPORT	Contract with Brazosport Water Authority - Brackish RO	\$2,139,694	0	380	412	446	489	543	Y			10
H835	H	LAKE JACKSON	Contract with Brazosport Water Authority - Brackish RO	\$2,893,186	0	561	584	625	682	750	Y			10
H836	H	MANUFACTURING, BRAZORIA	Contract with Brazosport Water Authority - Brackish RO	\$1,268,345	0	311	128	127	102	102	Y			10
H837	H	OYSTER CREEK	Contract with Brazosport Water Authority - Brackish RO	\$253,002	0	26	28	31	35	39	Y			10
H838	H	RICHWOOD	Contract with Brazosport Water Authority - Brackish RO	\$347,561	0	56	57	58	61	64	Y			10
H839	H	BRAZOSPORT WATER AUTHORITY	BWA Brackish Groundwater Plant	\$30,570,395	0	3,136	3,136	3,136	3,136	3,136	Y			10
H840	H	BRAZOSPORT WATER AUTHORITY	BWA WTP Plant Expansion	\$14,359,419	0	8,400	8,400	8,400	8,400	8,400	N			8
H841	H	GULF COAST WATER AUTHORITY	COH to GCWA Contract	\$0	0	56,896	56,896	56,896	56,896	56,896	Y			8
H842	H	GULF COAST WATER AUTHORITY	GCWA Reclaimed Water from COH	\$66,840,044	0	56,896	56,896	56,896	56,896	56,896	Y			8
H843	H	ALVIN	Contract with Gulf Coast Water Authority - Reuse	\$2,498,222	0	0	41	84	152	229	Y			6
H844	H	BACLIFF MUD	Contract with Gulf Coast Water Authority - Reuse	\$1,359,254	0	838	828	813	794	772	Y			8
H845	H	BAYOU VISTA	Contract with Gulf Coast Water Authority - Reuse	\$472,601	0	217	215	211	206	200	Y			8
H846	H	CLEAR LAKE SHORES	Contract with Gulf Coast Water Authority - Reuse	\$276,494	0	101	101	99	97	94	Y			8
H847	H	COUNTY-OTHER, GALVESTON	Contract with Gulf Coast Water Authority - Reuse	\$2,137,743	0	1,228	1,213	1,191	1,164	1,130	Y			8
H848	H	GALVESTON COUNTY WATER AUTHORITY	Contract with Gulf Coast Water Authority - Reuse	\$2,240,523	0	1,292	1,276	1,253	1,224	1,189	Y			8
H849	H	HITCHCOCK	Contract with Gulf Coast Water Authority - Reuse	\$1,444,037	0	801	791	777	759	737	Y			8
H850	H	KEMAH	Contract with Gulf Coast Water Authority - Reuse	\$201,986	0	114	122	122	121	120	Y			8
H851	H	LA MARQUE	Contract with Gulf Coast Water Authority - Reuse	\$2,320,604	0	1,342	1,326	1,302	1,272	1,235	Y			8
H852	H	LEAGUE CITY	Contract with Gulf Coast Water Authority - Reuse	\$3,886,338	0	2,890	3,001	2,975	2,940	2,894	Y			8
H853	H	MANUFACTURING, GALVESTON	Contract with Gulf Coast Water Authority - Reuse	\$124,034,330	0	28,631	28,291	27,776	27,129	26,352	Y			8
H854	H	MANVEL	Contract with Gulf Coast Water Authority - Reuse	\$219,256	0	21	18	18	19	20	Y			8
H855	H	PEARLAND	Contract with Gulf Coast Water Authority - Reuse	\$65,464,844	0	6,342	6,498	7,004	7,655	8,470	Y			8
H856	H	SAN LEON MUD	Contract with Gulf Coast Water Authority - Reuse	\$2,158,601	0	1,389	1,372	1,347	1,316	1,278	Y			8
H857	H	SANTA FE	Contract with Gulf Coast Water Authority - Reuse	\$918,341	0	483	477	469	458	445	Y			8
H858	H	STEAM ELECTRIC POWER, GALVESTON	Contract with Gulf Coast Water Authority - Reuse	\$4,779,876	0	1,512	1,746	2,050	2,403	2,807	Y			8
H859	H	TEXAS CITY	Contract with Gulf Coast Water Authority - Reuse	\$7,315,253	0	9,258	9,148	8,981	8,773	8,521	Y			8
H860	H	TIKI ISLAND	Contract with Gulf Coast Water Authority - Reuse	\$841,650	0	437	432	424	414	403	Y			8
H861	H	ANGLETON	Contract with Brazosport Water Authority - Dow Reservoir Expansion	\$1,738,499	0	994	997	1,001	1,026	1,063	Y			8
H862	H	BRAZORIA	Contract with Brazosport Water Authority - Dow Reservoir Expansion	\$401,718	0	175	175	175	175	175	Y			8
H863	H	CLUTE	Contract with Brazosport Water Authority - Dow Reservoir Expansion	\$1,409,074	0	582	594	604	626	657	Y			8
H864	H	COUNTY-OTHER, BRAZORIA	Contract with Brazosport Water Authority - Dow Reservoir Expansion	\$3,394,515	0	3,173	3,501	3,273	2,999	2,579	Y			8
H865	H	FREEPORT	Contract with Brazosport Water Authority - Dow Reservoir Expansion	\$3,334,813	0	1,039	1,126	1,217	1,337	1,483	Y			8
H866	H	LAKE JACKSON	Contract with Brazosport Water Authority - Dow Reservoir Expansion	\$3,178,443	0	1,532	1,595	1,709	1,865	2,049	Y			8
H867	H	MANUFACTURING, BRAZORIA	Contract with Brazosport Water Authority - Dow Reservoir Expansion	\$1,729,257	0	849	349	347	280	280	Y			8
H868	H	OYSTER CREEK	Contract with Brazosport Water Authority - Dow Reservoir Expansion	\$192,361	0	71	77	85	95	107	Y			8

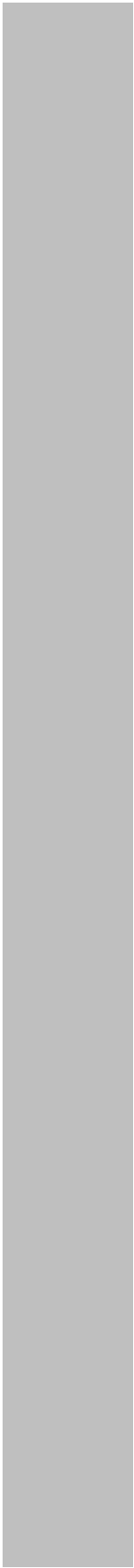
H869	H	RICHWOOD	Contract with Brazosport Water Authority - Dow Reservoir Expansion	\$292,333	0	154	155	158	166	176	Y			8
H870	H	BRAZOSPORT WATER AUT	DOW to BWA Contract	\$0	0	8,569	8,569	8,569	8,569	8,569	Y			8

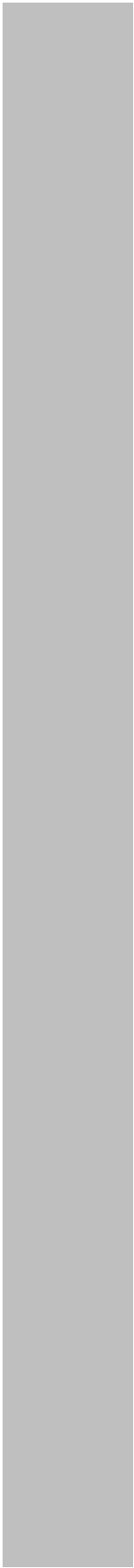


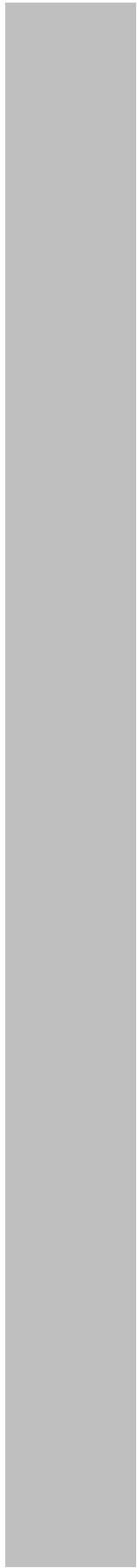


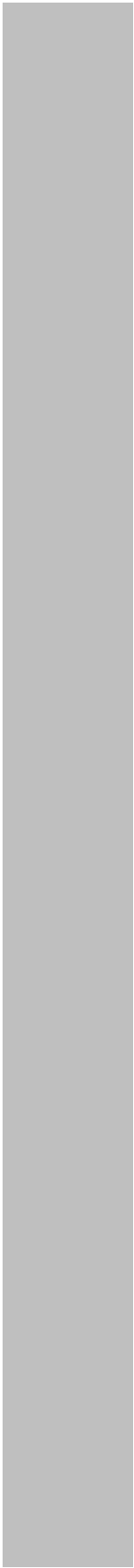


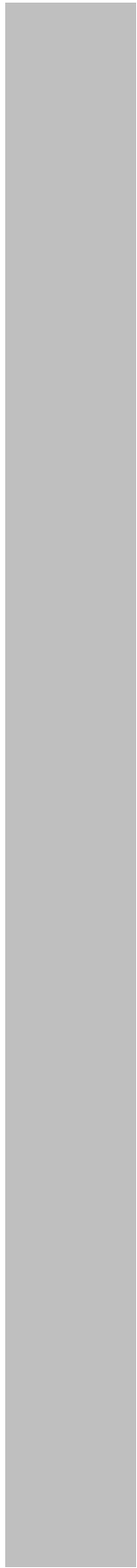


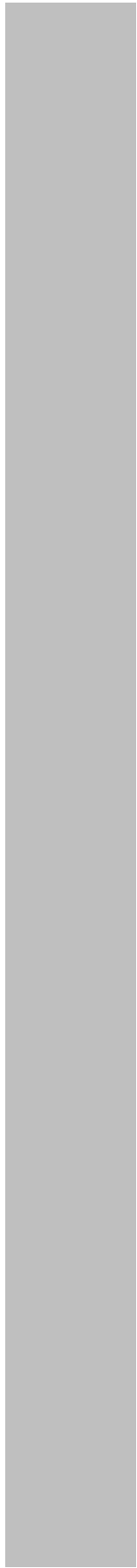


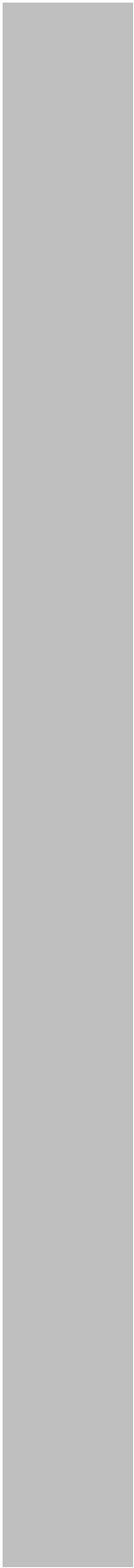


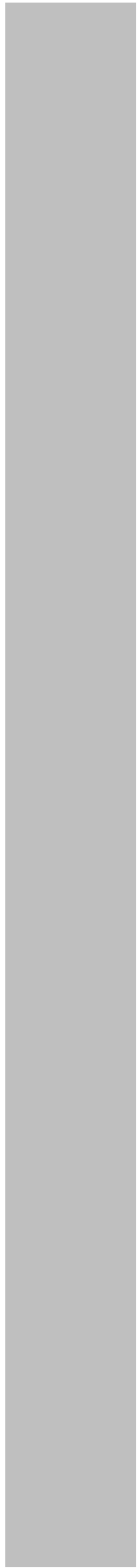


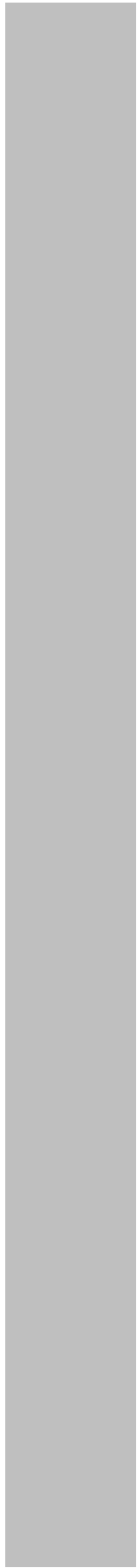


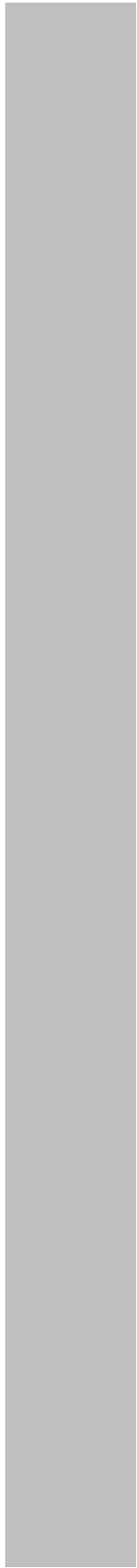


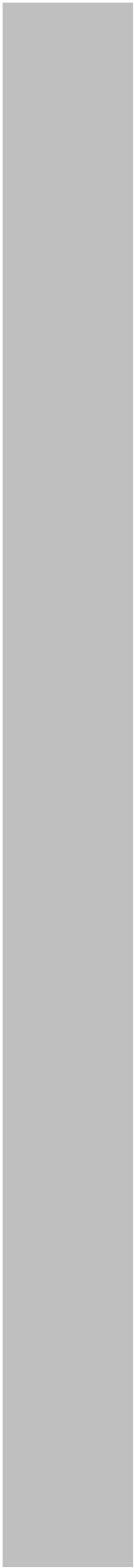


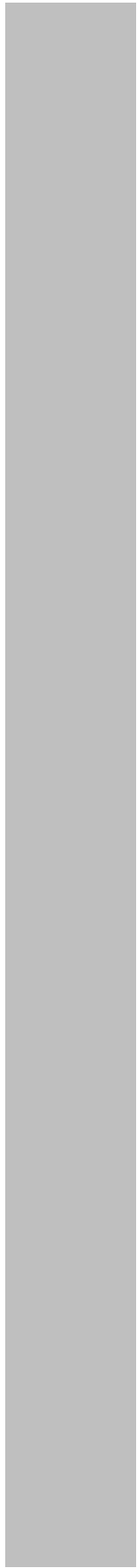


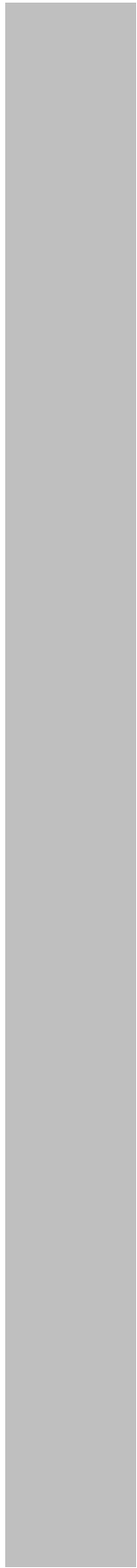


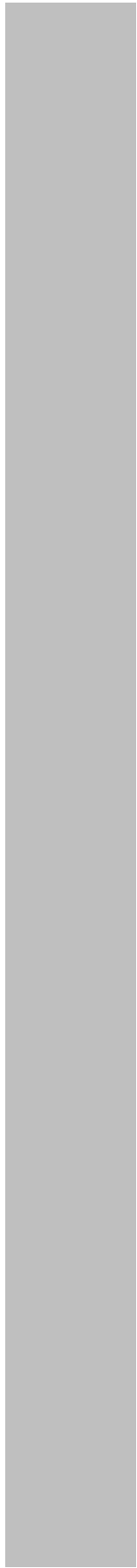


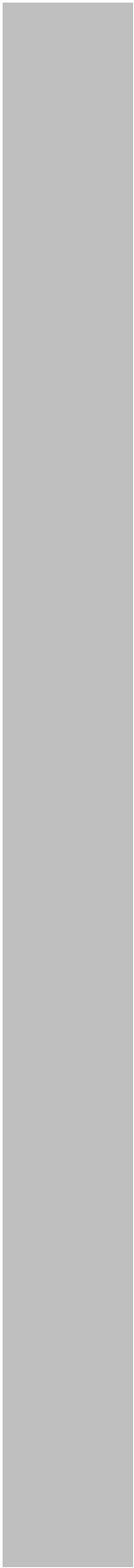


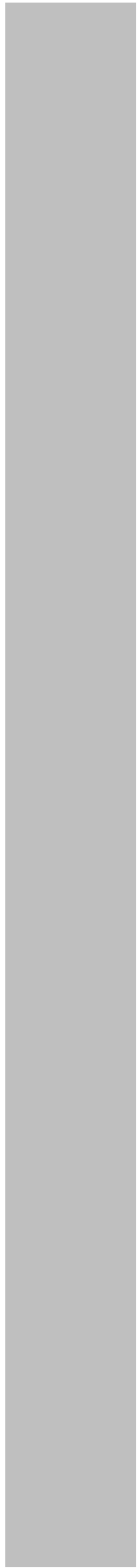


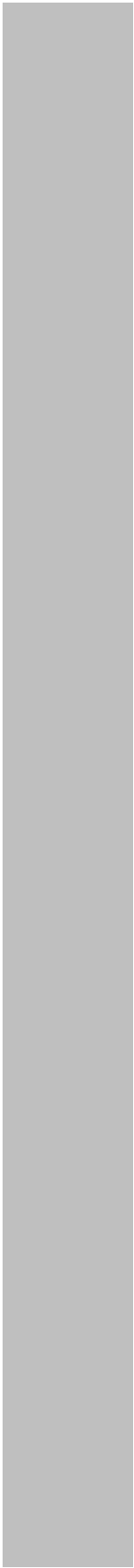


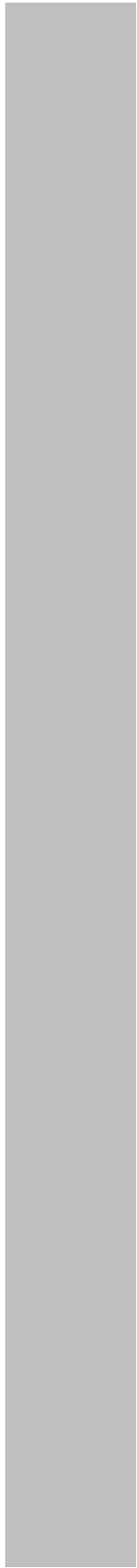


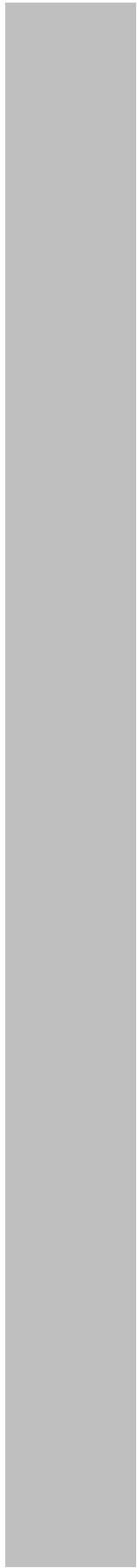


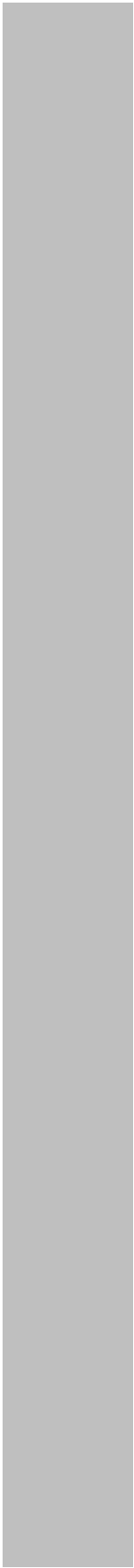


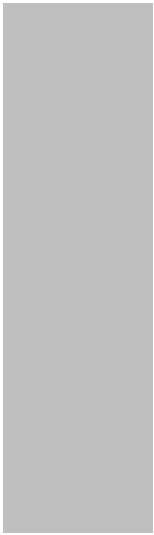












1 - Decade of Need for Project			Criteria 2 - Project Feasibility						Criteria 3 - Project Viability						
10	20	400	5	5	10	5	25	100	100	10	100	10	5.00	5	30.00
Uniform Standard 1B - In what decade is initial funding needed? [2060 = 0 points; 2050 = 2; 2040 = 4; 2030 = 6; 2020 = 8; 2010 = 10]	Criteria 1 Total Score	Weighted Criteria 1 Total	Uniform Standard 2A - What supporting data is available to show that the quantity of water needed is available? [Models suggest insufficient quantities of water or no modeling performed = 0 points; models suggest sufficient quantity of water = 3; Field tests and measurements confirm sufficient quantities of water = 5]	Uniform Standard 2B - If necessary, does the sponsor hold necessary legal rights, water rights and/or contracts to use the water that this project would require? [Legal rights, water rights and/or contract application not submitted = 0 points; application submitted = 2; application is administratively complete = 3; legal rights, water rights and/or contracts obtained or not needed = 5]	engineering and/or planning has been accomplished for this project? [Project idea is outlined in RWP = 1 point; feasibility studies initiated = 2; feasibility studies completed = 3; conceptual design initiated = 4; conceptual design completed = 5; preliminary engineering report initiated = 6; preliminary engineering report completed = 7; preliminary design initiated = 8; preliminary design completed = 9; final design complete = 10]	Uniform Standard 2D - Has the project sponsor requested (in writing for the 2016 Plan) that the project be included in the Regional Water Plan? [No = 0 points; yes = 5]	Criteria 2 Total Score	Weighted Criteria 2 Total	Uniform Standard 3A - In the decade the project supply comes online, what is the % of the WUG's (or WUGs') needs satisfied by this project? [Calculation is based on the needs of all WUGs receiving water from the project.]	Converted Needs-based score for Uniform Standard 3A	Uniform Standard 3B - In the final decade of the planning period, what is the % of the WUG's (or WUGs') needs satisfied by this project? [Calculation is based on the needs of all WUGs receiving water from the project.]	Converted Needs-based score for Uniform Standard 3A	Uniform Standard 3C - Is this project the only economically feasible source of new supply for the WUG, other than conservation? [No = 0 points; Yes = 5]	Uniform Standard 3D - Does this project serve multiple WUGs? [No = 0 points; Yes = 5]	Criteria 3 Total Score
8	14	280	3	0	1	5	9	36	31.23028391	3.12	70.24793388	7.02	0.00	0	10.15
10	18	360	5	5	10	5	25	100	100	10.00	29.75206612	2.98	0.00	0	12.98
10	18	360	5	5	1	5	16	64	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	40.90909091	4.09	12.38938053	1.24	5.00	0	10.33
10	20	400	5	0	1	5	11	44	49.28057554	4.93	50.88105727	5.09	0.00	0	10.02
10	18	360	5	0	1	5	11	44	16.14035088	1.61	15.63876652	1.56	0.00	0	3.18
10	20	400	5	5	10	5	25	100	50.71942446	5.07	33.48017621	3.35	0.00	0	8.42
10	20	400	5	5	10	5	25	100	100	10.00	8.101851852	0.81	0.00	0	10.81
10	20	400	5	5	10	5	25	100	81.53846154	8.15	91.89814815	9.19	0.00	0	17.34
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	0.00	0	20.00
10	18	360	5	0	1	5	11	44	100	10.00	94.11764706	9.41	5.00	0	24.41
6	10	200	5	5	10	5	25	100	12.5	1.25	5.882352941	0.59	5.00	0	6.84
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	1	5	16	64	100	10.00	100	10.00	5.00	0	25.00
10	20	400	5	5	10	5	25	100	100	10.00	100	10.00	5.00	0	25.00
8	16	320	5	0	1	5	11	44	25.74257426	2.57	86.17683686	8.62	0.00	0	11.19
10	18	360	5	0	1	5	11	44	86.41975309	8.64	83.89057751	8.39	0.00	0	17.03
10	18	360	5	5	1	5	16	64	7.407407407	0.74	9.878419453	0.99	0.00	0	1.73
10	20	400	0	0	1	5	6	24	14.22222222	1.42	0	0.00	0.00	0	1.42
10	20	400	5	5	10	5	25	100	6.666666667	0.67	6.23100304	0.62	0.00	0	1.29
10	20	400	5	0	1	5	11	44	79.11111111	7.91	0	0.00	0.00	0	7.91
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	50	5.00	11.11111111	1.11	5.00	0	11.11
10	18	360	5	0	1	5	11	44	58.98760331	5.90	70.8848406	7.09	0.00	0	12.99
10	18	360	5	0	1	5	11	44	2.685950413	0.27	3.383214053	0.34	0.00	0	0.61
10	20	400	5	5	10	5	25	100	14.13237925	1.41	10.57254392	1.06	0.00	0	2.47
10	20	400	5	0	1	5	11	44	85.86762075	8.59	15.19193234	1.52	0.00	0	10.11
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	30.87719298	3.09	16.21233859	1.62	5.00	0	9.71
10	20	400	5	5	10	5	25	100	100	10.00	0.792852494	0.08	0.00	0	10.08
10	20	400	5	5	10	5	25	100	18.60465116	1.86	6.944444444	0.69	5.00	0	7.55
10	20	400	5	5	10	5	25	100	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	0	1	5	11	44	80.64516129	8.06	91.25138427	9.13	5.00	0	22.19
10	18	360	5	5	10	5	25	100	19.35483871	1.94	8.748615725	0.87	5.00	0	7.81
10	18	360	5	0	1	5	11	44	80	8.00	91.11012826	9.11	5.00	0	22.11
10	18	360	5	5	10	5	25	100	20	2.00	8.889871738	0.89	5.00	0	7.89
10	18	360	5	0	1	5	11	44	80.66914498	8.07	91.30100077	9.13	5.00	0	22.20
10	18	360	5	5	10	5	25	100	19.33085502	1.93	8.69899923	0.87	5.00	0	7.80
10	18	360	3	5	7	5	20	80	14.24762614	1.42	11.921639	1.19	0.00	5	7.62
10	18	360	3	3	8	5	19	76	7.100115815	0.71	5.943658339	0.59	0.00	5	6.30
8	16	320	3	0	1	5	9	36	1.345863789	0.13	37.86137234	3.79	0.00	0	3.92
4	8	160	3	0	1	0	4	16	59.65008201	5.97	79.40638627	7.94	0.00	5	18.91

8	16	320	3	5	10	5	23	92	71.86843947	7.19	78.50775834	7.85	0.00	5	20.04
8	16	320	3	0	1	5	9	36	8.378574525	0.84	16.34433692	1.63	0.00	5	7.47
0	0	0	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00
4	4	80	3	0	1	5	9	36	13.64473654	1.36	13.64473654	1.36	0.00	0	2.73
8	16	320	0	5	5	5	15	60	0	0.00	0	0.00	5.00	0	5.00
8	16	320	3	0	1	5	9	36	9.973313474	1.00	8.345147301	0.83	0.00	5	6.83
6	8	160	3	0	1	5	9	36	0.063046402	0.01	19.52180231	1.95	0.00	5	6.96
4	6	120	3	0	5	5	13	52	22.34889553	2.23	19.10263116	1.91	0.00	0	4.15
8	16	320	3	0	1	5	9	36	1.345863789	0.13	37.86137234	3.79	0.00	0	3.92
8	14	280	5	0	1	5	11	44	67.66467066	6.77	77.13125846	7.71	0.00	0	14.48
10	20	400	5	5	10	5	25	100	18.43971631	1.84	6.49526387	0.65	0.00	0	2.49
10	20	400	5	0	1	5	11	44	81.56028369	8.16	16.37347767	1.64	0.00	0	9.79
10	18	360	5	0	1	5	11	44	71.26436782	7.13	90.59534081	9.06	5.00	0	21.19
10	18	360	5	5	10	5	25	100	28.73563218	2.87	9.404659189	0.94	5.00	0	8.81
10	18	360	5	0	1	5	11	44	46.66666667	4.67	84.3537415	8.44	5.00	0	18.10
10	18	360	5	5	10	5	25	100	53.33333333	5.33	15.6462585	1.56	5.00	0	11.90
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	58.33333333	5.83	46.80851064	4.68	5.00	0	15.51
8	14	280	5	0	1	5	11	44	61.13138686	6.11	77.57009346	7.76	0.00	0	13.87
10	20	400	5	5	10	5	25	100	15.84507042	1.58	16.26168224	1.63	0.00	0	3.21
10	20	400	5	0	1	5	11	44	84.15492958	8.42	6.168224299	0.62	0.00	0	9.03
8	14	280	5	0	1	5	11	44	67.82786885	6.78	76.74418605	7.67	0.00	0	14.46
10	20	400	5	5	10	5	25	100	18.51851852	1.85	6.429548564	0.64	0.00	0	2.49
10	20	400	5	0	1	5	11	44	81.48148148	8.15	16.82626539	1.68	0.00	0	9.83
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	78.57142857	7.86	64.70588235	6.47	5.00	0	19.33
10	20	400	5	5	8	5	23	92	100	10.00	100	10.00	0.00	5	25.00
10	20	400	5	5	8	5	23	92	100	10.00	100	10.00	0.00	5	25.00
10	20	400	5	5	8	5	23	92	100	10.00	100	10.00	0.00	5	25.00
8	16	320	5	0	2	5	12	48	83.22368421	8.32	87.73006135	8.77	0.00	5	22.10
10	18	360	5	5	2	5	17	68	45.91165414	4.59	19.70407795	1.97	0.00	5	11.56
10	18	360	5	5	2	5	17	68	37.31203008	3.73	60.1948755	6.02	0.00	5	14.75
10	18	360	5	5	10	5	25	100	16.77631579	1.68	12.88343558	1.29	0.00	5	7.97
8	14	280	5	0	1	5	11	44	15.2652472	1.53	7.831107903	0.78	0.00	5	7.31
10	20	400	5	5	10	5	25	100	89.18776371	8.92	86.01226994	8.60	0.00	5	22.52
8	14	280	5	0	1	5	11	44	36.48648649	3.65	100	10.00	0.00	0	13.65
10	18	360	5	5	10	5	25	100	100	10.00	57.14285714	5.71	0.00	0	15.71
8	14	280	5	0	1	5	11	44	13.51351351	1.35	0	0.00	0.00	0	1.35
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	3	0	1	5	9	36	83.65384615	8.37	83.96226415	8.40	0.00	0	16.76
10	18	360	5	0	1	5	11	44	0.961538462	0.10	0.943396226	0.09	0.00	0	0.19
10	20	400	0	0	1	5	6	24	83.83838384	8.38	0	0.00	0.00	0	8.38
10	20	400	5	5	10	5	25	100	16.16161616	1.62	15.09433962	1.51	0.00	0	3.13
10	18	360	5	5	1	5	16	64	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	100	10.00	48.40425532	4.84	5.00	0	19.84
8	14	280	5	0	1	5	11	44	20.33898305	2.03	51.79856115	5.18	0.00	0	7.21
8	14	280	5	0	1	5	11	44	11.86440678	1.19	15.82733813	1.58	0.00	0	2.77
10	20	400	5	5	10	5	25	100	100	10.00	32.37410072	3.24	0.00	0	13.24
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	43.33333333	4.33	18.98734177	1.90	5.00	0	11.23
6	10	200	5	0	1	5	11	44	21.24006671	2.12	74.96317495	7.50	0.00	0	9.62
8	14	280	5	0	1	5	11	44	0.379059523	0.04	3.610959135	0.36	0.00	0	0.40
10	20	400	0	0	1	5	6	24	72.36842105	7.24	0	0.00	0.00	0	7.24
10	20	400	5	5	10	5	25	100	27.63157895	2.76	9.566095703	0.96	0.00	0	3.72
10	20	400	5	5	10	5	25	100	100	10.00	51.65607508	5.17	0.00	0	15.17
10	18	360	5	0	1	5	11	44	100	10.00	0	0.00	5.00	0	15.00
8	14	280	5	0	1	5	11	44	51.53733529	5.15	49.88679245	4.99	0.00	0	10.14
10	20	400	0	0	1	5	6	24	22.22222222	2.22	0	0.00	0.00	0	2.22
10	20	400	5	5	10	5	25	100	21.6374269	2.16	7.245283019	0.72	0.00	0	2.89

10	20	400	5	0	1	5	11	44	56.14035088	5.61	13.05660377	1.31	0.00	0	6.92
10	20	400	5	5	10	5	25	100	18.93617021	1.89	29.81132075	2.98	0.00	0	4.87
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	65.51724138	6.55	28.76712329	2.88	5.00	0	14.43
10	20	400	5	0	1	5	11	44	89.00178498	8.90	31.66840822	3.17	0.00	0	12.07
10	18	360	5	0	1	5	11	44	1.345863789	0.13	37.86137234	3.79	0.00	0	3.92
10	18	360	5	5	1	5	16	64	22.56642302	2.26	18.96203413	1.90	0.00	0	4.15
10	20	400	5	5	10	5	25	100	10.99821502	1.10	8.268895855	0.83	0.00	0	1.93
8	14	280	3	0	1	5	9	36	1.150793651	0.12	3.239289446	0.32	0.00	0	0.44
10	18	360	5	0	1	5	11	44	92.01277955	9.20	92.65734266	9.27	0.00	0	18.47
10	20	400	0	0	1	5	6	24	59.75232198	5.98	0	0.00	0.00	0	5.98
10	20	400	5	5	10	5	25	100	8.049535604	0.80	7.342657343	0.73	0.00	0	1.54
10	20	400	5	0	1	5	11	44	32.19814241	3.22	0	0.00	0.00	0	3.22
10	20	400	5	5	10	5	25	100	46.58823529	4.66	3.349882904	0.33	0.00	0	4.99
10	20	400	5	5	10	5	25	100	30.82352941	3.08	3.741451991	0.37	0.00	0	3.46
10	18	360	3	0	1	5	9	36	5.411764706	0.54	70.78032787	7.08	0.00	0	7.62
6	10	200	3	0	1	5	9	36	16.02037463	1.60	3.653395785	0.37	0.00	0	1.97
10	20	400	5	5	10	5	25	100	100	10.00	5.779859485	0.58	0.00	0	10.58
8	14	280	3	0	1	5	9	36	15.22502394	1.52	12.7587822	1.28	0.00	0	2.80
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	0.00	0	20.00
6	10	200	3	0	4	5	12	48	44.858191	4.49	40.84523	4.08	0.00	0	8.57
8	14	280	5	0	1	5	11	44	0.753446618	0.08	2.772112697	0.28	0.00	0	0.35
8	14	280	5	0	1	5	11	44	84.94709843	8.49	22.07241232	2.21	0.00	0	10.70
8	14	280	5	5	10	5	25	100	13.1933312	1.32	6.158571896	0.62	0.00	0	1.94
10	20	400	5	0	1	5	11	44	100	10.00	17.26590629	1.73	0.00	0	11.73
8	14	280	3	0	1	5	9	36	16.15902533	1.62	11.0532014	1.11	0.00	0	2.72
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	1	5	16	64	70.92436975	7.09	92.16463415	9.22	5.00	0	21.31
10	18	360	5	5	10	5	25	100	46.8907563	4.69	13.04878049	1.30	5.00	0	10.99
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	86.15384615	8.62	35.35911602	3.54	5.00	0	17.15
6	10	200	5	0	1	5	11	44	1.614357864	0.16	35.75171527	3.58	0.00	0	3.74
8	14	280	5	0	1	5	11	44	1.953237756	0.20	10.30001537	1.03	0.00	0	1.23
10	20	400	0	0	1	5	6	24	75.82208706	7.58	0	0.00	0.00	0	7.58
10	20	400	5	5	10	5	25	100	24.17791294	2.42	7.29566955	0.73	0.00	0	3.15
10	20	400	5	5	10	5	25	100	89.51024661	8.95	7.454969747	0.75	0.00	0	9.70
8	16	320	5	5	10	5	25	100	1.804098913	0.18	24.92349398	2.49	0.00	0	2.67
8	14	280	3	0	1	5	9	36	8.42875012	0.84	14.27413608	1.43	0.00	0	2.27
10	18	360	5	0	1	5	11	44	14.54918033	1.45	30.06756757	3.01	5.00	0	9.46
10	18	360	5	5	10	5	25	100	18.64754098	1.86	9.290540541	0.93	5.00	0	7.79
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	50.94339623	5.09	24.13793103	2.41	5.00	0	12.51
10	18	360	5	5	1	5	16	64	100	10.00	0	0.00	5.00	0	15.00
10	18	360	5	0	1	5	11	44	100	10.00	0	0.00	5.00	0	15.00
10	18	360	5	5	10	5	25	100	100	10.00	0	0.00	5.00	0	15.00
10	18	360	5	0	1	5	11	44	88.20512821	8.82	96.05087015	9.61	5.00	0	23.43
10	18	360	5	5	10	5	25	100	40.51282051	4.05	11.24497992	1.12	5.00	0	10.18
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
2	2	40	5	5	10	5	25	100	100	10.00	100	10.00	5.00	0	25.00
8	14	280	5	0	1	5	11	44	3.262955854	0.33	1.990049751	0.20	0.00	0	0.53
6	10	200	5	0	1	5	11	44	1.032258065	0.10	4.47761194	0.45	0.00	0	0.55
10	20	400	0	0	1	5	6	24	71.03448276	7.10	0	0.00	0.00	0	7.10
10	20	400	5	5	10	5	25	100	24.82758621	2.48	7.524875622	0.75	0.00	0	3.24
10	20	400	5	5	10	5	25	100	0.689655172	0.07	0.186567164	0.02	0.00	0	0.09
10	20	400	5	0	1	5	11	44	3.448275862	0.34	0.559701493	0.06	0.00	0	0.40
10	20	400	5	0	1	5	11	44	80.81761006	8.08	85.26119403	8.53	0.00	0	16.61
6	10	200	5	0	1	5	11	44	22.14765101	2.21	78.40236686	7.84	0.00	0	10.06
10	20	400	0	0	1	5	6	24	75	7.50	0	0.00	0.00	0	7.50

10	20	400	5	5	10	5	25	100	25	2.50	8.579881657	0.86	0.00	0	3.36
10	20	400	5	5	10	5	25	100	86.86868687	8.69	0	0.00	0.00	0	8.69
8	16	320	5	5	10	5	25	100	100	10.00	54.14201183	5.41	0.00	0	15.41
10	18	360	5	5	1	5	16	64	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	100	10.00	55.55555556	5.56	5.00	0	20.56
8	14	280	5	0	1	5	11	44	35	3.50	72.22222222	7.22	5.00	0	15.72
10	18	360	5	5	10	5	25	100	100	10.00	27.77777778	2.78	5.00	0	17.78
10	18	360	5	5	1	5	16	64	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	30.4245283	3.04	10.85930123	1.09	5.00	0	9.13
10	18	360	5	0	1	5	11	44	100	10.00	1.606425703	0.16	5.00	0	15.16
10	20	400	5	5	10	5	25	100	100	10.00	100	10.00	5.00	0	25.00
10	18	360	3	0	1	5	9	36	75.39370079	7.54	78.06004619	7.81	0.00	0	15.35
10	18	360	5	0	1	5	11	44	3.248031496	0.32	3.849114704	0.38	0.00	0	0.71
10	20	400	5	0	1	5	11	44	71.38686131	7.14	0	0.00	0.00	0	7.14
10	20	400	5	5	10	5	25	100	28.61313869	2.86	18.09083911	1.81	0.00	0	4.67
10	18	360	3	5	9	5	22	88	45.93266272	4.59	21.5503308	2.16	0.00	5	11.75
6	10	200	5	0	1	5	11	44	21.77033493	2.18	74.20560748	7.42	0.00	0	9.60
6	10	200	5	0	1	5	11	44	2.631578947	0.26	5.514018692	0.55	0.00	0	0.81
10	20	400	0	0	1	5	6	24	75.92592593	7.59	0	0.00	0.00	0	7.59
10	20	400	5	5	10	5	25	100	24.07407407	2.41	8.224299065	0.82	0.00	0	3.23
10	20	400	5	0	1	5	11	44	86.75213675	8.68	0	0.00	0.00	0	8.68
8	16	320	5	0	1	5	11	44	100	10.00	51.12149533	5.11	0.00	0	15.11
10	20	400	5	5	10	5	25	100	93.52517986	9.35	92.93286219	9.29	5.00	0	23.65
10	20	400	5	5	10	5	25	100	6.474820144	0.65	7.067137809	0.71	5.00	0	6.35
8	14	280	5	0	1	5	11	44	66.23794212	6.62	81.89910979	8.19	0.00	0	14.81
10	20	400	5	5	10	5	25	100	10.79136691	1.08	8.308605341	0.83	0.00	0	1.91
10	20	400	5	0	1	5	11	44	89.20863309	8.92	9.792284866	0.98	0.00	0	9.90
10	18	360	3	0	1	5	9	36	81.16883117	8.12	92.84164859	9.28	0.00	0	17.40
10	18	360	5	5	10	5	25	100	18.83116883	1.88	7.15835141	0.72	0.00	0	2.60
10	20	400	5	5	10	5	25	100	80.09367681	8.01	4.892367906	0.49	0.00	0	8.50
8	14	280	3	0	1	5	9	36	45.79545455	4.58	85.71428571	8.57	0.00	0	13.15
10	18	360	5	5	10	5	25	100	19.90632319	1.99	9.39334638	0.94	0.00	0	2.93
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	28.97196262	2.90	22.81879195	2.28	5.00	0	10.18
10	20	400	5	5	10	5	25	100	27.77777778	2.78	6.445993031	0.64	0.00	0	3.42
10	18	360	3	0	1	5	9	36	53.81944444	5.38	84.32055749	8.43	0.00	0	13.81
10	18	360	5	5	10	5	25	100	18.40277778	1.84	9.233449477	0.92	0.00	0	2.76
10	18	360	3	0	1	5	9	36	81.50289017	8.15	90.96209913	9.10	0.00	0	17.25
10	18	360	5	5	10	5	25	100	18.49710983	1.85	9.329446064	0.93	0.00	0	2.78
10	20	400	5	5	10	5	25	100	27.5862069	2.76	6.290672451	0.63	0.00	0	3.39
10	18	360	3	0	1	5	9	36	80.17241379	8.02	90.45553145	9.05	0.00	0	17.06
10	18	360	5	5	10	5	25	100	19.82758621	1.98	9.978308026	1.00	0.00	0	2.98
10	20	400	5	5	10	5	25	100	76.69421488	7.67	4.789430223	0.48	0.00	0	8.15
8	14	280	3	0	1	5	9	36	44.87603306	4.49	83.56729975	8.36	0.00	0	12.84
10	20	400	5	5	10	5	25	100	100	10.00	11.64327002	1.16	0.00	0	11.16
8	14	280	3	0	1	5	9	36	56.7867036	5.68	80.08163265	8.01	0.00	0	13.69
10	20	400	3	5	10	5	23	92	88.30584708	8.83	12.02040816	1.20	0.00	0	10.03
10	20	400	5	5	10	5	25	100	100	10.00	7.897959184	0.79	0.00	0	10.79
10	20	400	5	5	10	5	25	100	28.04878049	2.80	6.352459016	0.64	0.00	0	3.44
10	18	360	3	0	1	5	9	36	80.08130081	8.01	90.36885246	9.04	0.00	0	17.05
10	18	360	5	5	10	5	25	100	19.91869919	1.99	9.836065574	0.98	0.00	0	2.98
10	20	400	5	5	10	5	25	100	27.77777778	2.78	6.388888889	0.64	0.00	0	3.42
10	18	360	3	0	1	5	9	36	80	8.00	90	9.00	0.00	0	17.00
10	18	360	5	5	10	5	25	100	20	2.00	10	1.00	0.00	0	3.00
10	20	400	5	5	10	5	25	100	27.77777778	2.78	6.293706294	0.63	0.00	0	3.41
10	18	360	3	0	1	5	9	36	81.25	8.13	90.90909091	9.09	0.00	0	17.22
10	18	360	5	5	10	5	25	100	18.75	1.88	9.090909091	0.91	0.00	0	2.78
10	18	360	3	0	1	5	9	36	81.61290323	8.16	93.01648885	9.30	0.00	0	17.46
10	20	400	5	5	10	5	25	100	100	10.00	6.983511154	0.70	0.00	0	10.70

10	20	400	3	5	10	5	23	92	100	10.00	100	10.00	5.00	5	30.00
8	16	320	3	0	1	5	9	36	80.09787928	8.01	91.53394803	9.15	0.00	0	17.16
8	14	280	5	0	1	5	11	44	67.71428571	6.77	77.26358149	7.73	0.00	0	14.50
10	20	400	5	5	10	5	25	100	18.62745098	1.86	6.438631791	0.64	0.00	0	2.51
10	20	400	5	0	1	5	11	44	81.37254902	8.14	16.29778672	1.63	0.00	0	9.77
10	18	360	5	0	1	5	11	44	32.98611111	3.30	63.0810093	6.31	0.00	0	9.61
10	18	360	5	0	1	5	11	44	18.75	1.88	22.57636122	2.26	0.00	0	4.13
10	18	360	5	5	10	5	25	100	48.26388889	4.83	14.34262948	1.43	0.00	0	6.26
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	3	0	3	5	11	44	100	10.00	55.48387097	5.55	0.00	0	15.55
10	20	400	5	5	10	5	25	100	100	10.00	7.096774194	0.71	0.00	0	10.71
4	6	120	5	5	10	5	25	100	20.2680067	2.03	37.41935484	3.74	0.00	0	5.77
8	14	280	5	0	1	5	11	44	21.05263158	2.11	32.8358209	3.28	0.00	0	5.39
8	14	280	5	0	1	5	11	44	1.754385965	0.18	0.995024876	0.10	0.00	0	0.27
10	20	400	5	5	10	5	25	100	78	7.80	41.79104478	4.18	0.00	0	11.98
10	20	400	5	0	1	5	11	44	22	2.20	24.37810945	2.44	0.00	0	4.64
10	18	360	5	5	1	5	16	64	100	10.00	100	10.00	0.00	0	20.00
8	16	320	5	0	1	5	11	44	100	10.00	100	10.00	0.00	0	20.00
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
8	16	320	3	0	1	5	9	36	75.39370079	7.54	78.06004619	7.81	0.00	0	15.35
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	0.00	0	20.00
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	0.00	0	20.00
10	20	400	5	5	10	5	25	100	81.45454545	8.15	93.47826087	9.35	5.00	0	22.49
10	20	400	5	5	10	5	25	100	18.54545455	1.85	6.52173913	0.65	5.00	0	7.51
8	16	320	3	0	1	5	9	36	8.378574525	0.84	16.34433692	1.63	0.00	5	7.47
10	16	320	3	0	1	5	9	36	37.48268205	3.75	22.45696223	2.25	0.00	0	5.99
6	10	200	5	0	1	5	11	44	22.00674536	2.20	77.67459138	7.77	0.00	0	9.97
10	20	400	0	0	1	5	6	24	72.30769231	7.23	0	0.00	0.00	0	7.23
10	20	400	5	5	10	5	25	100	27.69230769	2.77	9.918276374	0.99	0.00	0	3.76
10	20	400	5	5	10	5	25	100	85.06329114	8.51	0	0.00	0.00	0	8.51
8	16	320	5	5	10	5	25	100	100	10.00	53.52897474	5.35	0.00	0	15.35
10	18	360	5	5	1	5	16	64	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	47.36842105	4.74	13.13131313	1.31	5.00	0	11.05
10	18	360	5	5	1	5	16	64	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	36.2745098	3.63	11.46616541	1.15	5.00	0	9.77
8	14	280	5	0	1	5	11	44	11.11111111	1.11	37.5	3.75	0.00	0	4.86
10	20	400	5	5	10	5	25	100	50	5.00	100	10.00	0.00	0	15.00
10	20	400	5	0	1	5	11	44	50	5.00	0	0.00	0.00	0	5.00
8	14	280	5	0	1	5	11	44	43.12796209	4.31	51.57894737	5.16	0.00	0	9.47
10	20	400	5	5	10	5	25	100	25.91836735	2.59	44.47368421	4.45	0.00	0	7.04
10	20	400	5	0	1	5	11	44	74.08163265	7.41	3.947368421	0.39	0.00	0	7.80
8	14	280	5	0	1	5	11	44	61.18721461	6.12	68.60158311	6.86	0.00	0	12.98
10	18	360	5	0	1	5	11	44	2.873563218	0.29	2.374670185	0.24	0.00	0	0.52
10	20	400	5	5	10	5	25	100	16.93548387	1.69	9.498680739	0.95	0.00	0	2.64
10	20	400	5	0	1	5	11	44	83.06451613	8.31	19.52506596	1.95	0.00	0	10.26
10	20	400	5	5	10	5	25	100	81.6	8.16	93.4595525	9.35	5.00	0	22.51
10	20	400	5	5	10	5	25	100	18.4	1.84	6.540447504	0.65	5.00	0	7.49
10	20	400	5	5	10	5	25	100	80.22813688	8.02	92.52873563	9.25	5.00	0	22.28
10	20	400	5	5	10	5	25	100	19.77186312	1.98	7.471264368	0.75	5.00	0	7.72
10	20	400	5	5	10	5	25	100	19.96197719	2.00	6.910197869	0.69	0.00	0	2.69
10	20	400	5	5	10	5	25	100	80.03802281	8.00	93.08980213	9.31	0.00	0	17.31
10	20	400	5	5	10	5	25	100	19.89528796	1.99	7.5	0.75	0.00	0	2.74
10	20	400	5	5	10	5	25	100	80.10471204	8.01	92.5	9.25	0.00	0	17.26
10	20	400	5	5	10	5	25	100	19.91525424	1.99	6.852637962	0.69	0.00	0	2.68
10	20	400	5	5	10	5	25	100	80.08474576	8.01	93.14736204	9.31	0.00	0	17.32
10	20	400	5	5	10	5	25	100	80.16304348	8.02	93.19932998	9.32	5.00	0	22.34
10	20	400	5	5	10	5	25	100	19.83695652	1.98	6.800670017	0.68	5.00	0	7.66
10	20	400	5	5	10	5	25	100	80.2955665	8.03	93.06688418	9.31	5.00	0	22.34
10	20	400	5	5	10	5	25	100	19.7044335	1.97	6.933115824	0.69	5.00	0	7.66

8	14	280	5	0	1	5	11	44	30	3.00	37.5	3.75	0.00	0	6.75
10	18	360	5	5	10	5	25	100	100	10.00	70.83333333	7.08	0.00	0	17.08
8	14	280	5	0	1	5	11	44	11.66666667	1.17	0	0.00	0.00	0	1.17
10	20	400	5	5	10	5	25	100	20	2.00	6.902985075	0.69	0.00	0	2.69
10	20	400	5	5	10	5	25	100	80	8.00	93.09701493	9.31	0.00	0	17.31
10	20	400	5	5	10	5	25	100	80.08298755	8.01	93.04471256	9.30	5.00	0	22.31
10	20	400	5	5	10	5	25	100	19.91701245	1.99	6.955287438	0.70	5.00	0	7.69
8	14	280	5	0	1	5	11	44	67.24960254	6.72	85.64593301	8.56	0.00	0	15.29
10	20	400	5	5	10	5	25	100	25.53191489	2.55	7.655502392	0.77	0.00	0	3.32
10	20	400	5	0	1	5	11	44	74.46808511	7.45	6.698564593	0.67	0.00	0	8.12
8	14	280	5	0	1	5	11	44	67.37967914	6.74	85.77817531	8.58	0.00	0	15.32
10	20	400	5	5	10	5	25	100	19.76470588	1.98	7.423971377	0.74	0.00	0	2.72
10	20	400	5	0	1	5	11	44	80.23529412	8.02	6.797853309	0.68	0.00	0	8.70
10	20	400	5	5	10	5	25	100	19.92031873	1.99	7.488299532	0.75	0.00	0	2.74
10	20	400	5	5	10	5	25	100	80.07968127	8.01	92.51170047	9.25	0.00	0	17.26
8	14	280	5	0	1	5	11	44	67.52988048	6.75	85.74380165	8.57	0.00	0	15.33
10	20	400	5	5	10	5	25	100	19.89795918	1.99	7.438016529	0.74	0.00	0	2.73
10	20	400	5	0	1	5	11	44	80.10204082	8.01	6.818181818	0.68	0.00	0	8.69
4	6	120	5	0	1	5	11	44	37.83783784	3.78	59.50413223	5.95	0.00	0	9.73
10	20	400	5	5	10	5	25	100	100	10.00	100	10.00	0.00	0	20.00
8	14	280	5	5	10	5	25	100	100	10.00	40.49586777	4.05	0.00	0	14.05
8	14	280	5	0	1	5	11	44	56.60138977	5.66	65.09695291	6.51	0.00	0	12.17
10	18	360	5	0	1	5	11	44	7.751937984	0.78	6.024930748	0.60	0.00	0	1.38
10	20	400	5	5	10	5	25	100	17.32394366	1.73	9.037396122	0.90	0.00	0	2.64
10	20	400	5	0	1	5	11	44	82.67605634	8.27	19.87534626	1.99	0.00	0	10.26
8	14	280	5	0	1	5	11	44	52	5.20	61.31221719	6.13	0.00	0	11.33
10	18	360	5	0	1	5	11	44	6.091370558	0.61	5.20361991	0.52	0.00	0	1.13
10	20	400	5	5	10	5	25	100	30.43478261	3.04	13.57466063	1.36	0.00	0	4.40
10	20	400	5	0	1	5	11	44	69.56521739	6.96	19.90950226	1.99	0.00	0	8.95
10	20	400	5	5	10	5	25	100	81.71428571	8.17	93.36158192	9.34	5.00	0	22.51
10	20	400	5	5	10	5	25	100	18.28571429	1.83	6.638418079	0.66	5.00	0	7.49
10	20	400	5	5	10	5	25	100	81.25	8.13	93.42105263	9.34	5.00	0	22.47
10	20	400	5	5	10	5	25	100	18.75	1.88	6.578947368	0.66	5.00	0	7.53
8	14	280	5	0	1	5	11	44	55.20231214	5.52	61.76836862	6.18	0.00	0	11.70
10	18	360	5	5	10	5	25	100	74.25742574	7.43	13.82316314	1.38	0.00	0	8.81
10	18	360	5	0	1	5	11	44	25.74257426	2.57	24.40846824	2.44	0.00	0	5.02
10	20	400	5	5	10	5	25	100	80.08849558	8.01	92.59259259	9.26	5.00	0	22.27
10	20	400	5	5	10	5	25	100	19.91150442	1.99	7.407407407	0.74	5.00	0	7.73
8	14	280	5	0	1	5	11	44	55.94713656	5.59	65.3418124	6.53	0.00	0	12.13
10	18	360	5	0	1	5	11	44	1.216545012	0.12	1.430842607	0.14	0.00	0	0.26
10	20	400	5	5	10	5	25	100	24.86187845	2.49	17.01112878	1.70	0.00	0	4.19
10	20	400	5	0	1	5	11	44	75.13812155	7.51	16.21621622	1.62	0.00	0	9.14
8	14	280	5	0	1	5	11	44	51.68067227	5.17	60.97560976	6.10	0.00	0	11.27
10	18	360	5	0	1	5	11	44	6.976744186	0.70	4.87804878	0.49	0.00	0	1.19
10	20	400	5	5	10	5	25	100	30.90909091	3.09	14.63414634	1.46	0.00	0	4.55
10	20	400	5	0	1	5	11	44	69.09090909	6.91	19.51219512	1.95	0.00	0	8.86
8	14	280	5	0	1	5	11	44	66.81957187	6.68	78.58851675	7.86	0.00	0	14.54
10	18	360	5	0	1	5	11	44	0.830564784	0.08	1.315789474	0.13	0.00	0	0.21
10	20	400	5	5	10	5	25	100	6.617647059	0.66	6.339712919	0.63	0.00	0	1.30
10	20	400	5	0	1	5	11	44	93.38235294	9.34	13.75598086	1.38	0.00	0	10.71
8	14	280	5	0	1	5	11	44	67.84140969	6.78	86.30136986	8.63	0.00	0	15.41
10	20	400	5	5	10	5	25	100	17.97752809	1.80	6.849315068	0.68	0.00	0	2.48
10	20	400	5	0	1	5	11	44	82.02247191	8.20	6.849315068	0.68	0.00	0	8.89
8	14	280	5	0	1	5	11	44	61.86440678	6.19	76.09561753	7.61	0.00	0	13.80
8	14	280	5	0	1	5	11	44	0.423728814	0.04	0.398406375	0.04	0.00	0	0.08
10	20	400	5	5	10	5	25	100	14.22413793	1.42	13.54581673	1.35	0.00	0	2.78
10	20	400	5	0	1	5	11	44	85.77586207	8.58	9.960159363	1.00	0.00	0	9.57
8	14	280	5	0	1	5	11	44	66.40316206	6.64	83.52713178	8.35	0.00	0	14.99
10	20	400	5	5	10	5	25	100	9.126984127	0.91	8.720930233	0.87	0.00	0	1.78

10	20	400	5	0	1	5	11	44	90.87301587	9.09	7.751937984	0.78	0.00	0	9.86
10	18	360	5	0	1	5	11	44	79.49579832	7.95	91.77904564	9.18	5.00	0	22.13
10	18	360	5	5	10	5	25	100	20.50420168	2.05	8.220954357	0.82	5.00	0	7.87
2	2	40	5	0	1	5	11	44	12.5	1.25	12.5	1.25	5.00	0	7.50
10	18	360	5	5	10	5	25	100	100	10.00	87.5	8.75	5.00	0	23.75
8	14	280	5	0	1	5	11	44	48.38709677	4.84	62.06896552	6.21	0.00	0	11.05
10	18	360	5	5	10	5	25	100	66.66666667	6.67	34.48275862	3.45	0.00	0	10.11
10	18	360	5	0	1	5	11	44	33.33333333	3.33	3.448275862	0.34	0.00	0	3.68
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	0.00	0	20.00
10	18	360	5	0	1	5	11	44	100	10.00	0	0.00	0.00	0	10.00
2	2	40	5	0	1	5	11	44	50	5.00	50	5.00	5.00	0	15.00
2	2	40	5	5	10	5	25	100	50	5.00	50	5.00	5.00	0	15.00
10	18	360	3	5	7	5	20	80	14.24762614	1.42	11.921639	1.19	0.00	5	7.62
8	18	360	3	5	10	5	23	92	0	0.00	0	0.00	0.00	0	0.00
10	18	360	5	5	2	5	17	68	100	10.00	100	10.00	0.00	5	25.00
6	10	200	3	5	4	5	17	68	95.28811753	9.53	100	10.00	0.00	0	19.53
8	16	320	3	0	1	5	9	36	9.973313474	1.00	8.345147301	0.83	0.00	5	6.83
8	16	320	5	0	2	5	12	48	9.36116382	0.94	79.62808026	7.96	0.00	5	13.90
10	20	400	5	5	2	5	17	68	100	10.00	100	10.00	0.00	5	25.00
10	18	360	5	0	1	5	11	44	99.83072917	9.98	30.24673096	3.02	0.00	0	13.01
10	18	360	5	5	9	5	24	96	98.07970246	9.81	78.18962139	7.82	0.00	5	22.63
10	20	400	5	5	10	5	25	100	100	10.00	74.1632645	7.42	0.00	0	17.42
6	12	240	5	0	1	5	11	44	1.549413257	0.15	2.336727427	0.23	0.00	0	0.39
6	12	240	5	0	1	5	11	44	30.00753157	3.00	15.88581923	1.59	0.00	5	9.59
2	2	40	3	5	1	5	14	56	100	10.00	100	10.00	0.00	0	20.00
10	18	360	5	0	1	5	11	44	61.44492132	6.14	77.63819095	7.76	0.00	0	13.91
10	20	400	5	5	10	5	25	100	22.05323194	2.21	7.579564489	0.76	0.00	0	2.96
10	20	400	5	0	1	5	11	44	77.94676806	7.79	14.80318258	1.48	0.00	0	9.27
8	14	280	5	0	1	5	11	44	63.40125392	6.34	75.43424318	7.54	0.00	0	13.88
10	18	360	5	0	1	5	11	44	2.053036784	0.21	2.915632754	0.29	0.00	0	0.50
10	20	400	5	5	10	5	25	100	9.820585458	0.98	8.622828784	0.86	0.00	0	1.84
10	20	400	5	0	1	5	11	44	90.17941454	9.02	13.02729529	1.30	0.00	0	10.32
10	20	400	5	5	10	5	25	100	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	0	1	5	11	44	30	3.00	81.25	8.13	5.00	0	16.13
10	18	360	5	5	10	5	25	100	70	7.00	18.75	1.88	5.00	0	13.88
10	20	400	0	0	1	5	6	24	95.06423848	9.51	75.44411831	7.54	0.00	0	17.05
8	14	280	3	0	1	5	9	36	15.57948648	1.56	18.2303639	1.82	0.00	0	3.38
8	14	280	5	5	1	5	16	64	5.427898576	0.54	0.315922245	0.03	0.00	0	0.57
10	20	400	5	5	1	5	16	64	18.19396439	1.82	22.15227924	2.22	0.00	0	4.03
10	20	400	5	5	1	5	16	64	88.78128119	8.88	86.54199546	8.65	5.00	0	22.53
10	20	400	5	0	1	5	11	44	75.31881862	7.53	75.94133967	7.59	5.00	0	20.13
10	20	400	5	5	1	5	16	64	100	10.00	100	10.00	5.00	0	25.00
10	20	400	0	0	1	5	6	24	73.94335512	7.39	0	0.00	0.00	0	7.39
10	18	360	5	0	1	5	11	44	73.94335512	7.39	73.94335512	7.39	0.00	0	14.79
10	20	400	5	5	1	5	16	64	26.05664488	2.61	26.05664488	2.61	0.00	0	5.21
10	18	360	5	5	1	5	16	64	0.096432015	0.01	0.397148676	0.04	0.00	0	0.05
10	20	400	5	5	1	5	16	64	100	10.00	100	10.00	0.00	0	20.00
10	20	400	5	0	1	5	11	44	56.19618437	5.62	34.79124236	3.48	0.00	0	9.10
10	18	360	5	0	1	5	11	44	100	10.00	0	0.00	5.00	0	15.00
4	6	120	5	5	1	5	16	64	100	10.00	100	10.00	5.00	0	25.00
4	6	120	5	0	1	5	11	44	17.12328767	1.71	10.77586207	1.08	0.00	0	2.79
10	18	360	5	0	1	5	11	44	100	10.00	9.482758621	0.95	0.00	0	10.95
8	14	280	5	5	10	5	25	100	100	10.00	43.96551724	4.40	0.00	0	14.40
4	6	120	5	0	1	5	11	44	1.369863014	0.14	35.77586207	3.58	0.00	0	3.71
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	23.52941176	2.35	10.21324355	1.02	0.00	0	3.37
10	18	360	5	5	10	5	25	100	76.47058824	7.65	89.78675645	8.98	0.00	0	16.63
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	37.14285714	3.71	28.84615385	2.88	5.00	0	11.60

10	20	400	5	5	10	5	25	100	21.11801242	2.11	7.277057423	0.73	0.00	0	2.84
10	20	400	5	5	10	5	25	100	78.88198758	7.89	92.72294258	9.27	0.00	0	17.16
10	18	360	3	0	1	5	9	36	90.43478261	9.04	90.1459854	9.01	0.00	0	18.06
10	18	360	5	0	1	5	11	44	1.739130435	0.17	2.554744526	0.26	0.00	0	0.43
10	20	400	0	0	1	5	6	24	91.93548387	9.19	0	0.00	0.00	0	9.19
10	20	400	5	5	10	5	25	100	8.064516129	0.81	7.299270073	0.73	0.00	0	1.54
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	25.58139535	2.56	7.731958763	0.77	5.00	0	8.33
10	18	360	5	5	1	5	16	64	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	33.33333333	3.33	11.23595506	1.12	5.00	0	9.46
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	20	400	5	0	1	0	6	24	74.47447447	7.45	66.03334626	6.60	0.00	0	14.05
10	18	360	5	0	1	0	6	24	25.30395137	2.53	20.20162854	2.02	0.00	0	4.55
10	20	400	5	5	10	0	20	80	25.52552553	2.55	13.7650252	1.38	0.00	0	3.93
10	18	360	5	5	1	5	16	64	100	10.00	0	0.00	0.00	0	10.00
10	20	400	5	5	10	5	25	100	100	10.00	100	10.00	0.00	0	20.00
10	20	400	5	5	10	5	25	100	100	10.00	100	10.00	0.00	0	20.00
10	18	360	3	0	1	5	9	36	85.32423208	8.53	85.65770273	8.57	0.00	0	17.10
10	18	360	5	0	1	5	11	44	1.877133106	0.19	2.480717115	0.25	0.00	0	0.44
10	20	400	0	0	1	5	6	24	85.68851473	8.57	0	0.00	0.00	0	8.57
10	20	400	5	5	10	5	25	100	14.31148527	1.43	11.86158015	1.19	0.00	0	2.62
10	18	360	5	5	1	5	16	64	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	100	10.00	81.51260504	8.15	5.00	0	23.15
10	18	360	5	0	1	5	11	44	32.5	3.25	0	0.00	0.00	0	3.25
10	18	360	5	5	1	5	16	64	67.5	6.75	100	10.00	0.00	0	16.75
10	18	360	5	0	1	5	11	44	41.66666667	4.17	66.66666667	6.67	0.00	0	10.83
10	20	400	5	0	1	5	11	44	100	10.00	0	0.00	0.00	0	10.00
10	18	360	5	5	1	5	16	64	58.33333333	5.83	35.8974359	3.59	0.00	0	9.42
10	20	400	5	5	10	5	25	100	93.29608939	9.33	96.61222021	9.66	5.00	0	23.99
10	20	400	5	5	10	5	25	100	6.703910615	0.67	3.387779794	0.34	5.00	0	6.01
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	100	10.00	42.51968504	4.25	5.00	0	19.25
10	18	360	5	0	1	5	11	44	4.135338346	0.41	7.568807339	0.76	0.00	0	1.17
10	20	400	0	0	1	5	6	24	76.23762376	7.62	0	0.00	0.00	0	7.62
10	20	400	5	5	10	5	25	100	23.76237624	2.38	6.957186544	0.70	0.00	0	3.07
10	20	400	5	5	10	5	25	100	83.08270677	8.31	85.47400612	8.55	0.00	0	16.86
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	3	0	1	5	9	36	58.11412631	5.81	55.19864462	5.52	0.00	0	11.33
10	20	400	5	0	1	5	11	44	0.83727142	0.08	0	0.00	0.00	0	0.08
10	18	360	3	0	1	5	9	36	87.39447476	8.74	40.61071567	4.06	0.00	0	12.80
8	14	280	3	0	1	5	9	36	37.48268205	3.75	22.45696223	2.25	0.00	0	5.99
10	18	360	5	0	1	5	11	44	0.485721976	0.05	2.167238988	0.22	0.00	0	0.27
10	20	400	0	0	1	5	6	24	63.99219232	6.40	0	0.00	0.00	0	6.40
10	20	400	5	0	1	5	11	44	35.17053626	3.52	7.785459259	0.78	0.00	0	4.30
10	20	400	5	0	1	5	11	44	100	10.00	98.97673734	9.90	0.00	0	19.90
10	18	360	5	5	1	5	16	64	2.027385628	0.20	1.023262662	0.10	0.00	0	0.31
10	18	360	3	0	1	5	9	36	80.80415045	8.08	56.7514031	5.68	0.00	0	13.76
10	18	360	5	0	1	5	11	44	19.19584955	1.92	33.54242324	3.35	0.00	0	5.27
10	18	360	5	5	1	5	16	64	72.37354086	7.24	18.42192143	1.84	0.00	0	9.08
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
6	10	200	3	0	4	5	12	48	26.42951203	2.64	28.32681535	2.83	0.00	0	5.48
10	18	360	5	0	1	5	11	44	22.88333776	2.29	16.17341366	1.62	0.00	0	3.91
10	20	400	5	0	1	5	11	44	83.68066921	8.37	65.60969594	6.56	0.00	0	14.93
10	18	360	5	0	1	5	11	44	12.59633271	1.26	15.4476271	1.54	0.00	0	2.80
10	20	400	5	0	1	5	11	44	16.31933079	1.63	0	0.00	0.00	0	1.63
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	1	5	16	64	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	20	400	0	0	1	5	6	24	100	10.00	0	0.00	0.00	0	10.00

10	20	400	5	5	10	5	25	100	100	10.00	100	10.00	0.00	0	20.00
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	0	1	5	11	44	48.03921569	4.80	54.25531915	5.43	0.00	0	10.23
10	18	360	5	0	1	5	11	44	22.54901961	2.25	15.95744681	1.60	0.00	0	3.85
10	18	360	5	5	10	5	25	100	29.41176471	2.94	29.78723404	2.98	0.00	0	5.92
10	20	400	5	5	10	5	25	100	80.16997167	8.02	92.53731343	9.25	5.00	0	22.27
10	20	400	5	5	10	5	25	100	19.83002833	1.98	7.462686567	0.75	5.00	0	7.73
10	18	360	3	0	1	5	9	36	80.09787928	8.01	91.53394803	9.15	0.00	0	17.16
10	20	400	5	5	10	5	25	100	100	10.00	9.974853311	1.00	0.00	0	11.00
10	18	360	5	5	1	5	16	64	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	34.17721519	3.42	14.87603306	1.49	5.00	0	9.91
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	3	0	1	5	9	36	78.76106195	7.88	81.20608899	8.12	0.00	0	16.00
10	18	360	5	0	1	5	11	44	21.23893805	2.12	18.79391101	1.88	0.00	0	4.00
10	20	400	5	0	1	5	11	44	97.38962859	9.74	92.46417294	9.25	0.00	0	18.99
10	18	360	5	5	1	5	16	64	3.413472443	0.34	3.594850619	0.36	0.00	0	0.70
10	20	400	5	0	1	5	11	44	2.610371409	0.26	3.940976439	0.39	0.00	0	0.66
10	18	360	3	0	1	5	9	36	74.71910112	7.47	43.41906203	4.34	0.00	0	11.81
10	18	360	3	0	1	5	9	36	24.15730337	2.42	55.90015129	5.59	0.00	0	8.01
10	18	360	5	0	1	5	11	44	1.123595506	0.11	0.680786687	0.07	0.00	0	0.18
10	18	360	3	0	1	5	9	36	46.66666667	4.67	46.57534247	4.66	0.00	0	9.32
10	20	400	5	0	1	5	11	44	51.61290323	5.16	50.68493151	5.07	0.00	0	10.23
10	18	360	5	0	1	5	11	44	2.222222222	0.22	2.739726027	0.27	0.00	0	0.50
10	20	400	0	0	1	5	6	24	48.38709677	4.84	0	0.00	0.00	0	4.84
8	14	280	5	0	1	5	11	44	68.20512821	6.82	77.32732733	7.73	0.00	0	14.55
10	18	360	5	0	1	5	11	44	5.423728814	0.54	3.753753754	0.38	0.00	0	0.92
10	20	400	5	0	1	5	11	44	100	10.00	18.91891892	1.89	0.00	0	11.89
10	18	360	5	5	1	5	16	64	100	10.00	100	10.00	5.00	0	25.00
10	20	400	0	0	1	5	6	24	100	10.00	0	0.00	0.00	0	10.00
10	20	400	5	5	10	5	25	100	100	10.00	100	10.00	0.00	0	20.00
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	20	400	5	5	10	5	25	100	100	10.00	18.00816281	1.80	0.00	5	16.80
10	20	400	5	5	10	5	25	100	100	10.00	18.00816281	1.80	0.00	5	16.80
10	20	400	5	5	10	5	25	100	100	10.00	18.00816281	1.80	0.00	5	16.80
10	18	360	3	5	1	5	14	56	100	10.00	73.07934329	7.31	0.00	0	17.31
8	16	320	3	0	1	5	9	36	51.07449857	5.11	75.52478348	7.55	0.00	5	17.66
10	20	400	5	5	10	5	25	100	100	10.00	13.225788	1.32	0.00	0	11.32
10	18	360	5	0	1	5	11	44	88.48314607	8.85	85.07967166	8.51	0.00	0	17.36
10	18	360	5	5	1	5	16	64	4.868913858	0.49	8.836310961	0.88	0.00	0	1.37
10	20	400	0	0	1	5	6	24	66.75291074	6.68	0	0.00	0.00	0	6.68
10	20	400	5	5	10	5	25	100	6.985769728	0.70	6.084017383	0.61	0.00	0	1.31
10	20	400	5	0	1	5	11	44	26.26131953	2.63	0	0.00	0.00	0	2.63
4	6	120	5	0	1	5	11	44	43.2418436	4.32	59.87755102	5.99	0.00	0	10.31
10	18	360	5	0	1	5	11	44	47.88391778	4.79	23.95918367	2.40	0.00	0	7.18
10	20	400	0	0	1	5	6	24	75.43859649	7.54	0	0.00	0.00	0	7.54
10	20	400	5	5	10	5	25	100	24.56140351	2.46	6.612244898	0.66	0.00	0	3.12
10	20	400	5	0	1	5	11	44	45.22370012	4.52	0	0.00	0.00	0	4.52
4	8	160	5	0	1	5	11	44	59.60642154	5.96	41.26530612	4.13	0.00	0	10.09
6	10	200	5	0	1	5	11	44	18.07134457	1.81	67.54576482	6.75	0.00	0	8.56
8	14	280	5	0	1	5	11	44	10.33653846	1.03	13.65187713	1.37	0.00	0	2.40
10	20	400	0	0	1	5	6	24	73.95348837	7.40	0	0.00	0.00	0	7.40
10	20	400	5	5	10	5	25	100	26.04651163	2.60	8.067018306	0.81	0.00	0	3.41
10	20	400	5	0	1	5	11	44	85.89870904	8.59	0	0.00	0.00	0	8.59
6	12	240	5	0	1	5	11	44	100	10.00	46.54049023	4.65	0.00	0	14.65
6	10	200	5	0	1	5	11	44	22.10526316	2.21	77.89473684	7.79	0.00	0	10.00
10	20	400	0	0	1	5	6	24	76.19047619	7.62	0	0.00	0.00	0	7.62
10	20	400	5	5	10	5	25	100	23.80952381	2.38	8.771929825	0.88	0.00	0	3.26

10	20	400	5	5	10	5	25	100	86.97916667	8.70	0	0.00	0.00	0	8.70
8	16	320	5	5	10	5	25	100	100	10.00	53.68421053	5.37	0.00	0	15.37
6	10	200	5	0	1	5	11	44	21.53179191	2.15	53.18230852	5.32	0.00	0	7.47
10	20	400	0	0	1	5	6	24	74.09326425	7.41	0	0.00	0.00	0	7.41
10	20	400	3	3	5	5	16	64	71.02702703	7.10	56.88166582	5.69	0.00	5	17.79
10	20	400	5	5	10	5	25	100	25.90673575	2.59	8.845738943	0.88	0.00	0	3.48
10	20	400	5	0	1	5	11	44	3.448275862	0.34	0	0.00	0.00	0	0.34
10	20	400	5	0	1	5	11	44	10.99137931	1.10	31.82308522	3.18	0.00	0	4.28
6	10	200	5	0	1	5	11	44	21.53432032	2.15	53.55086372	5.36	0.00	0	7.51
10	18	360	5	0	1	5	11	44	1.301518438	0.13	0	0.00	0.00	0	0.13
10	20	400	0	0	1	5	6	24	75.82417582	7.58	0	0.00	0.00	0	7.58
10	20	400	3	3	5	5	16	64	71.02702703	7.10	56.88166582	5.69	0.00	5	17.79
10	20	400	5	5	10	5	25	100	24.17582418	2.42	8.253358925	0.83	0.00	0	3.24
10	20	400	5	0	1	5	11	44	4.121475054	0.41	0	0.00	0.00	0	0.41
10	20	400	5	0	1	5	11	44	11.06290672	1.11	32.14971209	3.21	0.00	0	4.32
10	20	400	0	0	1	5	6	24	75.78125	7.58	0	0.00	0.00	0	7.58
10	20	400	5	5	10	5	25	100	24.21875	2.42	7.518796992	0.75	0.00	0	3.17
10	20	400	5	5	10	5	25	100	86.75213675	8.68	92.48120301	9.25	0.00	0	17.92
6	10	200	5	0	1	5	11	44	22.22222222	2.22	77.75735294	7.78	0.00	0	10.00
10	20	400	0	0	1	5	6	24	73.87387387	7.39	0	0.00	0.00	0	7.39
10	20	400	5	5	10	5	25	100	26.12612613	2.61	9.375	0.94	0.00	0	3.55
10	20	400	5	0	1	5	11	44	85.98130841	8.60	0	0.00	0.00	0	8.60
6	12	240	5	0	1	5	11	44	100	10.00	53.67647059	5.37	0.00	0	15.37
6	10	200	5	0	1	5	11	44	22.11302211	2.21	77.54098361	7.75	0.00	0	9.97
10	20	400	0	0	1	5	6	24	74.22222222	7.42	0	0.00	0.00	0	7.42
10	20	400	5	5	10	5	25	100	25.77777778	2.58	9.180327869	0.92	0.00	0	3.50
10	20	400	5	0	1	5	11	44	85.88807786	8.59	0	0.00	0.00	0	8.59
6	12	240	5	0	1	5	11	44	100	10.00	53.44262295	5.34	0.00	0	15.34
10	20	400	0	0	1	5	6	24	73.68421053	7.37	0	0.00	0.00	0	7.37
10	20	400	5	5	10	5	25	100	26.31578947	2.63	8.116385911	0.81	0.00	0	3.44
10	20	400	5	5	10	5	25	100	85.90909091	8.59	91.88361409	9.19	0.00	0	17.78
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	18.75	1.88	5.374823197	0.54	5.00	0	7.41
4	6	120	5	0	1	5	11	44	0.209292591	0.02	1.656127672	0.17	0.00	0	0.19
10	20	400	0	0	1	5	6	24	79.40298507	7.94	0	0.00	0.00	0	7.94
10	20	400	5	5	10	5	25	100	20.59701493	2.06	12.40590184	1.24	0.00	0	3.30
10	20	400	5	5	10	5	25	100	78.11158798	7.81	85.93797049	8.59	0.00	0	16.40
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	76.47058824	7.65	76.47058824	7.65	5.00	0	20.29
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	20	400	5	5	10	5	25	100	100	10.00	45.83333333	4.58	5.00	0	19.58
10	20	400	5	5	10	5	25	100	80.57553957	8.06	93.15895372	9.32	5.00	0	22.37
10	20	400	5	5	10	5	25	100	19.42446043	1.94	6.841046278	0.68	5.00	0	7.63
10	20	400	5	5	10	5	25	100	38.86237072	3.89	41.07710319	4.11	0.00	5	12.99
8	16	320	5	0	2	5	12	48	9.36116382	0.94	79.62808026	7.96	0.00	5	13.90
10	18	360	5	5	2	5	17	68	9.36116382	0.94	60.23173947	6.02	0.00	5	11.96
10	18	360	5	0	1	5	11	44	100	10.00	4.301703317	0.43	0.00	5	15.43
10	18	360	5	5	10	5	25	100	35.69470799	3.57	9.716324372	0.97	0.00	5	9.54
10	20	400	5	5	8	5	23	92	100	10.00	100	10.00	0.00	5	25.00
10	20	400	5	5	8	5	23	92	100	10.00	100	10.00	0.00	5	25.00
10	20	400	5	5	8	5	23	92	100	10.00	100	10.00	0.00	5	25.00
10	16	320	5	0	1	5	11	44	18.94606227	1.89	19.39634079	1.94	0.00	5	8.83
10	16	320	3	0	1	5	9	36	6.165419365	0.62	8.142453471	0.81	0.00	5	6.43
10	20	400	5	5	10	5	25	100	80	8.00	92.53731343	9.25	5.00	0	22.25
10	20	400	5	5	10	5	25	100	20	2.00	7.462686567	0.75	5.00	0	7.75
6	10	200	3	0	4	5	12	48	18.84928886	1.88	0	0.00	0.00	5	6.88
8	16	320	3	0	2	5	10	40	92.36722406	9.24	79.91935018	7.99	0.00	5	22.23
10	18	360	5	5	2	5	17	68	92.36722406	9.24	26.44505611	2.64	0.00	5	16.88
10	20	400	5	5	10	5	25	100	100	10.00	9.036051816	0.90	0.00	5	15.90

10	20	400	3	5	8	5	21	84	100	10.00	100	10.00	0.00	5	25.00
6	10	200	3	0	1	5	9	36	7.589619895	0.76	15.68725579	1.57	0.00	5	7.33
10	20	400	5	5	8	5	23	92	100	10.00	100	10.00	0.00	5	25.00
10	20	400	5	5	8	5	23	92	100	10.00	100	10.00	0.00	5	25.00
10	20	400	5	5	8	5	23	92	100	10.00	100	10.00	0.00	5	25.00
10	20	400	5	5	8	5	23	92	100	10.00	100	10.00	0.00	5	25.00
10	20	400	5	5	8	5	23	92	100	10.00	100	10.00	0.00	5	25.00
6	10	200	5	0	1	5	11	44	0.436663062	0.04	53.47429407	5.35	0.00	5	10.39
8	14	280	3	0	1	5	9	36	1.822503057	0.18	3.150924874	0.32	0.00	5	5.50
10	20	400	5	5	10	5	25	100	19.88636364	1.99	6.856634016	0.69	0.00	0	2.67
10	20	400	5	5	10	5	25	100	80.11363636	8.01	93.14336598	9.31	0.00	0	17.33
10	20	400	5	5	10	5	25	100	78.25059102	7.83	92.07065013	9.21	5.00	0	22.03
10	20	400	5	5	10	5	25	100	21.74940898	2.17	7.929349868	0.79	5.00	0	7.97
0	0	0	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00
6	10	200	5	0	1	5	11	44	22.14912281	2.21	78.00995025	7.80	0.00	0	10.02
10	20	400	0	0	1	5	6	24	73.71794872	7.37	0	0.00	0.00	0	7.37
10	20	400	5	5	10	5	25	100	26.28205128	2.63	9.353233831	0.94	0.00	0	3.56
10	20	400	5	5	10	5	25	100	85.8044164	8.58	0	0.00	0.00	0	8.58
8	16	320	5	5	10	5	25	100	100	10.00	53.83084577	5.38	0.00	0	15.38
10	18	360	5	0	1	5	11	44	93.19371728	9.32	91.83673469	9.18	0.00	0	18.50
4	6	120	5	5	1	5	16	64	0.438596491	0.04	1.224489796	0.12	0.00	0	0.17
10	20	400	0	0	1	5	6	24	93.10344828	9.31	0	0.00	0.00	0	9.31
10	20	400	5	5	10	5	25	100	6.896551724	0.69	6.93877551	0.69	0.00	0	1.38
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	32.5	3.25	13.23529412	1.32	5.00	0	9.57
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	3	0	1	5	9	36	5.128205128	0.51	4.415584416	0.44	0.00	0	0.95
10	18	360	5	0	1	5	11	44	85.8974359	8.59	92.72727273	9.27	0.00	0	17.86
10	20	400	5	5	10	5	25	100	100	10.00	12.46753247	1.25	0.00	0	11.25
10	20	400	5	0	1	5	11	44	73.52941176	7.35	68.96551724	6.90	0.00	0	14.25
10	18	360	5	0	1	5	11	44	26.78571429	2.68	20.68965517	2.07	0.00	0	4.75
10	20	400	5	5	10	5	25	100	26.47058824	2.65	10.34482759	1.03	0.00	0	3.68
6	10	200	5	0	1	5	11	44	22.32704403	2.23	78.07692308	7.81	0.00	0	10.04
10	20	400	5	5	10	5	6	24	76	7.60	0	0.00	0.00	0	7.60
10	20	400	5	0	1	5	25	100	24	2.40	8.653846154	0.87	0.00	0	3.27
10	20	400	5	0	1	5	11	44	86.85121107	8.69	0	0.00	0.00	0	8.69
8	16	320	5	0	1	5	11	44	100	10.00	53.84615385	5.38	0.00	0	15.38
8	14	280	5	0	1	5	11	44	67.82608696	6.78	85.58558559	8.56	0.00	0	15.34
10	20	400	5	5	10	5	25	100	7.024793388	0.70	6.756756757	0.68	0.00	0	1.38
10	20	400	5	0	1	5	11	44	92.97520661	9.30	7.657657658	0.77	0.00	0	10.06
10	20	400	5	5	10	5	25	100	44.74568138	4.47	44.81163252	4.48	0.00	5	13.96
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	0.00	0	20.00
10	20	400	5	5	10	5	25	100	100	10.00	100	10.00	0.00	0	20.00
10	20	400	0	0	1	5	6	24	75	7.50	0	0.00	0.00	0	7.50
10	20	400	5	5	10	5	25	100	25	2.50	7.37704918	0.74	0.00	0	3.24
10	20	400	5	5	10	5	25	100	86.48648649	8.65	92.62295082	9.26	0.00	0	17.91
10	20	400	5	5	10	5	25	100	100	10.00	100	10.00	0.00	0	20.00
8	14	280	3	5	10	5	23	92	30.078125	3.01	69.39369604	6.94	0.00	0	9.95
10	18	360	5	0	1	5	11	44	100	10.00	21.09014254	2.11	0.00	0	12.11
10	20	400	5	5	10	5	25	100	100	10.00	9.516161413	0.95	0.00	0	10.95
8	14	280	5	0	1	5	11	44	11.21651786	1.12	0	0.00	0.00	0	1.12
10	20	400	5	5	10	5	25	100	100	10.00	100	10.00	5.00	0	25.00
10	20	400	5	5	10	5	25	100	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	27.5862069	2.76	9.042553191	0.90	5.00	0	8.66
8	14	280	5	0	1	5	11	44	56.46766169	5.65	65.86538462	6.59	0.00	0	12.23
10	18	360	5	0	1	5	11	44	4.117647059	0.41	4.166666667	0.42	0.00	0	0.83
10	20	400	5	5	10	5	25	100	20.66420664	2.07	12.33974359	1.23	0.00	0	3.30

10	20	400	5	0	1	5	11	44	79.33579336	7.93	17.62820513	1.76	0.00	0	9.70
8	14	280	5	0	1	5	11	44	64.57607433	6.46	78.09712587	7.81	0.00	0	14.27
10	18	360	5	0	1	5	11	44	0.979192166	0.10	1.684836472	0.17	0.00	0	0.27
10	20	400	5	5	10	5	25	100	9.831824062	0.98	8.919722498	0.89	0.00	0	1.88
10	20	400	5	0	1	5	11	44	90.16817594	9.02	11.29831516	1.13	0.00	0	10.15
10	20	400	5	5	10	5	25	100	27.71084337	2.77	6.289308176	0.63	0.00	0	3.40
10	18	360	3	0	1	5	9	36	52.40963855	5.24	83.64779874	8.36	0.00	0	13.61
10	20	400	5	5	10	5	25	100	100	10.00	10.06289308	1.01	0.00	0	11.01
10	18	360	5	0	1	5	11	44	63.63636364	6.36	90.12693935	9.01	5.00	0	20.38
10	18	360	5	5	10	5	25	100	36.36363636	3.64	9.873060649	0.99	5.00	0	9.62
10	18	360	5	5	1	5	16	64	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	28.57142857	2.86	10.11235955	1.01	5.00	0	8.87
8	14	280	5	0	1	5	11	44	6.49526387	0.65	10.15007899	1.02	0.00	0	1.66
10	20	400	0	0	1	5	6	24	73.80952381	7.38	0	0.00	0.00	0	7.38
10	20	400	5	5	10	5	25	100	26.19047619	2.62	7.266982622	0.73	0.00	0	3.35
10	20	400	5	5	10	5	25	100	85.97402597	8.60	82.58293839	8.26	0.00	0	16.86
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	45.45454545	4.55	22.22222222	2.22	5.00	0	11.77
10	20	400	0	0	1	5	6	24	72.42152466	7.24	0	0.00	0.00	0	7.24
10	20	400	5	5	10	5	25	100	27.57847534	2.76	8.574928542	0.86	0.00	0	3.62
10	20	400	5	0	1	5	11	44	85.01094092	8.50	91.42507146	9.14	0.00	0	17.64
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	87.91208791	8.79	17.19457014	1.72	5.00	0	15.51
6	10	200	5	0	1	5	11	44	21.94871795	2.19	77.19178082	7.72	0.00	0	9.91
10	20	400	0	0	1	5	6	24	72.45283019	7.25	0	0.00	0.00	0	7.25
10	20	400	5	5	10	5	25	100	27.54716981	2.75	9.863013699	0.99	0.00	0	3.74
10	20	400	5	5	10	5	25	100	85.0669413	8.51	0	0.00	0.00	0	8.51
8	16	320	5	5	10	5	25	100	100	10.00	53.15068493	5.32	0.00	0	15.32
2	2	40	3	5	1	5	14	56	40.58919804	4.06	40.58919804	4.06	0.00	0	8.12
10	18	360	5	5	10	5	25	100	100	10.00	59.41080196	5.94	0.00	0	15.94
4	8	160	3	0	1	0	4	16	59.65008201	5.97	79.40638627	7.94	0.00	5	18.91
10	20	400	5	5	8	5	23	92	100	10.00	100	10.00	0.00	5	25.00
10	20	400	5	0	1	5	11	44	64.28571429	6.43	61.78861789	6.18	0.00	0	12.61
10	18	360	5	0	1	5	11	44	21.73913043	2.17	18.69918699	1.87	0.00	0	4.04
10	20	400	5	5	10	5	25	100	35.71428571	3.57	19.51219512	1.95	0.00	0	5.52
6	10	200	5	0	1	5	11	44	15.54192229	1.55	67.22972973	6.72	0.00	0	8.28
8	14	280	5	0	1	5	11	44	3.703703704	0.37	0	0.00	0.00	0	0.37
10	20	400	0	0	1	5	6	24	73.82198953	7.38	0	0.00	0.00	0	7.38
10	20	400	5	5	10	5	25	100	26.17801047	2.62	8.108108108	0.81	0.00	0	3.43
10	20	400	3	0	3	5	11	44	87.95811518	8.80	62.16216216	6.22	0.00	0	15.01
2	10	200	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	37.93103448	3.79	15.54054054	1.55	5.00	0	10.35
8	14	280	5	0	1	5	11	44	67.77408638	6.78	82.12209302	8.21	0.00	0	14.99
10	20	400	5	5	10	5	25	100	18.39622642	1.84	6.831395349	0.68	0.00	0	2.52
10	20	400	5	0	1	5	11	44	81.60377358	8.16	11.04651163	1.10	0.00	0	9.27
10	18	360	5	0	1	5	11	44	15.43942993	1.54	12.95313882	1.30	0.00	0	2.84
10	20	400	0	0	1	5	6	24	74.4	7.44	0	0.00	0.00	0	7.44
10	20	400	5	5	10	5	25	100	25.6	2.56	7.073386384	0.71	0.00	0	3.27
10	20	400	5	5	10	5	25	100	72.68408551	7.27	79.9734748	8.00	0.00	0	15.27
6	10	200	3	5	1	5	14	56	59.65008201	5.97	83.05632502	8.31	0.00	0	14.27
10	20	400	5	5	10	5	25	100	100	10.00	16.94367498	1.69	0.00	0	11.69
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	38.0952381	3.81	19.23076923	1.92	5.00	0	10.73
8	16	320	5	5	10	5	25	100	86.46984716	8.65	37.65797151	3.77	0.00	5	17.41
10	20	400	5	5	10	5	25	100	84.12705341	8.41	30.14158157	3.01	0.00	5	16.43
8	12	240	5	0	1	5	11	44	11.3952954	1.14	54.58867197	5.46	0.00	5	11.60
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	0.00	0	20.00
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	0.00	0	20.00

10	18	360	5	0	1	5	11	44	57.62812872	5.76	70.82590612	7.08	0.00	0	12.85
10	18	360	5	0	1	5	11	44	2.681764005	0.27	2.584670232	0.26	0.00	0	0.53
10	20	400	5	5	10	5	25	100	12.12361331	1.21	8.704693999	0.87	0.00	0	2.08
10	20	400	5	0	1	5	11	44	87.87638669	8.79	17.9144385	1.79	0.00	0	10.58
10	20	400	5	5	10	5	25	100	100	10.00	100	10.00	5.00	0	25.00
10	20	400	5	5	10	5	25	100	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	26.94444444	2.69	14.52702703	1.45	5.00	0	9.15
6	10	200	5	0	1	5	11	44	22.16494845	2.22	77.98845837	7.80	0.00	0	10.02
10	20	400	0	0	1	5	6	24	74.06483791	7.41	0	0.00	0.00	0	7.41
10	20	400	5	5	10	5	25	100	25.93516209	2.59	9.315746084	0.93	0.00	0	3.53
10	20	400	5	0	1	5	11	44	85.8974359	8.59	0	0.00	0.00	0	8.59
8	16	320	5	0	1	5	11	44	100	10.00	53.7510305	5.38	0.00	0	15.38
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	37.03703704	3.70	18.46153846	1.85	5.00	0	10.55
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	3	0	1	5	9	36	87.36263736	8.74	100	10.00	0.00	0	18.74
10	20	400	5	5	10	5	25	100	100	10.00	9.958506224	1.00	0.00	0	11.00
10	18	360	5	0	1	5	11	44	100	10.00	90.1459854	9.01	5.00	0	24.01
6	10	200	5	5	10	5	25	100	14.07407407	1.41	9.854014599	0.99	5.00	0	7.39
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
6	10	200	5	0	1	5	11	44	21.98316183	2.20	77.36873868	7.74	0.00	0	9.94
10	20	400	0	0	1	5	6	24	72.24770642	7.22	0	0.00	0.00	0	7.22
10	20	400	5	5	10	5	25	100	27.75229358	2.78	9.897404949	0.99	0.00	0	3.76
10	20	400	5	5	10	5	25	100	85.06876228	8.51	0	0.00	0.00	0	8.51
8	16	320	5	5	10	5	25	100	100	10.00	53.34942667	5.33	0.00	0	15.33
8	14	280	5	0	1	5	11	44	29.31034483	2.93	47.85714286	4.79	0.00	0	7.72
10	18	360	5	0	1	5	11	44	18.18181818	1.82	7.142857143	0.71	0.00	0	2.53
10	20	400	5	5	10	5	25	100	100	10.00	21.42857143	2.14	0.00	0	12.14
10	18	360	5	0	1	5	11	44	9.090909091	0.91	23.57142857	2.36	0.00	0	3.27
8	14	280	5	0	1	5	11	44	52.71920089	5.27	50.40214477	5.04	0.00	0	10.31
10	18	360	5	0	1	5	11	44	0.29455081	0.03	1.273458445	0.13	0.00	0	0.16
10	20	400	0	0	1	5	6	24	15.86715867	1.59	0	0.00	0.00	0	1.59
10	20	400	5	5	10	5	25	100	15.49815498	1.55	4.557640751	0.46	0.00	0	2.01
10	20	400	5	5	10	5	25	100	5.535055351	0.55	3.150134048	0.32	0.00	0	0.87
10	20	400	5	0	1	5	11	44	63.099631	6.31	10.12064343	1.01	0.00	0	7.32
10	20	400	5	5	10	5	25	100	15.02209131	1.50	30.63002681	3.06	0.00	0	4.57
6	10	200	5	0	1	5	11	44	2.510460251	0.25	5.040322581	0.50	0.00	0	0.76
10	20	400	0	0	1	5	6	24	76.74418605	7.67	0	0.00	0.00	0	7.67
10	20	400	5	5	10	5	25	100	23.25581395	2.33	7.258064516	0.73	0.00	0	3.05
10	20	400	5	5	10	5	25	100	87.36842105	8.74	87.7016129	8.77	0.00	0	17.51
6	10	200	5	0	1	5	11	44	22.14611872	2.21	75.53571429	7.55	0.00	0	9.77
4	6	120	5	0	1	5	11	44	2.266666667	0.23	3.303571429	0.33	0.00	0	0.56
10	20	400	0	0	1	5	6	24	73.98373984	7.40	0	0.00	0.00	0	7.40
10	20	400	5	5	10	5	25	100	26.01626016	2.60	9.017857143	0.90	0.00	0	3.50
10	20	400	5	0	10	5	20	80	86.15384615	8.62	0	0.00	0.00	0	8.62
8	16	320	5	0	10	5	20	80	100	10.00	52.05357143	5.21	0.00	0	15.21
8	14	280	5	0	1	5	11	44	67.41721854	6.74	81.74418605	8.17	0.00	0	14.92
10	20	400	5	5	10	5	25	100	19.92481203	1.99	7.325581395	0.73	0.00	0	2.73
10	20	400	5	0	1	5	11	44	80.07518797	8.01	10.93023256	1.09	0.00	0	9.10
8	14	280	5	0	1	5	11	44	8.43373494	0.84	11.80327869	1.18	0.00	0	2.02
10	20	400	0	0	1	5	6	24	77.77777778	7.78	0	0.00	0.00	0	7.78
10	20	400	5	5	10	5	25	100	22.22222222	2.22	6.557377049	0.66	0.00	0	2.88
10	20	400	5	0	1	5	11	44	86.66666667	8.67	81.63934426	8.16	0.00	0	16.83
6	10	200	5	0	1	5	11	44	21.9895288	2.20	77.5261324	7.75	0.00	0	9.95
10	20	400	0	0	1	5	6	24	74.11764706	7.41	0	0.00	0.00	0	7.41
10	20	400	5	5	10	5	25	100	25.88235294	2.59	9.233449477	0.92	0.00	0	3.51
10	20	400	5	0	1	5	11	44	85.90078329	8.59	0	0.00	0.00	0	8.59
6	12	240	5	0	1	5	11	44	100	10.00	53.48432056	5.35	0.00	0	15.35
2	2	40	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00

10	18	360	3	0	1	5	9	36	77.49719416	7.75	91.51284835	9.15	0.00	0	16.90
10	18	360	5	0	1	5	11	44	22.50280584	2.25	8.487151647	0.85	0.00	0	3.10
10	20	400	0	0	1	5	6	24	100	10.00	0	0.00	0.00	0	10.00
6	10	200	3	0	4	5	12	48	54.74058893	5.47	44.11672518	4.41	0.00	0	9.89
10	18	360	5	0	1	5	11	44	34.41198031	3.44	18.89104814	1.89	0.00	0	5.33
10	18	360	5	0	1	5	11	44	36.75777568	3.68	17.0856319	1.71	0.00	0	5.38
10	18	360	5	0	1	5	11	44	24.6413237	2.46	8.644684052	0.86	0.00	0	3.33
10	20	400	5	0	1	5	11	44	100	10.00	12.25238215	1.23	0.00	0	11.23
10	18	360	5	5	1	5	16	64	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	0	1	5	11	44	100	10.00	10.43876066	1.04	0.00	0	11.04
4	8	160	5	5	10	5	25	100	73.03988996	7.30	89.56123934	8.96	0.00	0	16.26
8	16	320	3	5	10	5	23	92	71.86843947	7.19	78.50775834	7.85	0.00	5	20.04
10	20	400	5	5	10	5	25	100	100	10.00	19.17744472	1.92	0.00	5	16.92
10	20	400	5	5	10	5	25	100	100	10.00	19.17744472	1.92	0.00	5	16.92
8	14	280	3	5	1	5	14	56	33.875	3.39	69.7645601	6.98	0.00	0	10.36
10	18	360	5	5	10	5	25	100	100	10.00	48.76084263	4.88	0.00	0	14.88
8	14	280	5	5	10	5	25	100	56.86735654	5.69	92.02652684	9.20	0.00	0	14.89
10	18	360	5	0	1	5	11	44	89.56823196	8.96	0	0.00	0.00	0	8.96
10	20	400	5	5	10	5	25	100	33.1010453	3.31	7.973473165	0.80	0.00	0	4.11
10	20	400	5	0	1	5	11	44	66.8989547	6.69	0	0.00	0.00	0	6.69
10	18	360	5	0	1	5	11	44	52.38095238	5.24	85.4368932	8.54	5.00	0	18.78
10	18	360	5	5	10	5	25	100	47.61904762	4.76	14.5631068	1.46	5.00	0	11.22
8	14	280	5	0	1	5	11	44	29.8245614	2.98	70.1986755	7.02	5.00	0	15.00
10	18	360	5	5	10	5	25	100	100	10.00	29.8013245	2.98	5.00	0	17.98
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	0.00	0	20.00
6	10	200	5	0	1	5	11	44	21.99287076	2.20	77.59666203	7.76	0.00	0	9.96
10	18	360	5	0	1	5	11	44	26.38870736	2.64	0	0.00	0.00	0	2.64
10	20	400	0	0	1	5	6	24	72.3871734	7.24	0	0.00	0.00	0	7.24
10	20	400	5	5	10	5	25	100	27.6128266	2.76	9.897079277	0.99	0.00	0	3.75
10	20	400	5	5	10	5	25	100	100	10.00	53.44645341	5.34	0.00	0	15.34
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	0.00	0	20.00
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	0.00	0	20.00
10	20	400	5	5	10	5	25	100	21.11959288	2.11	7.164790174	0.72	0.00	0	2.83
10	20	400	5	5	10	5	25	100	78.88040712	7.89	92.83520983	9.28	0.00	0	17.17
10	20	400	5	5	10	5	25	100	21.22641509	2.12	7.936507937	0.79	0.00	0	2.92
10	20	400	5	5	10	5	25	100	78.77358491	7.88	92.06349206	9.21	0.00	0	17.08
10	18	360	5	5	1	5	16	64	100	10.00	0	0.00	5.00	0	15.00
10	18	360	5	0	1	5	11	44	65.2173913	6.52	88.35820896	8.84	5.00	0	20.36
10	18	360	5	5	10	5	25	100	34.7826087	3.48	11.64179104	1.16	5.00	0	9.64
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	69.23076923	6.92	36.30136986	3.63	5.00	0	15.55
10	18	360	5	0	1	5	11	44	94.0397351	9.40	70	7.00	0.00	0	16.40
10	20	400	5	5	10	5	25	100	100	10.00	9.178082192	0.92	0.00	0	10.92
2	2	40	5	0	1	5	11	44	27.80821918	2.78	27.80821918	2.78	0.00	0	5.56
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	68.75	6.88	33.33333333	3.33	5.00	0	15.21
10	18	360	5	0	1	5	11	44	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	1	5	16	64	100	10.00	100	10.00	5.00	0	25.00
10	18	360	5	5	10	5	25	100	33.33333333	3.33	8.823529412	0.88	5.00	0	9.22
10	20	400	5	5	10	5	25	100	79.8816568	7.99	92.60969977	9.26	5.00	0	22.25
10	20	400	5	5	10	5	25	100	20.1183432	2.01	7.390300231	0.74	5.00	0	7.75
10	20	400	5	5	10	5	25	100	100	10.00	100	10.00	0.00	5	25.00
10	18	360	5	5	10	5	25	100	100	10.00	78.24908116	7.82	0.00	5	22.82
10	20	400	5	5	10	5	25	100	100	10.00	9.670422365	0.97	0.00	5	15.97
10	20	400	5	0	1	5	11	44	100	10.00	39.04520897	3.90	0.00	5	18.90
10	16	320	3	0	1	5	9	36	1.777411856	0.18	3.386154124	0.34	0.00	5	5.52
10	20	400	5	5	8	5	23	92	100	10.00	100	10.00	0.00	5	25.00
10	20	400	5	5	8	5	23	92	100	10.00	100	10.00	0.00	5	25.00
10	20	400	5	5	8	5	23	92	100	10.00	100	10.00	0.00	5	25.00

8	14	280	5	0	1	5	11	44	47.45098039	4.75	57.67477204	5.77	0.00	0	10.51
10	18	360	5	0	1	5	11	44	5.813953488	0.58	3.647416413	0.36	0.00	0	0.95
10	20	400	5	5	10	5	25	100	46.02803738	4.60	19.22492401	1.92	0.00	0	6.53
10	20	400	5	0	1	5	11	44	53.97196262	5.40	19.45288754	1.95	0.00	0	7.34
6	10	200	5	0	1	0	6	24	22.14611872	2.21	78.13102119	7.81	0.00	0	10.03
10	20	400	0	0	1	5	6	24	73.84615385	7.38	0	0.00	0.00	0	7.38
10	20	400	5	5	10	5	25	100	26.15384615	2.62	9.344894027	0.93	0.00	0	3.55
10	20	400	5	5	10	5	25	100	85.81818182	8.58	0	0.00	0.00	0	8.58
8	16	320	5	5	10	5	25	100	100	10.00	53.85356455	5.39	0.00	0	15.39
8	14	280	5	0	1	5	11	44	67.3828125	6.74	85.68548387	8.57	0.00	0	15.31
10	20	400	5	5	10	5	25	100	20.10050251	2.01	7.459677419	0.75	0.00	0	2.76
10	20	400	5	0	1	5	11	44	79.89949749	7.99	6.85483871	0.69	0.00	0	8.68
8	14	280	5	0	1	5	11	44	66.9365722	6.69	85.12960437	8.51	0.00	0	15.21
10	20	400	5	5	10	5	25	100	27.5862069	2.76	8.185538881	0.82	0.00	0	3.58
10	20	400	5	0	1	5	11	44	72.4137931	7.24	6.684856753	0.67	0.00	0	7.91
10	20	400	0	0	1	5	6	24	76.19047619	7.62	0	0.00	0.00	0	7.62
10	20	400	5	5	10	5	25	100	23.80952381	2.38	7.407407407	0.74	0.00	0	3.12
10	20	400	5	5	10	5	25	100	87.05882353	8.71	92.59259259	9.26	0.00	0	17.97
10	20	400	5	5	10	5	25	100	80.21390374	8.02	93.18181818	9.32	5.00	0	22.34
10	20	400	5	5	10	5	25	100	19.78609626	1.98	6.818181818	0.68	5.00	0	7.66
10	20	400	5	0	1	5	11	44	100	10.00	85.68281938	8.57	0.00	0	18.57
10	20	400	5	0	1	5	11	44	100	10.00	100	10.00	0.00	0	20.00
10	20	400	5	0	1	5	11	44	100	10.00	86.33093525	8.63	0.00	0	18.63
10	20	400	5	0	1	5	11	44	13.47024017	1.35	6.5830721	0.66	0.00	0	2.01
10	20	400	5	0	1	5	11	44	100	10.00	36.05577689	3.61	0.00	0	13.61
10	20	400	5	0	1	5	11	44	42.62917933	4.26	29.08103916	2.91	0.00	0	7.17
10	20	400	5	0	1	5	11	44	0.380502606	0.04	0.05799013	0.01	0.00	0	0.04
10	20	400	5	0	1	5	11	44	46.42857143	4.64	26.89655172	2.69	0.00	0	7.33
10	20	400	5	0	1	5	11	44	81.15942029	8.12	52.03252033	5.20	0.00	0	13.32
10	20	400	5	5	8	5	23	92	3.392691001	0.34	1.60547171	0.16	0.00	5	5.50
10	18	360	5	5	8	5	23	92	0	0.00	0	0.00	0.00	0	0.00
8	16	320	3	2	5	5	15	60	100	10.00	100	10.00	0.00	5	25.00
10	18	360	3	2	5	5	15	60	100	10.00	100	10.00	0.00	5	25.00
8	14	280	3	0	1	5	9	36	12.93375394	1.29	27.03659976	2.70	0.00	0	4.00
10	18	360	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00
10	18	360	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00
10	18	360	3	0	1	5	9	36	97.11538462	9.71	88.67924528	8.87	0.00	0	18.58
10	18	360	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00
10	18	360	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00
10	18	360	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00
10	18	360	3	0	1	5	9	36	49.56521739	4.96	43.79562044	4.38	0.00	0	9.34
10	18	360	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00
10	18	360	3	0	1	5	9	36	70.45343735	7.05	60.32937252	6.03	0.00	0	13.08
10	18	360	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00
10	18	360	3	0	1	5	9	36	20.58823529	2.06	21.27659574	2.13	0.00	0	4.19
10	18	360	3	0	1	5	9	36	100	10.00	85.02308773	8.50	0.00	0	18.50
10	18	360	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00
10	18	360	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00
10	18	360	3	0	1	5	9	36	84.84848485	8.48	50.79623598	5.08	0.00	0	13.56
10	18	360	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00
10	18	360	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00
10	18	360	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00
10	18	360	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00
10	18	360	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00
10	18	360	3	0	1	5	9	36	36.81401555	3.68	17.96586555	1.80	0.00	0	5.48
10	18	360	3	0	1	5	9	36	100	10.00	98.47277556	9.85	0.00	0	19.85
10	18	360	3	0	1	5	9	36	100	10.00	79.44939899	7.94	0.00	0	17.94
10	18	360	3	0	1	5	9	36	1.03873541	0.10	0.159188593	0.02	0.00	0	0.12
10	18	360	3	0	1	5	9	36	100	10.00	73.79310345	7.38	0.00	0	17.38

10	18	360	3	0	1	5	9	36	100	10.00	100	10.00	0.00	0	20.00
10	18	360	3	5	9	5	22	88	9.270398338	0.93	4.386890013	0.44	0.00	5	6.37



**								
	Criteria 4 - Project Sustainability				Criteria 5 - Project Cost Effectiveness		FINAL SCORE	
250.00	10	5	15.00	150	5	100	1000.00	
Weighted Criteria 3 Total	Uniform Standard 4A - Over what period of time is this project expected to provide water (regardless of the planning period)? [Less than or equal to 20 yrs = 5 points; greater than 20 yrs = 10]	Uniform Standard 4B - Does the volume of water supplied by the project change over the regional water planning period? [Decreases = 0 points; no change = 3; increases = 5]	Criteria 4 Total Score	Weighted Criteria 4 Total	Uniform Standard 5A - What is the expected unit cost of water supplied by this project compared to the median unit cost of all other recommended strategies in the region's current RWP? (Project's Unit Cost divided by the median project's unit cost) [200% or greater than median = 0 points; 150% to 199% = 1; 101% to 149% = 2; 100% = 3; 51% to 99% = 4; 0% to 50% = 5]	Weighted Criteria 5 Total		
							Grouped With	
							Comments	
							Changed / New?	
84.57	10	5	15.00	150	0	0	550.57	
108.13	10	5	15.00	150	4	80	798.13	
208.33	10	5	15.00	150	2	40	822.33	
86.08	10	5	15.00	150	4	80	776.08	
83.47	10	5	15.00	150	4	80	757.47	
26.48	10	5	15.00	150	2	40	620.48	
70.17	10	5	15.00	150	4	80	800.17	
90.08	10	5	15.00	150	4	80	820.08	
144.53	10	5	15.00	150	2	40	834.53	
166.67	10	5	15.00	150	4	80	800.67	
203.43	10	5	15.00	150	2	40	797.43	
56.99	10	5	15.00	150	4	80	586.99	
208.33	10	5	15.00	150	2	40	802.33	
208.33	10	5	15.00	150	2	40	822.33	
208.33	10	5	15.00	150	4	80	938.33	
93.27	10	5	15.00	150	5	100	707.27	
141.93	10	5	15.00	150	0	0	695.93	
14.40	10	5	15.00	150	5	100	688.40	
11.85	5	0	5.00	50	2	40	525.85	
10.75	10	5	15.00	150	4	80	740.75	
65.93	5	0	5.00	50	2	40	599.93	
208.33	10	5	15.00	150	2	40	802.33	
92.59	10	5	15.00	150	4	80	782.59	
108.23	10	5	15.00	150	5	100	762.23	
5.06	10	5	15.00	150	2	40	599.06	
20.59	10	5	15.00	150	4	80	750.59	
84.22	10	0	10.00	100	4	80	708.22	
208.33	10	5	15.00	150	2	40	802.33	
80.91	10	5	15.00	150	2	40	730.91	
83.99	10	0	10.00	100	2	40	723.99	
62.96	10	0	10.00	100	4	80	742.96	
208.33	10	5	15.00	150	2	40	898.33	
184.91	10	5	15.00	150	2	40	778.91	
65.09	10	5	15.00	150	2	40	715.09	
184.26	10	5	15.00	150	2	40	778.26	
65.74	10	5	15.00	150	2	40	715.74	
184.98	10	5	15.00	150	2	40	778.98	
65.02	10	5	15.00	150	2	40	715.02	
63.47	10	5	15.00	150	2	40	693.47	H350
52.54	10	5	15.00	150	5	100	738.54	
32.67	10	5	15.00	150	5	100	638.67	H51
157.55	10	5	15.00	150	5	100	583.55	H663

The lines reflect ownership shares of a single reservoir project.

Both entries reflect the same contractual WMS.

Both entries reflect the same contractual WMS.

166.98	10	5	15.00	150	5	100	828.98
62.27	10	5	15.00	150	5	100	668.27
166.67	10	5	15.00	150	5	100	452.67
22.74	10	5	15.00	150	0	0	288.74
41.67	10	3	13.00	130	0	0	551.67
56.93	10	5	15.00	150	5	100	662.93
57.99	10	5	15.00	150	0	0	403.99
34.54	10	5	15.00	150	0	0	356.54
32.67	10	5	15.00	150	5	100	638.67
120.66	10	5	15.00	150	5	100	694.66
20.78	10	5	15.00	150	4	80	750.78
81.61	10	0	10.00	100	4	80	705.61
176.55	10	5	15.00	150	2	40	770.55
73.45	10	5	15.00	150	2	40	723.45
150.85	10	5	15.00	150	2	40	744.85
99.15	10	5	15.00	150	4	80	789.15
208.33	10	0	10.00	100	2	40	752.33
129.28	10	5	15.00	150	4	80	819.28
115.58	10	5	15.00	150	5	100	689.58
26.76	10	0	10.00	100	2	40	666.76
75.27	10	0	10.00	100	4	80	699.27
120.48	10	5	15.00	150	5	100	694.48
20.79	10	5	15.00	150	4	80	750.79
81.92	10	0	10.00	100	4	80	705.92
208.33	10	0	10.00	100	2	40	752.33
161.06	10	0	10.00	100	4	80	801.06
208.33	10	5	15.00	150	5	100	950.33
208.33	10	5	15.00	150	5	100	950.33
208.33	10	5	15.00	150	5	100	950.33
184.13	10	5	15.00	150	5	100	802.13
96.35	10	0	10.00	100	4	80	704.35
122.92	10	5	15.00	150	4	80	780.92
66.38	10	5	15.00	150	4	80	756.38
60.91	10	0	10.00	100	5	100	584.91
187.67	10	5	15.00	150	0	0	837.67
113.74	10	5	15.00	150	2	40	627.74
130.95	10	0	10.00	100	2	40	730.95
11.26	10	0	10.00	100	2	40	475.26
208.33	10	5	15.00	150	2	40	802.33
139.68	10	5	15.00	150	0	0	685.68
1.59	10	5	15.00	150	5	100	655.59
69.87	5	0	5.00	50	2	40	583.87
26.05	10	3	13.00	130	4	80	736.05
208.33	10	5	15.00	150	2	40	822.33
165.34	10	5	15.00	150	2	40	815.34
60.11	10	5	15.00	150	1	20	554.11
23.08	10	5	15.00	150	2	40	537.08
110.31	10	5	15.00	150	4	80	840.31
208.33	10	5	15.00	150	2	40	802.33
93.60	10	5	15.00	150	4	80	783.60
80.17	10	5	15.00	150	5	100	574.17
3.33	10	5	15.00	150	5	100	577.33
60.31	5	0	5.00	50	2	40	574.31
31.00	10	5	15.00	150	4	80	761.00
126.38	10	0	10.00	100	4	80	806.38
125.00	5	0	5.00	50	2	40	619.00
84.52	10	5	15.00	150	5	100	658.52
18.52	5	0	5.00	50	2	40	532.52
24.07	10	5	15.00	150	2	40	714.07

H762

Both entries reflect the same contractual WMS.

H244

Both entries reflect the same contractual WMS.

H588

Both entries reflect the same contractual WMS.

H354

Both entries reflect the same contractual WMS.

H41

Both entries reflect the same contractual WMS.

Changed

Changed

57.66	10	0	10.00	100	4	80	681.66
40.62	10	5	15.00	150	4	80	770.62
208.33	10	5	15.00	150	2	40	802.33
120.24	10	5	15.00	150	4	80	810.24
100.56	10	0	10.00	100	4	80	724.56
32.67	10	5	15.00	150	4	80	666.67
34.61	10	0	10.00	100	2	40	598.61
16.06	10	5	15.00	150	4	80	746.06
3.66	10	5	15.00	150	1	20	489.66
153.89	10	0	10.00	100	0	0	657.89
49.79	5	0	5.00	50	2	40	563.79
12.83	10	0	10.00	100	4	80	692.83
26.83	5	0	5.00	50	2	40	560.83
41.62	10	5	15.00	150	2	40	731.62
28.80	10	0	10.00	100	2	40	668.80
63.49	10	5	15.00	150	0	0	609.49
16.39	10	5	15.00	150	0	0	402.39
88.15	10	5	15.00	150	4	80	818.15
23.32	10	5	15.00	150	1	20	509.32
166.67	10	5	15.00	150	0	0	720.67
71.42	10	5	15.00	150	0	0	469.42
2.94	10	5	15.00	150	5	100	576.94
89.18	10	0	10.00	100	4	80	593.18
16.13	10	5	15.00	150	4	80	626.13
97.72	10	5	15.00	150	4	80	771.72
22.68	10	5	15.00	150	1	20	508.68
208.33	10	0	10.00	100	2	40	752.33
208.33	10	0	10.00	100	4	80	848.33
177.57	10	5	15.00	150	2	40	791.57
91.62	10	5	15.00	150	4	80	781.62
208.33	10	5	15.00	150	2	40	802.33
142.93	10	5	15.00	150	4	80	832.93
31.14	10	5	15.00	150	4	80	505.14
10.21	10	5	15.00	150	4	80	564.21
63.19	5	0	5.00	50	2	40	577.19
26.23	10	5	15.00	150	4	80	756.23
80.80	10	0	10.00	100	4	80	760.80
22.27	10	5	15.00	150	4	80	672.27
18.92	10	5	15.00	150	1	20	504.92
78.85	10	5	15.00	150	2	40	672.85
64.95	10	5	15.00	150	4	80	754.95
208.33	10	0	10.00	100	2	40	752.33
104.23	10	5	15.00	150	4	80	794.23
125.00	10	0	10.00	100	2	40	689.00
125.00	5	0	5.00	50	2	40	619.00
125.00	5	0	5.00	50	4	80	715.00
195.21	10	5	15.00	150	2	40	789.21
84.80	10	5	15.00	150	4	80	774.80
208.33	10	5	15.00	150	2	40	802.33
208.33	10	5	15.00	150	2	40	538.33
4.38	10	5	15.00	150	5	100	578.38
4.59	10	5	15.00	150	4	80	478.59
59.20	5	0	5.00	50	2	40	573.20
26.96	10	5	15.00	150	2	40	716.96
0.73	10	5	15.00	150	4	80	730.73
3.34	10	0	10.00	100	0	0	547.34
138.40	10	5	15.00	150	4	80	812.40
83.79	10	5	15.00	150	5	100	577.79
62.50	5	0	5.00	50	2	40	576.50

Changed

27.98	10	5	15.00	150	4	80	757.98
72.39	5	0	5.00	50	4	80	702.39
128.45	10	0	10.00	100	4	80	728.45
208.33	10	5	15.00	150	2	40	822.33
171.30	10	5	15.00	150	4	80	861.30
131.02	10	5	15.00	150	2	40	645.02
148.15	10	5	15.00	150	4	80	838.15
208.33	10	5	15.00	150	2	40	822.33
76.07	10	5	15.00	150	2	40	726.07
126.34	10	5	15.00	150	2	40	720.34
208.33	10	5	15.00	150	4	80	938.33
127.88	10	5	15.00	150	4	80	753.88
5.91	10	5	15.00	150	5	100	659.91
59.49	5	0	5.00	50	2	40	593.49
38.92	10	5	15.00	150	4	80	768.92
97.90	10	5	15.00	150	4	80	775.90
79.98	10	5	15.00	150	5	100	573.98
6.79	10	5	15.00	150	5	100	500.79
63.27	5	0	5.00	50	2	40	577.27
26.92	10	5	15.00	150	4	80	756.92
72.29	5	0	5.00	50	4	80	646.29
125.93	10	0	10.00	100	4	80	669.93
197.05	10	5	15.00	150	2	40	887.05
52.95	10	5	15.00	150	2	40	742.95
123.45	10	5	15.00	150	5	100	697.45
15.92	10	0	10.00	100	4	80	695.92
82.50	10	0	10.00	100	4	80	706.50
145.01	10	5	15.00	150	0	0	691.01
21.66	10	5	15.00	150	4	80	711.66
70.82	10	0	10.00	100	2	40	710.82
109.59	10	5	15.00	150	4	80	655.59
24.42	10	5	15.00	150	2	40	674.42
208.33	10	0	10.00	100	2	40	752.33
84.83	10	5	15.00	150	2	40	734.83
28.52	10	0	10.00	100	2	40	668.52
115.12	10	5	15.00	150	4	80	741.12
23.03	10	5	15.00	150	4	80	713.03
143.72	10	5	15.00	150	4	80	769.72
23.19	10	5	15.00	150	4	80	713.19
28.23	10	0	10.00	100	2	40	668.23
142.19	10	5	15.00	150	4	80	768.19
24.84	10	5	15.00	150	2	40	674.84
67.90	10	0	10.00	100	2	40	707.90
107.04	10	5	15.00	150	4	80	653.04
93.04	10	5	15.00	150	4	80	823.04
114.06	10	5	15.00	150	0	0	580.06
83.61	10	5	15.00	150	1	20	745.61
89.91	10	5	15.00	150	4	80	819.91
28.67	10	0	10.00	100	2	40	668.67
142.04	10	5	15.00	150	4	80	768.04
24.80	10	0	10.00	100	2	40	624.80
28.47	10	0	10.00	100	2	40	668.47
141.67	10	5	15.00	150	4	80	767.67
25.00	10	5	15.00	150	2	40	675.00
28.39	10	0	10.00	100	2	40	668.39
143.47	10	5	15.00	150	4	80	769.47
23.20	10	0	10.00	100	4	80	663.20
145.52	10	5	15.00	150	0	0	691.52
89.15	10	5	15.00	150	4	80	819.15

250.00	10	5	15.00	150	1	20	912.00
143.03	10	5	15.00	150	5	100	749.03
120.81	10	5	15.00	150	5	100	694.81
20.89	10	5	15.00	150	4	80	750.89
81.39	10	0	10.00	100	2	40	665.39
80.06	10	5	15.00	150	4	80	714.06
34.44	10	5	15.00	150	2	40	628.44
52.17	10	5	15.00	150	4	80	742.17
208.33	10	5	15.00	150	2	40	802.33
129.57	10	5	15.00	150	1	20	703.57
89.25	10	5	15.00	150	4	80	819.25
48.07	10	5	15.00	150	2	40	458.07
44.91	10	5	15.00	150	5	100	618.91
2.29	10	5	15.00	150	2	40	516.29
99.83	10	5	15.00	150	4	80	829.83
38.65	10	5	15.00	150	0	0	632.65
166.67	10	5	15.00	150	4	80	820.67
166.67	10	5	15.00	150	5	100	780.67
208.33	10	5	15.00	150	2	40	802.33
127.88	10	5	15.00	150	5	100	733.88
166.67	10	5	15.00	150	0	0	720.67
166.67	10	5	15.00	150	2	40	760.67
187.44	10	5	15.00	150	2	40	877.44
62.56	10	5	15.00	150	4	80	792.56
62.27	10	5	15.00	150	5	100	668.27
49.95	10	5	15.00	150	0	0	555.95
83.07	10	5	15.00	150	5	100	577.07
60.26	5	0	5.00	50	2	40	574.26
31.34	10	5	15.00	150	4	80	761.34
70.89	5	0	5.00	50	4	80	700.89
127.94	10	0	10.00	100	4	80	727.94
208.33	10	5	15.00	150	2	40	822.33
92.08	10	5	15.00	150	4	80	782.08
208.33	10	5	15.00	150	2	40	822.33
81.45	10	5	15.00	150	4	80	771.45
40.51	10	5	15.00	150	5	100	614.51
125.00	10	0	10.00	100	2	40	765.00
41.67	10	0	10.00	100	1	20	605.67
78.92	10	5	15.00	150	5	100	652.92
58.66	10	0	10.00	100	4	80	738.66
65.02	10	0	10.00	100	4	80	689.02
108.16	10	5	15.00	150	5	100	682.16
4.37	10	5	15.00	150	2	40	598.37
22.03	10	5	15.00	150	2	40	712.03
85.49	10	0	10.00	100	4	80	709.49
187.55	10	5	15.00	150	2	40	877.55
62.45	10	5	15.00	150	4	80	792.45
185.63	10	0	10.00	100	2	40	825.63
64.37	10	0	10.00	100	2	40	704.37
22.39	10	5	15.00	150	2	40	712.39
144.27	10	5	15.00	150	2	40	834.27
22.83	10	0	10.00	100	2	40	662.83
143.84	10	0	10.00	100	2	40	783.84
22.31	10	5	15.00	150	2	40	712.31
144.36	10	5	15.00	150	2	40	834.36
186.14	10	5	15.00	150	2	40	876.14
63.86	10	5	15.00	150	2	40	753.86
186.14	10	5	15.00	150	2	40	876.14
63.86	10	5	15.00	150	2	40	753.86

Changed

H44

Both entries reflect the same contractual WMS.

56.25	10	5	15.00	150	1	20	550.25
142.36	10	0	10.00	100	2	40	742.36
9.72	10	0	10.00	100	1	20	453.72
22.42	10	5	15.00	150	2	40	712.42
144.25	10	5	15.00	150	2	40	834.25
185.94	10	5	15.00	150	2	40	875.94
64.06	10	5	15.00	150	2	40	754.06
127.41	10	5	15.00	150	5	100	701.41
27.66	10	3	13.00	130	4	80	737.66
67.64	10	0	10.00	100	4	80	691.64
127.63	10	5	15.00	150	5	100	701.63
22.66	10	0	10.00	100	2	40	662.66
72.53	10	0	10.00	100	4	80	696.53
22.84	10	0	10.00	100	2	40	662.84
143.83	10	0	10.00	100	2	40	783.83
127.73	10	5	15.00	150	5	100	701.73
22.78	10	0	10.00	100	2	40	662.78
72.43	10	0	10.00	100	4	80	696.43
81.12	10	5	15.00	150	5	100	495.12
166.67	10	5	15.00	150	0	0	816.67
117.08	10	5	15.00	150	2	40	687.08
101.42	10	5	15.00	150	5	100	675.42
11.48	10	5	15.00	150	2	40	605.48
21.97	10	5	15.00	150	4	80	751.97
85.46	10	0	10.00	100	4	80	709.46
94.43	10	5	15.00	150	5	100	668.43
9.41	10	5	15.00	150	2	40	603.41
36.67	10	5	15.00	150	2	40	726.67
74.56	10	0	10.00	100	4	80	698.56
187.56	10	5	15.00	150	2	40	877.56
62.44	10	5	15.00	150	4	80	792.44
187.23	10	5	15.00	150	2	40	877.23
62.77	10	5	15.00	150	4	80	792.77
97.48	10	5	15.00	150	4	80	651.48
73.40	10	5	15.00	150	4	80	763.40
41.79	10	5	15.00	150	1	20	615.79
185.57	10	0	10.00	100	2	40	825.57
64.43	10	0	10.00	100	2	40	704.43
101.07	10	5	15.00	150	5	100	675.07
2.21	10	5	15.00	150	2	40	596.21
34.89	10	5	15.00	150	4	80	764.89
76.13	10	0	10.00	100	4	80	700.13
93.88	10	5	15.00	150	5	100	667.88
9.88	10	5	15.00	150	2	40	603.88
37.95	10	5	15.00	150	4	80	767.95
73.84	10	0	10.00	100	4	80	697.84
121.17	10	5	15.00	150	5	100	695.17
1.79	10	5	15.00	150	2	40	595.79
10.80	10	5	15.00	150	2	40	700.80
89.28	10	0	10.00	100	4	80	713.28
128.45	10	5	15.00	150	5	100	702.45
20.69	10	0	10.00	100	4	80	700.69
74.06	10	0	10.00	100	2	40	658.06
114.97	10	5	15.00	150	5	100	688.97
0.69	10	5	15.00	150	2	40	514.69
23.14	10	5	15.00	150	4	80	753.14
79.78	10	0	10.00	100	4	80	703.78
124.94	10	5	15.00	150	5	100	698.94
14.87	10	0	10.00	100	4	80	694.87

Changed

82.19	10	0	10.00	100	4	80	706.19
184.40	10	5	15.00	150	2	40	778.40
65.60	10	5	15.00	150	2	40	715.60
62.50	10	5	15.00	150	2	40	336.50
197.92	10	5	15.00	150	4	80	887.92
92.05	10	5	15.00	150	4	80	646.05
84.29	10	5	15.00	150	4	80	774.29
30.65	10	0	10.00	100	0	0	534.65
166.67	10	5	15.00	150	0	0	720.67
83.33	5	0	5.00	50	2	40	577.33
125.00	10	5	15.00	150	2	40	399.00
125.00	10	5	15.00	150	4	80	495.00
63.47	10	5	15.00	150	2	40	693.47
0.00	10	3	13.00	130	0	0	582.00
208.33	10	5	15.00	150	5	100	886.33
162.74	10	5	15.00	150	0	0	580.74
56.93	10	5	15.00	150	5	100	662.93
115.82	10	5	15.00	150	5	100	733.82
208.33	10	5	15.00	150	1	20	846.33
108.40	10	5	15.00	150	5	100	762.40
188.56	10	5	15.00	150	2	40	834.56
145.14	10	5	15.00	150	4	80	875.14
3.24	10	0	10.00	100	5	100	487.24
79.91	10	5	15.00	150	5	100	613.91
166.67	10	5	15.00	150	0	0	412.67
115.90	10	5	15.00	150	5	100	769.90
24.69	10	5	15.00	150	4	80	754.69
77.29	10	0	10.00	100	4	80	701.29
115.70	10	5	15.00	150	5	100	689.70
4.14	10	5	15.00	150	2	40	598.14
15.37	10	5	15.00	150	2	40	705.37
86.01	10	0	10.00	100	4	80	710.01
208.33	10	3	13.00	130	0	0	838.33
134.38	10	5	15.00	150	2	40	728.38
115.63	10	5	15.00	150	4	80	805.63
142.09	10	0	10.00	100	5	100	766.09
28.17	10	5	15.00	150	5	100	594.17
4.79	10	0	10.00	100	5	100	548.79
33.62	10	3	13.00	130	5	100	727.62
187.77	10	3	13.00	130	5	100	881.77
167.72	10	5	15.00	150	5	100	861.72
208.33	10	3	13.00	130	5	100	902.33
61.62	5	0	5.00	50	5	100	635.62
123.24	10	5	15.00	150	5	100	777.24
43.43	10	3	13.00	130	5	100	737.43
0.41	10	5	15.00	150	5	100	674.41
166.67	10	3	13.00	130	5	100	860.67
75.82	10	5	15.00	150	5	100	769.82
125.00	5	0	5.00	50	5	100	679.00
208.33	10	5	15.00	150	5	100	642.33
23.25	10	5	15.00	150	1	20	357.25
91.24	10	5	15.00	150	2	40	685.24
119.97	10	5	15.00	150	4	80	729.97
30.95	10	5	15.00	150	1	20	364.95
208.33	10	5	15.00	150	2	40	802.33
28.12	10	5	15.00	150	2	40	678.12
138.55	10	5	15.00	150	4	80	828.55
208.33	10	0	10.00	100	2	40	752.33
96.66	10	5	15.00	150	4	80	786.66

H39 The lines reflect ownership shares of a single reservoir project.

H48 Both entries reflect the same contractual WMS.

H559 Both entries reflect the same contractual WMS.

23.66	10	5	15.00	150	4	80	753.66
143.00	10	5	15.00	150	2	40	833.00
150.48	10	5	15.00	150	4	80	776.48
3.58	10	5	15.00	150	5	100	657.58
76.61	5	0	5.00	50	2	40	590.61
12.80	10	5	15.00	150	4	80	742.80
208.33	10	5	15.00	150	2	40	802.33
69.43	10	5	15.00	150	4	80	759.43
208.33	10	5	15.00	150	2	40	822.33
78.81	10	5	15.00	150	4	80	768.81
208.33	10	5	15.00	150	2	40	802.33
117.09	10	5	15.00	150	4	80	771.09
37.92	10	5	15.00	150	2	40	611.92
32.74	10	5	15.00	150	4	80	742.74
83.33	5	0	5.00	50	2	40	597.33
166.67	10	3	13.00	130	1	20	816.67
166.67	10	5	15.00	150	4	80	896.67
142.48	10	5	15.00	150	4	80	768.48
3.63	10	5	15.00	150	5	100	657.63
71.41	5	0	5.00	50	2	40	585.41
21.81	10	5	15.00	150	4	80	751.81
208.33	10	5	15.00	150	2	40	822.33
192.93	10	5	15.00	150	2	40	842.93
27.08	5	0	5.00	50	5	100	581.08
139.58	10	5	15.00	150	5	100	813.58
90.28	10	5	15.00	150	5	100	744.28
83.33	5	0	5.00	50	5	100	677.33
78.53	10	5	15.00	150	5	100	752.53
199.92	10	5	15.00	150	2	40	889.92
50.08	10	5	15.00	150	4	80	780.08
208.33	10	5	15.00	150	2	40	802.33
160.43	10	5	15.00	150	2	40	810.43
9.75	10	5	15.00	150	4	80	643.75
63.53	5	0	5.00	50	2	40	577.53
25.60	10	5	15.00	150	4	80	755.60
140.46	10	5	15.00	150	4	80	870.46
208.33	10	5	15.00	150	2	40	802.33
94.43	10	5	15.00	150	0	0	640.43
0.70	10	0	10.00	100	4	80	624.70
106.67	10	5	15.00	150	0	0	652.67
49.95	10	5	15.00	150	4	80	595.95
2.21	10	5	15.00	150	2	40	596.21
53.33	5	0	5.00	50	4	80	607.33
35.80	10	3	13.00	130	0	0	609.80
165.81	10	5	15.00	150	0	0	759.81
2.54	10	0	10.00	100	2	40	566.54
114.63	10	0	10.00	100	0	0	610.63
43.95	10	5	15.00	150	4	80	677.95
75.66	10	5	15.00	150	5	100	749.66
208.33	10	5	15.00	150	2	40	802.33
45.63	10	5	15.00	150	1	20	463.63
32.55	10	0	10.00	100	1	20	556.55
124.41	10	0	10.00	100	0	0	668.41
23.37	10	5	15.00	150	2	40	617.37
13.60	10	0	10.00	100	0	0	557.60
208.33	10	5	15.00	150	2	40	802.33
208.33	10	5	15.00	150	2	40	822.33
208.33	10	5	15.00	150	2	40	802.33
83.33	5	0	5.00	50	2	40	597.33

166.67	10	5	15.00	150	4	80	896.67
208.33	10	5	15.00	150	2	40	802.33
208.33	10	5	15.00	150	2	40	802.33
208.33	10	5	15.00	150	2	40	802.33
85.25	10	5	15.00	150	0	0	639.25
32.09	10	0	10.00	100	2	40	576.09
49.33	10	0	10.00	100	4	80	689.33
185.59	10	0	10.00	100	2	40	825.59
64.41	10	0	10.00	100	2	40	704.41
143.03	10	5	15.00	150	4	80	769.03
91.65	10	0	10.00	100	2	40	731.65
208.33	10	5	15.00	150	2	40	822.33
82.54	10	5	15.00	150	4	80	772.54
208.33	10	5	15.00	150	2	40	802.33
133.31	10	5	15.00	150	0	0	679.31
33.36	10	5	15.00	150	2	40	627.36
158.21	10	5	15.00	150	0	0	752.21
5.84	10	5	15.00	150	2	40	619.84
5.46	10	0	10.00	100	2	40	589.46
98.45	10	5	15.00	150	0	0	644.45
66.71	10	5	15.00	150	0	0	612.71
1.50	10	5	15.00	150	2	40	595.50
77.70	10	5	15.00	150	0	0	623.70
85.25	10	5	15.00	150	0	0	679.25
4.13	10	5	15.00	150	5	100	658.13
40.32	5	0	5.00	50	2	40	554.32
121.28	10	5	15.00	150	2	40	635.28
7.65	10	5	15.00	150	2	40	601.65
99.10	10	0	10.00	100	0	0	643.10
208.33	10	5	15.00	150	2	40	822.33
83.33	5	0	5.00	50	2	40	597.33
166.67	10	5	15.00	150	4	80	896.67
208.33	10	5	15.00	150	2	40	802.33
140.01	10	5	15.00	150	0	0	790.01
140.01	10	5	15.00	150	0	0	790.01
140.01	10	5	15.00	150	0	0	790.01
144.23	10	5	15.00	150	5	100	810.23
147.17	10	5	15.00	150	5	100	753.17
94.35	10	5	15.00	150	4	80	824.35
144.64	10	5	15.00	150	0	0	698.64
11.42	10	5	15.00	150	5	100	685.42
55.63	5	0	5.00	50	2	40	569.63
10.89	10	5	15.00	150	4	80	740.89
21.88	5	0	5.00	50	2	40	555.88
85.93	10	5	15.00	150	4	80	479.93
59.87	10	0	10.00	100	2	40	603.87
62.87	5	0	5.00	50	2	40	576.87
25.98	10	5	15.00	150	4	80	755.98
37.69	10	0	10.00	100	2	40	621.69
84.06	10	0	10.00	100	4	80	468.06
71.35	10	5	15.00	150	4	80	545.35
19.99	10	5	15.00	150	4	80	573.99
61.63	5	0	5.00	50	2	40	575.63
28.43	10	5	15.00	150	2	40	718.43
71.58	5	0	5.00	50	4	80	645.58
122.12	10	0	10.00	100	4	80	586.12
83.33	10	5	15.00	150	5	100	577.33
63.49	5	0	5.00	50	2	40	577.49
27.15	10	3	13.00	130	4	80	737.15

H490, H491 Represent components of a single Groundwater Reduction Plan.

H489, H491 Represent components of a single Groundwater Reduction Plan.

H489, H490 Represent components of a single Groundwater Reduction Plan.

72.48	5	0	5.00	50	4	80	702.48
128.07	10	0	10.00	100	4	80	728.07
62.26	10	5	15.00	150	4	80	536.26
61.74	5	0	5.00	50	2	40	575.74
148.26	10	5	15.00	150	0	0	762.26
28.96	10	0	10.00	100	2	40	668.96
2.87	5	0	5.00	50	5	100	596.87
35.68	10	0	10.00	100	2	40	619.68
62.57	10	5	15.00	150	4	80	536.57
1.08	5	0	5.00	50	5	100	555.08
63.19	5	0	5.00	50	2	40	577.19
148.26	10	5	15.00	150	0	0	762.26
27.02	10	5	15.00	150	4	80	757.02
3.43	5	0	5.00	50	5	100	597.43
36.01	10	0	10.00	100	2	40	620.01
63.15	5	0	5.00	50	2	40	577.15
26.45	10	0	10.00	100	4	80	706.45
149.36	10	5	15.00	150	4	80	879.36
83.32	10	5	15.00	150	4	80	557.32
61.56	5	0	5.00	50	2	40	575.56
29.58	10	5	15.00	150	2	40	719.58
71.65	5	0	5.00	50	4	80	645.65
128.06	10	0	10.00	100	4	80	592.06
83.05	10	5	15.00	150	4	80	557.05
61.85	5	0	5.00	50	2	40	575.85
29.13	10	0	10.00	100	2	40	669.13
71.57	5	0	5.00	50	4	80	645.57
127.87	10	0	10.00	100	4	80	591.87
61.40	5	0	5.00	50	2	40	575.40
28.69	10	5	15.00	150	2	40	718.69
148.16	10	5	15.00	150	4	80	878.16
208.33	10	5	15.00	150	2	40	802.33
61.77	10	5	15.00	150	2	40	711.77
1.55	10	5	15.00	150	4	80	395.55
66.17	5	0	5.00	50	2	40	580.17
27.50	10	5	15.00	150	4	80	757.50
136.71	10	5	15.00	150	4	80	866.71
208.33	10	0	10.00	100	2	40	752.33
169.12	10	5	15.00	150	4	80	859.12
208.33	10	0	10.00	100	2	40	752.33
163.19	10	5	15.00	150	4	80	893.19
186.45	10	5	15.00	150	2	40	876.45
63.55	10	5	15.00	150	2	40	753.55
108.28	10	5	15.00	150	5	100	858.28
115.82	10	5	15.00	150	5	100	733.82
99.66	10	5	15.00	150	4	80	757.66
128.58	10	0	10.00	100	4	80	712.58
79.51	10	5	15.00	150	4	80	769.51
208.33	10	5	15.00	150	5	100	950.33
208.33	10	5	15.00	150	4	80	930.33
208.33	10	5	15.00	150	5	100	950.33
73.62	10	5	15.00	150	5	100	687.62
53.59	10	5	15.00	150	1	20	579.59
185.45	10	5	15.00	150	2	40	875.45
64.55	10	5	15.00	150	2	40	754.55
57.37	5	0	5.00	50	0	0	355.37
185.24	10	5	15.00	150	5	100	795.24
140.68	10	0	10.00	100	5	100	768.68
132.53	10	5	15.00	150	4	80	862.53

H526 The lines reflect the two WUG participants in a single joint reuse WMS.

H519 The lines reflect the two WUG participants in a single joint reuse WMS.

H355 Both entries reflect the same contractual WMS.

Changed

208.33	10	5	15.00	150	5	100	942.33
61.06	10	5	15.00	150	0	0	447.06
208.33	10	5	15.00	150	2	40	890.33
208.33	10	5	15.00	150	2	40	890.33
208.33	10	5	15.00	150	2	40	890.33
208.33	10	5	15.00	150	4	80	930.33
208.33	10	5	15.00	150	4	80	930.33
208.33	10	5	15.00	150	4	80	930.33
86.59	10	5	15.00	150	5	100	580.59
45.81	10	5	15.00	150	1	20	531.81
22.29	10	5	15.00	150	2	40	712.29
144.38	10	5	15.00	150	2	40	834.38
183.60	10	0	10.00	100	2	40	823.60
66.40	10	0	10.00	100	4	80	746.40
166.67	10	5	15.00	150	5	100	452.67
83.47	10	5	15.00	150	5	100	577.47
61.43	5	0	5.00	50	2	40	575.43
29.70	10	5	15.00	150	2	40	719.70
71.50	5	0	5.00	50	4	80	701.50
128.19	10	0	10.00	100	4	80	728.19
154.19	10	5	15.00	150	0	0	708.19
1.39	10	5	15.00	150	5	100	435.39
77.59	5	0	5.00	50	2	40	591.59
11.53	10	5	15.00	150	2	40	701.53
208.33	10	5	15.00	150	2	40	802.33
79.78	10	5	15.00	150	4	80	769.78
208.33	10	5	15.00	150	2	40	802.33
7.95	10	5	15.00	150	0	0	553.95
148.85	10	5	15.00	150	2	40	742.85
93.72	10	5	15.00	150	2	40	783.72
118.75	10	5	15.00	150	1	20	732.75
39.56	10	5	15.00	150	2	40	633.56
30.68	10	5	15.00	150	4	80	760.68
83.67	10	5	15.00	150	5	100	577.67
63.33	5	0	5.00	50	2	40	577.33
27.21	10	5	15.00	150	4	80	757.21
72.38	5	0	5.00	50	4	80	646.38
128.21	10	0	10.00	100	4	80	672.21
127.84	10	5	15.00	150	5	100	701.84
11.48	10	0	10.00	100	4	80	691.48
83.86	10	0	10.00	100	4	80	707.86
116.30	10	5	15.00	150	5	100	866.30
166.67	10	5	15.00	150	2	40	760.67
166.67	10	5	15.00	150	4	80	896.67
62.50	5	0	5.00	50	2	40	576.50
26.98	10	5	15.00	150	4	80	756.98
149.26	10	5	15.00	150	4	80	879.26
166.67	10	5	15.00	150	0	0	816.67
82.89	10	5	15.00	150	5	100	704.89
100.91	10	5	15.00	150	2	40	694.91
91.26	10	5	15.00	150	4	80	821.26
9.35	10	0	10.00	100	5	100	533.35
208.33	10	5	15.00	150	4	80	938.33
208.33	10	5	15.00	150	0	0	858.33
208.33	10	5	15.00	150	2	40	802.33
72.19	10	5	15.00	150	4	80	762.19
101.94	10	5	15.00	150	5	100	675.94
6.90	10	5	15.00	150	2	40	600.90
27.50	10	5	15.00	150	2	40	717.50

H577, H578 Represent phases of infrastructure to meet Groundwater Reduction Plan requirements. Other similar phased projects are listed as a single entry.
H576, H578 Represent phases of infrastructure to meet Groundwater Reduction Plan requirements. Other similar phased projects are listed as a single entry.
H576, H577 Represent phases of infrastructure to meet Groundwater Reduction Plan requirements. Other similar phased projects are listed as a single entry.
H580, H581 Represent phases of infrastructure to meet Groundwater Reduction Plan requirements. Other similar phased projects are listed as a single entry.
H579, H581 Represent phases of infrastructure to meet Groundwater Reduction Plan requirements. Other similar phased projects are listed as a single entry.
H579,H580 Represent phases of infrastructure to meet Groundwater Reduction Plan requirements. Other similar phased projects are listed as a single entry.

H45 Both entries reflect the same contractual WMS.

80.80	10	0	10.00	100	4	80	704.80
118.89	10	5	15.00	150	5	100	692.89
2.22	10	5	15.00	150	2	40	596.22
15.63	10	5	15.00	150	2	40	705.63
84.56	10	0	10.00	100	4	80	708.56
28.33	10	0	10.00	100	2	40	668.33
113.38	10	5	15.00	150	3	60	719.38
91.72	10	0	10.00	100	2	40	731.72
169.80	10	5	15.00	150	2	40	763.80
80.20	10	5	15.00	150	4	80	770.20
208.33	10	5	15.00	150	2	40	822.33
73.90	10	5	15.00	150	4	80	763.90
13.87	10	5	15.00	150	4	80	567.87
61.51	5	0	5.00	50	2	40	575.51
27.88	10	5	15.00	150	2	40	717.88
140.46	10	5	15.00	150	4	80	870.46
208.33	10	5	15.00	150	2	40	802.33
98.06	10	5	15.00	150	4	80	788.06
60.35	5	0	5.00	50	2	40	574.35
30.13	10	0	10.00	100	4	80	710.13
147.03	10	5	15.00	150	4	80	821.03
208.33	10	5	15.00	150	2	40	802.33
129.26	10	5	15.00	150	2	40	779.26
82.62	10	5	15.00	150	5	100	576.62
60.38	5	0	5.00	50	2	40	574.38
31.18	10	0	10.00	100	4	80	711.18
70.89	5	0	5.00	50	4	80	700.89
127.63	10	0	10.00	100	4	80	727.63
67.65	10	5	15.00	150	5	100	413.65
132.84	10	5	15.00	150	4	80	822.84
157.55	10	5	15.00	150	5	100	583.55
208.33	10	5	15.00	150	0	0	850.33
105.06	10	5	15.00	150	2	40	739.06
33.70	10	5	15.00	150	2	40	627.70
46.02	10	5	15.00	150	2	40	736.02
68.98	10	5	15.00	150	2	40	502.98
3.09	5	0	5.00	50	5	100	477.09
61.52	5	0	5.00	50	2	40	575.52
28.57	10	0	10.00	100	2	40	668.57
125.10	10	5	15.00	150	1	20	739.10
208.33	10	5	15.00	150	2	40	642.33
86.23	10	5	15.00	150	2	40	736.23
124.91	10	5	15.00	150	5	100	698.91
21.02	10	5	15.00	150	4	80	751.02
77.21	10	0	10.00	100	4	80	701.21
23.66	10	5	15.00	150	3	60	637.66
62.00	5	0	5.00	50	2	40	576.00
27.23	10	5	15.00	150	2	40	717.23
127.21	10	5	15.00	150	3	60	837.21
118.92	10	5	15.00	150	5	100	624.92
97.45	10	5	15.00	150	4	80	827.45
208.33	10	5	15.00	150	2	40	802.33
89.44	10	5	15.00	150	4	80	779.44
145.11	10	0	10.00	100	5	100	765.11
136.89	10	0	10.00	100	0	0	736.89
96.65	10	5	15.00	150	0	0	530.65
208.33	10	5	15.00	150	2	40	802.33
166.67	10	5	15.00	150	4	80	800.67
166.67	10	5	15.00	150	2	40	760.67

Changed

H42

Both entries reflect the same contractual WMS.

Changed

Changed

Changed

107.05	10	5	15.00	150	5	100	761.05
4.39	10	5	15.00	150	2	40	598.39
17.36	10	5	15.00	150	4	80	747.36
88.16	10	0	10.00	100	4	80	712.16
208.33	10	5	15.00	150	0	0	858.33
208.33	10	5	15.00	150	0	0	858.33
76.23	10	5	15.00	150	2	40	726.23
83.46	10	5	15.00	150	5	100	577.46
61.72	5	0	5.00	50	2	40	575.72
29.38	10	5	15.00	150	2	40	719.38
71.58	5	0	5.00	50	4	80	645.58
128.13	10	0	10.00	100	4	80	672.13
208.33	10	5	15.00	150	2	40	802.33
87.92	10	5	15.00	150	4	80	777.92
208.33	10	5	15.00	150	2	40	802.33
156.14	10	5	15.00	150	4	80	782.14
91.63	10	5	15.00	150	2	40	781.63
200.12	10	5	15.00	150	2	40	794.12
61.61	10	5	15.00	150	4	80	591.61
208.33	10	5	15.00	150	2	40	802.33
82.79	10	5	15.00	150	5	100	576.79
60.21	5	0	5.00	50	2	40	574.21
31.37	10	5	15.00	150	4	80	761.37
70.89	5	0	5.00	50	4	80	700.89
127.79	10	0	10.00	100	4	80	727.79
64.31	10	5	15.00	150	4	80	618.31
21.10	10	5	15.00	150	2	40	615.10
101.19	10	5	15.00	150	4	80	831.19
27.22	10	5	15.00	150	0	0	581.22
85.93	10	5	15.00	150	5	100	659.93
1.31	10	5	15.00	150	2	40	595.31
13.22	5	0	5.00	50	2	40	527.22
16.71	10	5	15.00	150	4	80	746.71
7.24	10	5	15.00	150	2	40	697.24
61.02	10	0	10.00	100	4	80	685.02
38.04	10	5	15.00	150	4	80	768.04
6.29	10	5	15.00	150	4	80	480.29
63.95	5	0	5.00	50	2	40	577.95
25.43	10	5	15.00	150	4	80	755.43
145.89	10	5	15.00	150	4	80	875.89
81.40	10	5	15.00	150	5	100	575.40
4.64	10	5	15.00	150	5	100	418.64
61.65	5	0	5.00	50	2	40	575.65
29.20	10	5	15.00	150	2	40	719.20
71.79	5	0	5.00	50	4	80	681.79
126.71	10	0	10.00	100	4	80	706.71
124.30	10	5	15.00	150	5	100	698.30
22.71	10	5	15.00	150	2	40	712.71
75.84	10	0	10.00	100	4	80	699.84
16.86	10	5	15.00	150	4	80	570.86
64.81	5	0	5.00	50	2	40	578.81
23.98	10	5	15.00	150	4	80	753.98
140.26	10	5	15.00	150	4	80	814.26
82.93	10	5	15.00	150	4	80	556.93
61.76	5	0	5.00	50	2	40	575.76
29.26	10	0	10.00	100	2	40	669.26
71.58	5	0	5.00	50	4	80	645.58
127.90	10	0	10.00	100	4	80	591.90
166.67	10	5	15.00	150	5	100	492.67

140.84	10	5	15.00	150	0	0	686.84
25.82	10	5	15.00	150	5	100	679.82
83.33	5	0	5.00	50	2	40	597.33
82.38	10	5	15.00	150	1	20	500.38
44.42	10	5	15.00	150	0	0	598.42
44.87	10	0	10.00	100	0	0	548.87
27.74	10	5	15.00	150	2	40	621.74
93.54	10	5	15.00	150	0	0	687.54
208.33	10	5	15.00	150	2	40	822.33
92.03	10	0	10.00	100	2	40	636.03
135.50	10	5	15.00	150	4	80	625.50
166.98	10	5	15.00	150	5	100	828.98
140.98	10	5	15.00	150	0	0	790.98
140.98	10	5	15.00	150	0	0	790.98
86.37	10	5	15.00	150	5	100	672.37
123.97	10	0	10.00	100	4	80	763.97
124.08	10	5	15.00	150	2	40	694.08
74.64	10	0	10.00	100	4	80	658.64
34.23	10	5	15.00	150	4	80	764.23
55.75	5	0	5.00	50	4	80	629.75
156.51	10	5	15.00	150	2	40	750.51
93.49	10	5	15.00	150	4	80	783.49
125.02	10	5	15.00	150	2	40	639.02
149.83	10	5	15.00	150	2	40	799.83
166.67	10	5	15.00	150	4	80	800.67
82.99	10	5	15.00	150	5	100	576.99
21.99	5	0	5.00	50	5	100	575.99
60.32	5	0	5.00	50	2	40	574.32
31.26	10	0	10.00	100	4	80	711.26
127.87	10	0	10.00	100	5	100	827.87
166.67	10	5	15.00	150	0	0	720.67
166.67	10	5	15.00	150	2	40	760.67
23.57	10	5	15.00	150	4	80	753.57
143.10	10	5	15.00	150	2	40	833.10
24.30	10	0	10.00	100	4	80	704.30
142.36	10	0	10.00	100	2	40	782.36
125.00	5	0	5.00	50	2	40	639.00
169.65	10	5	15.00	150	2	40	763.65
80.35	10	5	15.00	150	4	80	770.35
208.33	10	5	15.00	150	2	40	802.33
129.61	10	0	10.00	100	2	40	729.61
136.70	10	0	10.00	100	2	40	680.70
90.98	10	5	15.00	150	4	80	820.98
46.35	10	5	15.00	150	4	80	360.35
208.33	10	5	15.00	150	2	40	802.33
126.74	10	5	15.00	150	4	80	816.74
208.33	10	5	15.00	150	2	40	802.33
208.33	10	5	15.00	150	2	40	822.33
76.80	10	5	15.00	150	4	80	766.80
185.41	10	0	10.00	100	2	40	825.41
64.59	10	0	10.00	100	2	40	704.59
208.33	10	5	15.00	150	5	100	958.33
190.21	10	0	10.00	100	5	100	850.21
133.06	10	5	15.00	150	4	80	863.06
157.54	10	5	15.00	150	4	80	831.54
45.97	10	5	15.00	150	1	20	571.97
208.33	10	5	15.00	150	5	100	950.33
208.33	10	5	15.00	150	0	0	850.33
208.33	10	5	15.00	150	4	80	930.33

H43
H764
H763

Both entries reflect the same contractual WMS.
Represent components of a single Groundwater Reduction Plan.
Represent components of a single Groundwater Reduction Plan.

87.60	10	5	15.00	150	5	100	661.60
7.88	10	5	15.00	150	2	40	601.88
54.38	10	5	15.00	150	4	80	784.38
61.19	10	0	10.00	100	4	80	685.19
83.56	10	5	15.00	150	5	100	557.56
61.54	5	0	5.00	50	2	40	575.54
29.58	10	5	15.00	150	2	40	719.58
71.52	5	0	5.00	50	4	80	701.52
128.21	10	0	10.00	100	4	80	728.21
127.56	10	5	15.00	150	5	100	701.56
22.97	10	0	10.00	100	2	40	662.97
72.30	10	0	10.00	100	4	80	696.30
126.72	10	5	15.00	150	5	100	700.72
29.81	10	0	10.00	100	2	40	669.81
65.92	10	0	10.00	100	4	80	689.92
63.49	5	0	5.00	50	2	40	577.49
26.01	10	5	15.00	150	4	80	756.01
149.71	10	5	15.00	150	4	80	879.71
186.16	10	5	15.00	150	2	40	876.16
63.84	10	5	15.00	150	2	40	753.84
154.74	10	5	15.00	150	2	40	788.74
166.67	10	5	15.00	150	1	20	780.67
155.28	10	5	15.00	150	2	40	789.28
16.71	10	0	10.00	100	2	40	600.71
113.38	10	5	15.00	150	2	40	747.38
59.76	10	5	15.00	150	2	40	693.76
0.37	10	0	10.00	100	2	40	584.37
61.10	10	5	15.00	150	0	0	655.10
110.99	10	5	15.00	150	1	20	724.99
45.83	10	5	15.00	150	0	0	687.83
0.00	10	3	13.00	130	0	0	582.00
208.33	10	5	15.00	150	5	100	838.33
208.33	10	5	15.00	150	4	80	858.33
33.31	10	5	15.00	150	0	0	499.31
166.67	10	0	10.00	100	4	80	742.67
166.67	10	0	10.00	100	4	80	742.67
154.83	10	0	10.00	100	2	40	690.83
166.67	10	0	10.00	100	4	80	742.67
166.67	10	0	10.00	100	4	80	742.67
166.67	10	0	10.00	100	4	80	742.67
77.80	10	0	10.00	100	4	80	653.80
166.67	10	0	10.00	100	4	80	742.67
108.99	10	0	10.00	100	4	80	684.99
166.67	10	0	10.00	100	0	0	662.67
34.89	10	0	10.00	100	0	0	530.89
154.19	10	5	15.00	150	0	0	700.19
166.67	10	0	10.00	100	4	80	742.67
166.67	10	0	10.00	100	4	80	742.67
113.04	10	5	15.00	150	4	80	739.04
166.67	10	0	10.00	100	5	100	762.67
166.67	10	0	10.00	100	4	80	742.67
166.67	10	5	15.00	150	4	80	792.67
166.67	10	5	15.00	150	4	80	792.67
166.67	10	5	15.00	150	4	80	792.67
45.65	10	0	10.00	100	5	100	641.65
165.39	10	5	15.00	150	4	80	791.39
149.54	10	5	15.00	150	5	100	795.54
1.00	10	0	10.00	100	4	80	577.00
144.83	10	5	15.00	150	4	80	770.83

New
New
New
New
New
New
New
New
New
New
New

166.67	10	5	15.00	150	4	80	792.67
53.05	10	5	15.00	150	5	100	751.05