REGION H
Water Planning Group

Summary Materials: Proposed Amendment to the 2021 Region H Regional Water Plan for LNVA Devers Pump Station Relocation

Section 1

Proposed RWP Amendment Package and Documentation of Minor Amendment Status Determination Request.

REGION H
Water Planning Group

REGION H WATER PLANNING GROUP
Senate Bill 1 - Texas Water Development Board
c/o San Jacinto River Authority
P. O. Box 329, Conroe, Texas 77305
Telephone 936-588-3111 Facsimile 936-588-3043

June 8, 2023

Mr. Jeff Walker
Executive Administrator
Texas Water Development Board
1700 Congress Avenue
Austin, Texas 78701

Re: Amendment to the 2021 Region H Water Plan
Lower Neches Valley Authority
Determination of Minor Amendment Status

Dear Mr. Walker:

The Region H Water Planning Group (RHWPG) is transmitting a draft amendment package, attached with this letter, to the Texas Water Development Board (TWDB) on behalf of the Lower Neches Valley Authority (LNVA). LNVA wishes to amend the 2021 Regional Water Plan (RWP) and the 2022 State Water Plan to incorporate LNVA's planned Devers Pump Station Relocation Water Management Strategy (WMS) and associated WMS Project. LNVA's request was considered by the RHWPG at its November 2, 2022 regular public meeting. The RHWPG, in recognition of the need for the amendment in order to better reflect current infrastructure capacity and planned WMS, took formal action at the meeting to approve the submittal of this package to TWDB for review by your staff in final determination of minor amendment status.

The RHWPG wishes to address this matter at their August meeting following this determination by TWDB and either formally consider amending the 2021 RWP or conducting a hearing if a major amendment is deemed necessary. TWDB staff efforts to expedite a determination are appreciated to facilitate preparation for the proposed August meeting review. Thank you for your time in consideration of this amendment. Should you have any further questions regarding this submittal, please feel free to contact me at 281.440.3942 or mevans@nhcrwa.com or the Region H consultant, Philip Taucer, at 713.600.6835 or philip.taucer@freese.com. The RHWPG looks forward to your response regarding this amendment application so that it may take the appropriate action to amend the 2021 RWP.

Sincerely,

Mark Evans
Region H Chair

cc: Heather Rose, TWDB

REGION H
Water Planning Group



DRAFT AMENDMENT TO 2021 REGION H REGIONAL WATER PLAN

LNVA DEVERS PUMP STATION RELOCATION

Prepared for:
Region H Water Planning Group and
Texas Water Development Board

With assistance from:
Freese and Nichols, Inc.

June 2023
[rev. June 22, 2023]

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DRAFT Amendment to 2021 Region H Regional Water Plan: LNVA Devers Pump Station Relocation

Prepared for:

Region H Water Planning Group and
Texas Water Development Board

With assistance from:

Freese and Nichols, Inc.

TBPE Reg. No. F-2144

DRAFT
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June 2023

[rev. June 22, 2023]

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Water Measurements

1 acre-foot (AF) = 43,560 cubic feet = 325,851 gallons

1 acre-foot per year (ac-ft/yr) = 325,851 gallons per year = 893 gallons per day

1 gallon per minute (gpm) = 1,440 gallons per day = 1.6 ac-ft/yr

1 million gallons per day (mgd) = 1,000,000 gallons per day = 1,120 ac-ft/yr

A.1 INTRODUCTION AND PLANNING GROUP ACTION

The Lower Neches Valley Authority (LNVA) has requested that the 2021 Region H Regional Water Plan (RWP) be amended to include LNVA's planned Devers Pump Station Relocation as a recommended Water Management Strategy (WMS) with an associated recommended WMS Project. The Region H Water Planning Group (RHWPG), at its November 2, 2022 regular public meeting, received a presentation regarding the amendment request. At the same meeting, the RHWPG took formal action to approve the submittal of an application package to Texas Water Development Board (TWDB) for confirmation of minor amendment status of the amendment. Subsequent to receipt of TWDB's determination, the RHWPG will hold a public meeting to take comments on the proposed amendment and consider taking action to approve the amendment and submit to TWDB for agency approval. The requirements and scheduling of this public process will be dependent on TWDB's finding regarding major or minor amendment status and will be documented as applicable in any final amendment submittal.

A.2 SUMMARY OF PROPOSED AMENDMENT AND ASSOCIATED EVALUATION

A.2.1 Background

LNVA is a major water supplier to irrigators in the eastern portion of Region H, including rice production in Chambers and Liberty County. A substantial portion of this supply is provided through LNVA's Devers Canal System, which diverts water from the Trinity River at the Devers 1st Pump Station near Moss Bluff, TX for conveyance through a canal network to points of use. In order to increase supply to meet the needs of current and future customers, LNVA has identified the need to develop a new Devers 1st Pump Station with larger pumping capacity.

Major project components include development of a new intake structure, high-capacity pump station, and discharge structures to connect the pump station to the Devers Canal System. The new facility has a planned capacity of 200,000 gpm, resulting in an additional 55,000 gpm (88,704 ac-ft/yr) of reliable pumping capacity. The new pump station will be located adjacent to the current pump station, limiting the required permitting and the need for development of additional conveyance to connect to existing canal infrastructure. This location at the existing facility site, along with the small project footprint, is anticipated to result in limited construction disturbance and required mitigation. Diversions will be made from existing water rights and at the existing diversion location.

A.2.2 Analyses Associated with Amendment

The proposed WMS and associated project for the amendment have been evaluated in accordance with applicable statutes, rules, TWDB guidance, and the contractual requirements of the 2021 RWP. Technical analyses were performed to the same standards as those for the other recommended WMS and projects in the 2021 Region H RWP, including but not limited to evaluations of supply development, environmental considerations, permitting and development, cost estimation, application of the RHWPG's approved WMS evaluation process, and identification of applicable Water User Groups (WUGs). All chapters and appendices of the RWP were reviewed and revised if applicable to reflect the proposed amendment. These analyses and resultant changes are documented in the following report sections, attachments, and in the electronic data provided to TWDB along with this report to facilitate evaluating potential adjustments in the TWDB State Water Planning Database (DB22).

Items pending TWDB determination of minor or major amendment status are noted where applicable in the following report subsections. Due to changes in RWP requirements and TWDB processes subsequent adoption of the 2021 Region H RWP, this draft amendment packet does not include a revised project prioritization submittal. If directed to do so by TWDB, the RHWPG will develop and include a revised prioritization in the final adopted amendment submittal. It should also be noted that the proposed WMS utilizes the firm yield of an existing surface water supply source and does not include storge or other elements that would impact source availability. Therefore, water availability modeling is not required for the proposed WMS and is not included as part of the amendment submittal.

A.2.3 Approach to Integrating Amendment into the RWP Data Structure

The nature of the proposed amendment, along with the current and recommended WMS supplies associated with the relevant WUGs, requires limited adjustment to the data structure of the RWP in order to integrate the amendment. The LNVA Devers 1st pump station currently serves the Irrigation WUGs in Liberty County (customers in the Trinity River Basin and Neches-Trinity Coastal Basin) and Chambers County (customers in the Neches-Trinity Coastal Basin) through the LNVA Devers Canal System. Supplies are surface water from LNVA's own run-of-river water right in the Trinity River Basin as well as supply from Lake Livingston.

In order to better reflect current infrastructure capacity, the proposed amendment reduces the amount of these supplies actively applied against projected water demands for the county-basin splits of the recipient Irrigation WUGs as part of existing supply. The water removed from meeting WUG demand is then assigned back to the same county-basin splits of the recipient WUGs through a proposed LNVA Devers Pump Station Relocation WMS (Table A-1).

Table A 1 – Proposed Volume Reassigned from Applied Existing Supply to WMS

WUG	Basin	Devers System Supply Reassigned from Existing Supply Applied to WUG Demand (ac-ft)					
		2020*	2030	2040	2050	2060	2070
Irrigation, Chambers	Neches-Trinity	5,052	5,052	5,052	5,052	5,052	5,052
Irrigation, Liberty	Neches-Trinity	2,319	2,319	2,319	2,319	2,319	2,319
Irrigation, Liberty	Trinity	1,715	1,715	1,715	1,715	1,715	1,715

**Because the proposed WMS and project are anticipated to be developed between the present and 2030, reductions applied to existing year 2020 supplies are not assigned back to the WUG in the 2020 timestep as part of the WMS.*

The WMS is associated with a companion Devers Pump Station Relocation project in the data structure of the RWP and DB22. The WMS and project are not associated in the data structure of the RWP with other recommended WMS or projects and do not impact supplies or details of other WMS or projects. The proposed amendment does not create a change in either need or unmet need for any county-basin split of any WUG.

A.3 CONSISTENCY WITH 31 TAC §357.51(C)(2)

It is anticipated by the RHWPG that the proposed amendment to incorporate the LNVA Devers Pump Station Relocation WMS and project into the 2021 Region H RWP meets the requirements for categorization as a minor amendment based upon TWDB guidance and the requirements of Title 31

Texas Administrative Code (TAC) §357.51(C)(2). The proposed amendment was evaluated for consistency with each of the elements of 31 TAC§357.51(C)(2).

- *31 TAC§357.51(C)(2)(A) – "does not result in over-allocation of an existing or planned source of water"*
  The proposed amendment reduces the amount shown in the RWP for several existing supplies applied to WUG demands as existing supply, with corresponding amounts from the same sources applied to WUG supply through the added WMS. The amendment does not impact source availability or result in the over-allocation of an existing or planned source of water.

- *31 TAC§357.51(C)(2)(B) – "does not relate to a new reservoir"*
  The proposed amendment is associated with existing sources and does not relate to a new reservoir.

- *31 TAC§357.51(C)(2)(C) – "does not increase unmet needs or produce new unmet needs in the adopted RWP unless the increase in unmet needs or new unmet needs is the result of removing infeasible WMSs and/or WMSPs in accordance with subsection (g) of this section and Texas Water Code §16.053(h)(10)"*
  The proposed amendment does not create or increase an unmet need in the RWP.

- *31 TAC§357.51(C)(2)(D) – "does not have a significant effect on instream flows, environmental flows or freshwater flows to bays and estuaries"*
  The proposed amendment does not have a significant effect on instream flows, environmental flows, or freshwater flows to bays and estuaries. The proposed project increases supply from existing water rights to levels observed in prior historical conditions; the project does not develop new surface water sources. Diversions will be made from existing water rights and at the existing diversion location.

- *31 TAC§357.51(C)(2)(E) – "does not have a significant substantive impact on water planning or previously adopted management strategies"*
  The proposed WMS and associated project do not modify or impact other recommended WMS or strategies or projects in the 2021 Region H RWP and do not have a significant substantive impact on the overall nature of the Plan or its ability to meet TWDB and statutory requirements.

- *31 TAC§357.51(C)(2)(F) – "does not delete or change any legal requirements of the plan."*
  The proposed amendment does not delete or change any legal requirement of the plan.

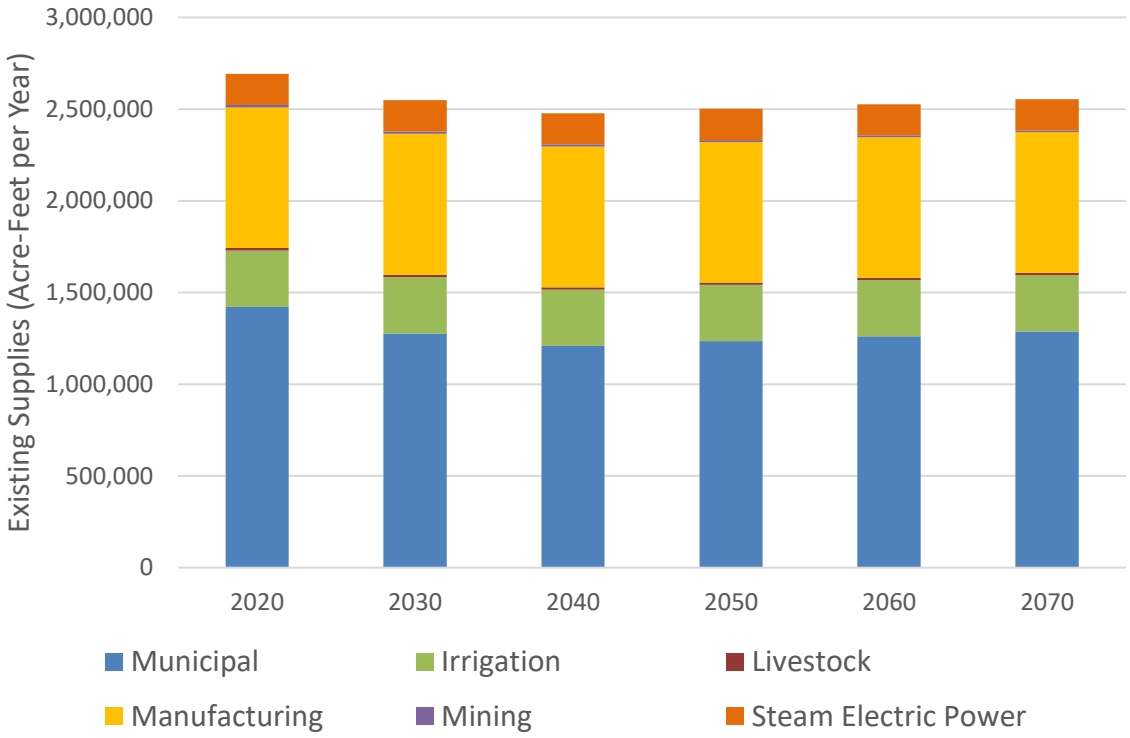
A.4 PROPOSED RWP MODIFICATIONS AND ADDITIONS TO VOLUME 1

A.4.1 Changes to Executive Summary

A.4.1.1 Revision of Data for Figure ES-3.

Underlying data for Figure ES-3 (page ES-5) was updated to reflect the proposed adjustment to existing supply allocations. Note that due to the proportionally limited magnitude of change, the amendment has minimal visible impact on the figure. The amended figure is presented below.

Figure ES-3 – Existing Water Supplies by WUG Category and Decade



A.4.1.2 Addition to Table ES-1

Table ES-1 (pages ES-7 and ES-8) was revised to add the proposed WMS to the list of potentially feasible WMS and projects. The revised table is presented below, with the added information indicated with yellow shading.

Table ES-1 – Region H Potentially Feasible WMS and Projects

Conservation
Advanced Municipal Conservation and Water Loss Reduction
Irrigation Conservation
Conveyance
BWA Transmission Expansion
CHCRWA Transmission and Internal Distribution
City of Houston GRP Transmission
COH, NHCRWA, and CHCRWA Shared Transmission
CWA Transmission Expansion
East Texas Transfer
GCWA Industrial Raw Water Line
Lake Livingston to SJRA Transfer
LNVA Neches-Trinity Basin Interconnect
NFBWA Phase 2 Distribution Segments
NHCRWA Distribution Expansion

NHCRWA Transmission Lines
Southeast Transmission Line Improvements
Surfside Beach Supply Infrastructure
WHCRWA Distribution Expansion
WHCRWA/NFBWA Transmission Line

Groundwater Development

Aquifer Storage and Recovery
Brackish Groundwater Development and Groundwater Blending
BWA Brackish Groundwater Development
City of Houston Area 2 Groundwater Infrastructure
Expanded Use of Groundwater
Forestar Houston County Project
Forestar Liberty County Project
GCWA Backup Well Development
Groveton Groundwater Expansion
SJRA Catahoula Aquifer Supplies

Groundwater Reduction Plans

CHCRWA GRP
City of Houston GRP
City of Missouri City GRP
City of Richmond GRP
City of Rosenberg GRP
City of Sugar Land IWRP
Fort Bend County MUD 25 GRP
Fort Bend County WC&ID No. 2 GRP
Montgomery County MUDs 8 and 9 GRP
NFBWA GRP
NHCRWA GRP
Porter SUD Joint GRP
River Plantation and East Plantation Joint GRP
SJRA GRP
WHCRWA GRP

Reuse

City of Houston Reuse
City of Pearland Reuse
Galveston County Industrial Reuse
NFBWA Member District Reuse
NHCRWA Member District Reuse
San Jacinto Basin Regional Return Flows
Wastewater Reclamation for Industry
Wastewater Reclamation for Municipal Irrigation
Westwood Shores MUD Reuse

Surface Water Development

Allens Creek Reservoir
BRA System Operation Permit
Dow Reservoir and Pump Station Expansion
Freeport Seawater Desalination
Lake Somerville Augmentation
Lone Star Lake
Manvel Supply Expansion
NRG Cedar Bayou Desalination

Treatment

BWA Conventional Treatment Expansion
City of Houston Treatment Expansion
City of Houston West Water Purification Plant
GCWA Western Galveston County Treatment Expansion
Northeast Water Purification Plant Expansion
Pearland Surface Water Treatment Plant
SEWPP Additional Module

Other

Brazos Saltwater Barrier
GCWA Shannon Pump Station Expansion
LNVA Devers Pump Station Relocation
Municipal Drought Management
New and Expanded Contracts

A.4.1.3 Addition to Table ES-3

Table ES-3 (pages ES-11 through ES-13) was revised to add the proposed project and associated details to the overview of key projects. The revised table is presented below, with the added information indicated with yellow shading.

Table ES-3 – Key Project Overview

Project	Potential Volume[1] (ac-ft)	Capital Cost ($)	Unit Cost ($/ac-ft)		Start Decade
			Start Decade	2070	
Conservation[2]					
Irrigation Conservation	93,562	$1,489,156	$133	$131	2020
Municipal Conservation (Advanced Conservation)	123,251	$2,211,236,519	$754	$591	2020
Municipal Conservation (Water Loss Reduction)	62,601	$891,822,048	$625	$578	2020
Conveyance					
BWA Transmission Expansion	26,211	$77,755,692	$248	$39	2030
CHCRWA Transmission and Internal Distribution	5,466	$17,202,167	$238	$16	2030
City of Houston GRP Transmission	27,216	$31,986,905	$91	$8	2030
COH, NHCRWA, and CHCRWA Shared Transmission	154,575	$545,329,786	$282	$24	2030
CWA Transmission Expansion	349,785	$119,336,981	$43	$19	2040

Project	Potential Volume[1] (ac-ft)	Capital Cost ($)	Unit Cost ($/ac-ft)		Start Decade
			Start Decade	2070	
East Texas Transfer	250,000	$458,840,377	$146	$17	2050
GCWA Industrial Raw Water Line	33,600	$45,110,104	$104	$9	2020
Lake Livingston to SJRA Transfer	50,000	$245,492,975	$437	$92	2050
LNVA Neches-Trinity Basin Interconnect	67,000	$103,316,000	$135	$27	2040
NFBWA Phase 2 Distribution Segments	62,496	$83,859,522	$104	$9	2030
NHCRWA Distribution Expansion	143,360	$919,703,916	$489	$44	2030
NHCRWA Transmission Lines	143,360	$327,910,960	$185	$24	2030
Southeast Transmission Line Improvements	39,928	$119,413,067	$229	$19	2030
Surfside Beach Supply Infrastructure	323	$1,900,440	$450	$36	2020
WHCRWA Distribution Expansion	92,288	$276,977,822	$237	$26	2030
WHCRWA/NFBWA Transmission Line	169,030	$1,310,701,901	$613	$67	2030
Groundwater Development					
Aquifer Storage and Recovery	9,426	$222,907,186	$2,551	$2,551	2070
Brackish Groundwater Development[3]	Varies	Varies by project	Varies by WUG	Varies by WUG	2020
BWA Brackish Groundwater Development	3,136	$33,246,167	$579	$370	2030
City of Houston Area 2 Groundwater Infrastructure	50,400	$122,751,076	$403	$222	2030
Expanded Use of Groundwater[3]	31,000+	Varies by WUG	Varies by WUG	Varies by WUG	2020
GCWA Backup Well Development	1,120	$1,346,492	$169	$84	2040
Groveton Groundwater Expansion	242	$2,211,952	$699	$56	2020
SJRA Catahoula Aquifer Supplies	10,500	$18,200,411	$479	$358	2040
Groundwater Reduction Plans					
CHCRWA GRP[4]	5,466	$0	$0	$0	2030
City of Houston GRP[4]	124,914	$0	$0	$0	2020
City of Missouri City GRP	25,760	$87,837,323	$405	$165	2030
City of Richmond GRP	7,178	$70,936,844	$1,108	$285	2020
City of Rosenberg GRP	3,920	$12,963,110	$261	$29	2030
City of Sugar Land IWRP	15,492	$133,134,039	$1,210	$390	2030
Fort Bend County MUD 25 GRP	1,120	$26,718,250	$2,541	$862	2030
Fort Bend County WC&ID No. 2 GRP	6,720	$63,535,966	$1,106	$440	2030
Montgomery County MUDs #8 and #9 GRP	2,240	$30,510,375	$1,875	$917	2020
NFBWA GRP[4]	62,496	$0	$0	$0	2030
NHCRWA GRP[4]	143,360	$0	$0	$0	2030
Porter SUD Joint GRP	2,240	$26,862,532	$1,542	$699	2020
River Plantation and East Plantation Joint GRP[5]	51	$0	$0	$0	2030
SJRA GRP	100,000	$998,910,850	$697	$340	2030
WHCRWA GRP[4]	92,288	$0	$0	$0	2030
Reuse					
City of Houston Reuse	242,554	$555,093,731	$373	$139	2040
City of Pearland Reuse	1,154	$12,648,000	$913	$142	2030

Project	Potential Volume[1] (ac-ft)	Capital Cost ($)	Unit Cost ($/ac-ft)		Start Decade
			Start Decade	2070	
Galveston County Industrial Reuse	22,400	$90,746,960	$564	$279	2030
NFBWA Member District Reuse	3,816	$46,640,088	$1,695	$835	2020
NHCRWA Member District Reuse	300	$4,295,775	$1,913	$905	2020
San Jacinto Basin Regional Return Flows[4]	119,673	$0	$0	$0	2020
Wastewater Reclamation for Municipal Irrigation	19,776	$181,028,437	$1,308	$896	2030
Westwood Shores MUD Reuse	150	$2,031,251	$1,921	$968	2020
Surface Water Development					
Allens Creek Reservoir	99,650	$365,446,301	$211	$39	2040
BRA System Operation Permit[4]	78,276	$0	$0	$0	2020
Dow Reservoir and Pump Station Expansion	80,000	350,000,000	$373	$66	2030
Freeport Seawater Desalination	11,200	155,877,822	$2,273	$1,293	2040
Manvel Supply Expansion	15,680	$269,052,608	$1,488	$309	2030
NRG Cedar Bayou Desalination	22,400	$342,840,391	$2,637	$1,560	2030
Treatment					
BWA Conventional Treatment Expansion	8,400	$19,085,165	$351	$191	2030
City of Houston Treatment Expansion[4]	89,396	$0	$0	$0	2040
City of Houston West Water Purification Plant	103,385	$959,257,534	$1,418	$407	2040
GCWA Western Galveston County Treatment Expansion	22,400	$167,919,105	$894	$367	2030
Northeast Water Purification Plant Expansion	448,000	$2,179,413,588	$615	$272	2030
Pearland Surface Water Treatment Plant	22,400	$232,787,093	$973	$242	2030
SEWPP Additional Module	22,400	$97,597,266	$497	$191	2030
Other Infrastructure					
Brazos Saltwater Barrier	10,000	$67,552,043	$517	$42	2040
GCWA Shannon Pump Station Expansion	162,400	$65,801,381	$35	$7	2030
LNVA Devers Pump Station Relocation	88,704	$17,570,019	$17	$4	2030

A.4.1.4 Revisions to Section ES.9 Text

Section ES.9 summarizes reporting of financing mechanisms for WMS. The second paragraph of the section, on page ES-20, is revised to reflect the additional project and presented below in italic text. Completed revisions are indicated in yellow shading, with potential locations of minor additional adjustments shown with blue shading.

With the assistance of the RHWPG, TWDB conducted a survey of water utilities related to the anticipated cost of infrastructure and approaches to fund these projects. Anticipated costs developed as part of the RWP were submitted to WUGs in order to determine their interest in pursuing one or more of the financial assistance programs offered by TWDB. Survey responses were returned by 23 sponsors (approximately 6.1 percent) of the 376 who received the survey. The surveys captured 78 projects and approximately $6.4 billion in identified capital projects. Results demonstrated a need for approximately $819 million in State funding for project planning, design, permitting and acquisition

costs and $4.7 billion for construction of projects. The total anticipated need for State funding totaled $5.5 billion, per the surveys. Additional information is contained in Chapter 9.

A.4.1.5 Revisions to Section ES.11 Text

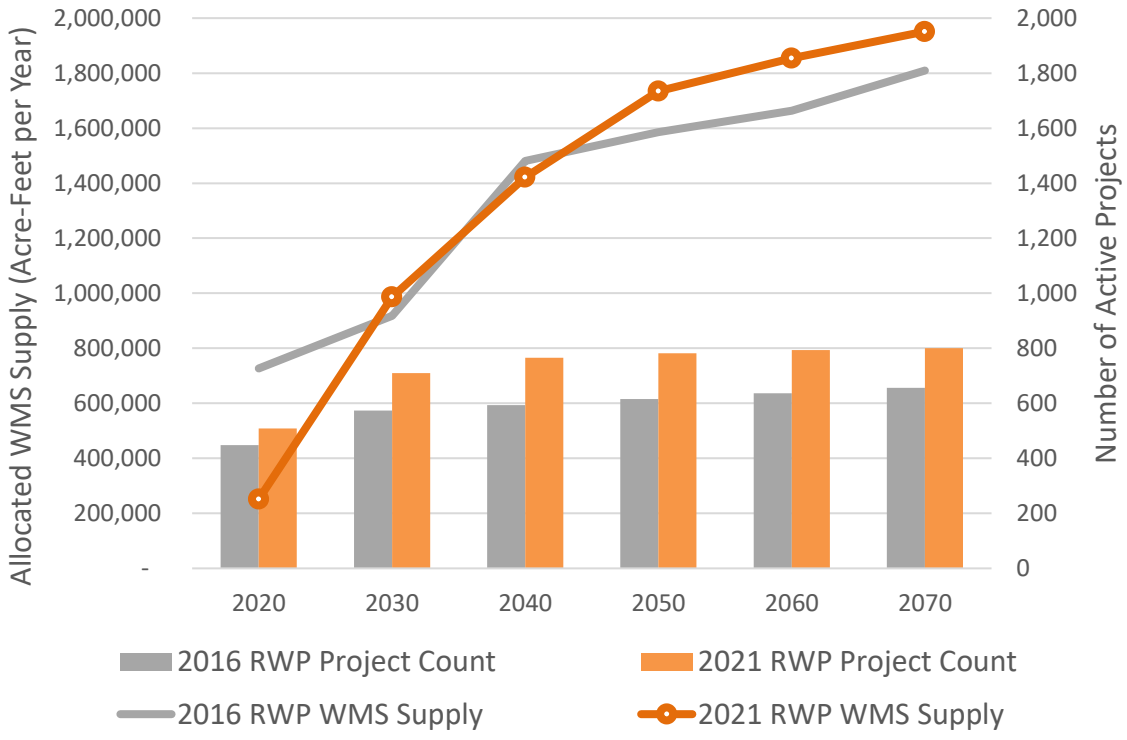
Section ES.11 summarizes implementation of strategies and projects and comparison to the preceding RWP. The sixth paragraph of the section, on pages ES-21 and ES-22, is revised to reflect the additional project and presented below in italic text. Specific changes are indicated in yellow shading.

In total, the RHWPG has recommended 61 WMSs and 819 projects in the 2021 RWP. This compares to 58 WMSs and 656 capital projects identified in the 2016 RWP. Allocations of WMS supplies in the 2021 RWP differ from those in the 2016 RWP for a number of reasons, including differences in projected WUG demands, establishment of new existing contracts between water providers and WUG customers, implementation of 2016 WMS as existing supplies, changes in recommended WMS, and changes to associated project schedules. A comparison of allocated WMS volume and active project count for the two plans is presented in Figure ES-7 below.

A.4.1.6 Revision of Data for Figure ES-7.

Underlying data for Figure ES-7 (page ES-22) was updated to reflect the proposed WMS and project. Note that due to the proportionally limited magnitude of change, the amendment has minimal visible impact on the figure. The amended figure is presented below.

Figure ES-7 – WMS Supply and Active Projects by Decade



A.4.2 Changes to Chapter 5 – Water Management Strategies

A.4.2.1 Addition to Table 5-3

Table 5-3 (pages 5-10 through 5-12) was revised to add the proposed WMS to the list of potentially feasible WMS and projects. The revised table is presented below, with the added information indicated with yellow shading.

Table 5-3 – Region H Potentially Feasible WMS and Projects

Conservation
Advanced Municipal Conservation and Water Loss Reduction
Irrigation Conservation
Conveyance
BWA Transmission Expansion
CHCRWA Transmission and Internal Distribution
City of Houston GRP Transmission
COH, NHCRWA, and CHCRWA Shared Transmission
CWA Transmission Expansion
East Texas Transfer
GCWA Industrial Raw Water Line
Lake Livingston to SJRA Transfer
LNVA Neches-Trinity Basin Interconnect
NFBWA Phase 2 Distribution Segments
NHCRWA Distribution Expansion
NHCRWA Transmission Lines
Southeast Transmission Line Improvements
Surfside Beach Supply Infrastructure
WHCRWA Distribution Expansion
WHCRWA/NFBWA Transmission Line
Groundwater Development
Aquifer Storage and Recovery
Brackish Groundwater Development and Groundwater Blending
BWA Brackish Groundwater Development
City of Houston Area 2 Groundwater Infrastructure
Expanded Use of Groundwater
Forestar Houston County Project
Forestar Liberty County Project
GCWA Backup Well Development
Groveton Groundwater Expansion
SJRA Catahoula Aquifer Supplies
Groundwater Reduction Plans
CHCRWA GRP
City of Houston GRP

City of Missouri City GRP
City of Richmond GRP
City of Rosenberg GRP
City of Sugar Land IWRP
Fort Bend County MUD 25 GRP
Fort Bend County WC&ID No. 2 GRP
Montgomery County MUDs 8 and 9 GRP
NFBWA GRP
NHCRWA GRP
Porter SUD Joint GRP
River Plantation and East Plantation Joint GRP
SJRA GRP
WHCRWA GRP

Reuse

City of Houston Reuse
City of Pearland Reuse
Galveston County Industrial Reuse
NFBWA Member District Reuse
NHCRWA Member District Reuse
San Jacinto Basin Regional Return Flows
Wastewater Reclamation for Industry
Wastewater Reclamation for Municipal Irrigation
Westwood Shores MUD Reuse

Surface Water Development

Allens Creek Reservoir
BRA System Operation Permit
Dow Reservoir and Pump Station Expansion
Freeport Seawater Desalination
Lake Somerville Augmentation
Lone Star Lake
Manvel Supply Expansion
NRG Cedar Bayou Desalination

Treatment

BWA Conventional Treatment Expansion
City of Houston Treatment Expansion
City of Houston West Water Purification Plant
GCWA Western Galveston County Treatment Expansion
Northeast Water Purification Plant Expansion
Pearland Surface Water Treatment Plant
SEWPP Additional Module

Other

Brazos Saltwater Barrier
GCWA Shannon Pump Station Expansion

LNVA Devers Pump Station Relocation
Municipal Drought Management
New and Expanded Contracts

A.4.2.2 Addition to Table 5-4

Table 5-4 (pages 5-15 through 5-17) was revised to add the proposed WMS and associated WMS Project to the summary of key WMS and project relationships. The revised table is presented below, with the added information indicated with yellow shading.

Table 5-4 – WMS and Key Project Relationships

Water Management Strategy*	WMS Project Name
Additional Supply from GCWA	WUG Infrastructure Expansion (WUG-level projects)
Brackish Groundwater Supplies	WUG Infrastructure Expansion (WUG-level projects)
Brazos Saltwater Barrier	Brazos Saltwater Barrier
CHCRWA GRP	CHCRWA Transmission and Internal Distribution
	COH, NHCRWA, and CHCRWA Shared Transmission
	Northeast Water Purification Plant Expansion
City of Houston Area 2 Groundwater Development	City of Houston Area 2 Groundwater Infrastructure
City of Houston GRP	Allens Creek Reservoir
	City of Houston GRP Transmission
	City of Houston West Water Purification Plant
	COH, NHCRWA, and CHCRWA Shared Transmission
	CWA Transmission Expansion
	Northeast Water Purification Plant Expansion
City of Houston Reuse	City of Houston Reuse
City of Pearland Reuse	City of Pearland Reuse
Dow Reservoir and Pump Station Expansion	BWA Transmission Expansion
	BWA Conventional Treatment Expansion
	Dow Reservoir and Pump Station Expansion
East Texas Transfer	East Texas Transfer
Expanded Use of Groundwater	Expanded Use of Groundwater (WUG-level projects)
Fort Bend MUD 25 GRP	Fort Bend County MUD 25 GRP
Fort Bend WC&ID 2 GRP	Fort Bend County WC&ID No. 2 GRP
Freeport Seawater Desalination	Freeport Seawater Desalination
Galveston County Industrial Reuse	Galveston County Industrial Reuse
GCWA Backup Wells	GCWA Backup Well Development
GCWA Galveston County Raw Water Expansion	GCWA Industrial Raw Water Line
	GCWA Shannon Pump Station Expansion
GCWA Galveston County Treated Water Expansion	GCWA Shannon Pump Station Expansion
	GCWA Western Galveston County Treatment Expansion
Groveton Groundwater Expansion	Groveton Groundwater Expansion
Industrial Supply Reallocation	WUG Infrastructure Expansion (WUG-level projects)
Irrigation Conservation	Irrigation Conservation
LNVA Devers Pump Station Relocation	LNVA Devers Pump Station Relocation

Water Management Strategy*	WMS Project Name
LNVA Neches-Trinity Basin Interconnect	LNVA Neches-Trinity Basin Interconnect
Manvel Supply Expansion	Manvel Supply Expansion
Missouri City GRP	City of Missouri City GRP
Montgomery County MUDs #8 and #9 GRP	Montgomery County MUDs #8 and #9 GRP
Municipal Conservation	Adv. Municipal Conservation (WUG-level projects)
New / Expanded Contract with BRA	Allens Creek Reservoir
New / Expanded Contract with BWA	BWA Brackish Groundwater Development
	BWA Transmission Expansion
	BWA Conventional Treatment Expansion
New / Expanded Contract with City of Houston	Northeast Water Purification Plant Expansion
New / Expanded Contract with GCWA	Allens Creek Reservoir
	GCWA Industrial Raw Water Line
	GCWA Shannon Pump Station Expansion
	GCWA Western Galveston County Treatment Expansion
New / Expanded Contract with LNVA	WUG Infrastructure Expansion (WUG-level projects)
New / Expanded Contract with SJRA	Lake Livingston to SJRA Transfer
	SJRA GRP
NFBWA GRP	City of Houston Reuse
	NFBWA Phase 2 Distribution Segments
	Northeast Water Purification Plant Expansion
	WHCRWA/NFBWA Transmission Line
NFBWA Member District Reuse	NFBWA Member District Reuse Infrastructure
NHCRWA GRP	City of Houston Reuse
	COH, NHCRWA, and CHCRWA Shared Transmission
	NHCRWA Distribution Expansion
	NHCRWA Transmission Lines
	Northeast Water Purification Plant Expansion
NHCRWA Member District Reuse	NHCRWA Member District Reuse Infrastructure
NRG Cedar Bayou Desalination	NRG Cedar Bayou Desalination
Other BRA System Operation Supplies	WUG Infrastructure Expansion (WUG-level projects)
Pearland SWTP	Pearland Surface Water Treatment Plant
Porter SUD Joint GRP	Porter SUD Joint GRP
Richmond GRP	Allens Creek Reservoir
	City of Richmond GRP
River Plantation and East Plantation Joint GRP	River Plantation and East Plantation Joint GRP
Rosenberg GRP	BWA Conventional Treatment Expansion
	City of Rosenberg GRP
SJRA Aquifer Storage and Recovery	SJRA Aquifer Storage and Recovery
SJRA Catahoula Aquifer Supplies	SJRA Catahoula Aquifer Supplies
SJRA GRP	Lake Livingston to SJRA Transfer
	SJRA GRP
SJRA Reuse Supplies for Manufacturing	WUG Infrastructure Expansion (WUG-level projects)
Southeast Transmission Line Expansion	SEWPP Additional Module
	Southeast Transmission Line Improvements

Water Management Strategy*	WMS Project Name
Sugar Land Advanced Demand Management	City of Sugar Land IWRP
Sugar Land IWRP	City of Sugar Land IWRP
Surfside Beach Supply Enhancement	Surfside Beach Supply Infrastructure
Wastewater Reclamation for Municipal Irrigation	Wastewater Reclamation for Municipal Irrigation
Water Loss Reduction	Water Loss Reduction (WUG-level projects)
Westwood Shores MUD Reuse	Westwood Shores MUD Reuse
WHCRWA GRP	City of Houston Reuse
	Northeast Water Purification Plant Expansion
	WHCRWA Distribution Expansion
	WHCRWA/NFBWA Transmission Line

**WMS and project names included in the TWDB Regional Planning database (DB22) may vary slightly from those shown in this summary table where necessary due to the DB22 data structure and to properly reflect project phasing and project type.*

A.4.2.3 Revisions to Section 5.5.3 Text

Section 5.5.3 summarizes key WMS and projects. The sixth paragraph of the section, on page 5-17, is revised to reflect the change in overall allocated WMS volume. Specific changes are indicated in yellow shading.

For many WUGs within the region, conservation and direct reuse projects are considered first-tier options for addressing projected needs; an assessment of need remaining (second-tier) after applying these project types but before applying other projects or WMS is included in Tables 5-A5 through 5-A7 in Appendix 5-A. The compilation of all recommended projects results in as much as 1,951,289 acre-feet per year for Region H. These allocations are detailed in Table 5-A8 in Appendix 5-A. A summary of water source supply balance after allocation of WMS supplies is shown in Table 5-A9 in Appendix 5-A. Table 5-5 below summarizes the key projects selected as part of recommended WMS along with their total potential yield, capital cost, and decade of implementation. These key projects represent substantial supply volumes, large expenditures, or important nodes in WMS supply relationships.

A.4.2.4 Addition to Table 5-5

Table 5-5 (pages 5-17 through 5-19) was revised to add the proposed project and associated details to the overview of key projects. The revised table is presented below, with the added information indicated with yellow shading.

Table 5-5 – Key Project Overview

Project	Potential Volume[1] (ac-ft)	Capital Cost ($)	Unit Cost ($/ac-ft)		Start Decade
			Start Decade	2070	
Conservation[2]					
Irrigation Conservation	93,562	$1,489,156	$133	$131	2020
Municipal Conservation (Advanced Conservation)	123,251	$2,211,236,519	$754	$591	2020
Municipal Conservation (Water Loss Reduction)	62,601	$891,822,048	$625	$578	2020
Conveyance					
BWA Transmission Expansion	26,211	$77,755,692	$248	$39	2030

Project	Potential Volume[1] (ac-ft)	Capital Cost ($)	Unit Cost ($/ac-ft)		Start Decade
			Start Decade	2070	
CHCRWA Transmission and Internal Distribution	5,466	$17,202,167	$238	$16	2030
City of Houston GRP Transmission	27,216	$31,986,905	$91	$8	2030
COH, NHCRWA, and CHCRWA Shared Transmission	154,575	$545,329,786	$282	$24	2030
CWA Transmission Expansion	349,785	$119,336,981	$43	$19	2040
East Texas Transfer	250,000	$458,840,377	$146	$17	2050
GCWA Industrial Raw Water Line	33,600	$45,110,104	$104	$9	2020
Lake Livingston to SJRA Transfer	50,000	$245,492,975	$437	$92	2050
LNVA Neches-Trinity Basin Interconnect	67,000	$103,316,000	$135	$27	2040
NFBWA Phase 2 Distribution Segments	62,496	$83,859,522	$104	$9	2030
NHCRWA Distribution Expansion	143,360	$919,703,916	$489	$44	2030
NHCRWA Transmission Lines	143,360	$327,910,960	$185	$24	2030
Southeast Transmission Line Improvements	39,928	$119,413,067	$229	$19	2030
Surfside Beach Supply Infrastructure	323	$1,900,440	$450	$36	2020
WHCRWA Distribution Expansion	92,288	$276,977,822	$237	$26	2030
WHCRWA/NFBWA Transmission Line	169,030	$1,310,701,901	$613	$67	2030
Groundwater Development					
Aquifer Storage and Recovery	9,426	$222,907,186	$2,551	$2,551	2070
Brackish Groundwater Development[3]	Varies	Varies by project	Varies by WUG	Varies by WUG	2020
BWA Brackish Groundwater Development	3,136	$33,246,167	$579	$370	2030
City of Houston Area 2 Groundwater Infrastructure	50,400	$122,751,076	$403	$222	2030
Expanded Use of Groundwater[3]	31,000+	Varies by WUG	Varies by WUG	Varies by WUG	2020
GCWA Backup Well Development	1,120	$1,346,492	$169	$84	2040
Groveton Groundwater Expansion	242	$2,211,952	$699	$56	2020
SJRA Catahoula Aquifer Supplies	10,500	$18,200,411	$479	$358	2040
Groundwater Reduction Plans					
CHCRWA GRP[4]	5,466	$0	$0	$0	2030
City of Houston GRP[4]	124,914	$0	$0	$0	2020
City of Missouri City GRP	25,760	$87,837,323	$405	$165	2030
City of Richmond GRP	7,178	$70,936,844	$1,108	$285	2020
City of Rosenberg GRP	3,920	$12,963,110	$261	$29	2030
City of Sugar Land IWRP	15,492	$133,134,039	$1,210	$390	2030
Fort Bend County MUD 25 GRP	1,120	$26,718,250	$2,541	$862	2030
Fort Bend County WC&ID No. 2 GRP	6,720	$63,535,966	$1,106	$440	2030
Montgomery County MUDs #8 and #9 GRP	2,240	$30,510,375	$1,875	$917	2020
NFBWA GRP[4]	62,496	$0	$0	$0	2030
NHCRWA GRP[4]	143,360	$0	$0	$0	2030
Porter SUD Joint GRP	2,240	$26,862,532	$1,542	$699	2020
River Plantation and East Plantation Joint GRP[5]	51	$0	$0	$0	2030
SJRA GRP	100,000	$998,910,850	$697	$340	2030

Project	Potential Volume[1] (ac-ft)	Capital Cost ($)	Unit Cost ($/ac-ft)		Start Decade
			Start Decade	2070	
WHCRWA GRP[4]	92,288	$0	$0	$0	2030
Reuse					
City of Houston Reuse	242,554	$555,093,731	$373	$139	2040
City of Pearland Reuse	1,154	$12,648,000	$913	$142	2030
Galveston County Industrial Reuse	22,400	$90,746,960	$564	$279	2030
NFBWA Member District Reuse	3,816	$46,640,088	$1,695	$835	2020
NHCRWA Member District Reuse	300	$4,295,775	$1,913	$905	2020
San Jacinto Basin Regional Return Flows[4]	119,673	$0	$0	$0	2020
Wastewater Reclamation for Municipal Irrigation	19,776	$181,028,437	$1,308	$896	2030
Westwood Shores MUD Reuse	150	$2,031,251	$1,921	$968	2020
Surface Water Development					
Allens Creek Reservoir	99,650	$365,446,301	$211	$39	2040
BRA System Operation Permit[4]	78,276	$0	$0	$0	2020
Dow Reservoir and Pump Station Expansion	80,000	350,000,000	$373	$66	2030
Freeport Seawater Desalination	11,200	155,877,822	$2,273	$1,293	2040
Manvel Supply Expansion	15,680	$269,052,608	$1,488	$309	2030
NRG Cedar Bayou Desalination	22,400	$342,840,391	$2,637	$1,560	2030
Treatment					
BWA Conventional Treatment Expansion	8,400	$19,085,165	$351	$191	2030
City of Houston Treatment Expansion[4]	89,396	$0	$0	$0	2040
City of Houston West Water Purification Plant	103,385	$959,257,534	$1,418	$407	2040
GCWA Western Galveston County Treatment Expansion	22,400	$167,919,105	$894	$367	2030
Northeast Water Purification Plant Expansion	448,000	$2,179,413,588	$615	$272	2030
Pearland Surface Water Treatment Plant	22,400	$232,787,093	$973	$242	2030
SEWPP Additional Module	22,400	$97,597,266	$497	$191	2030
Other Infrastructure					
Brazos Saltwater Barrier	10,000	$67,552,043	$517	$42	2040
GCWA Shannon Pump Station Expansion	162,400	$65,801,381	$35	$7	2030
LNVA Devers Pump Station Relocation	88,704	$17,570,019	$17	$4	2030

A.4.2.5 Revisions to Section 5.5.4 Text

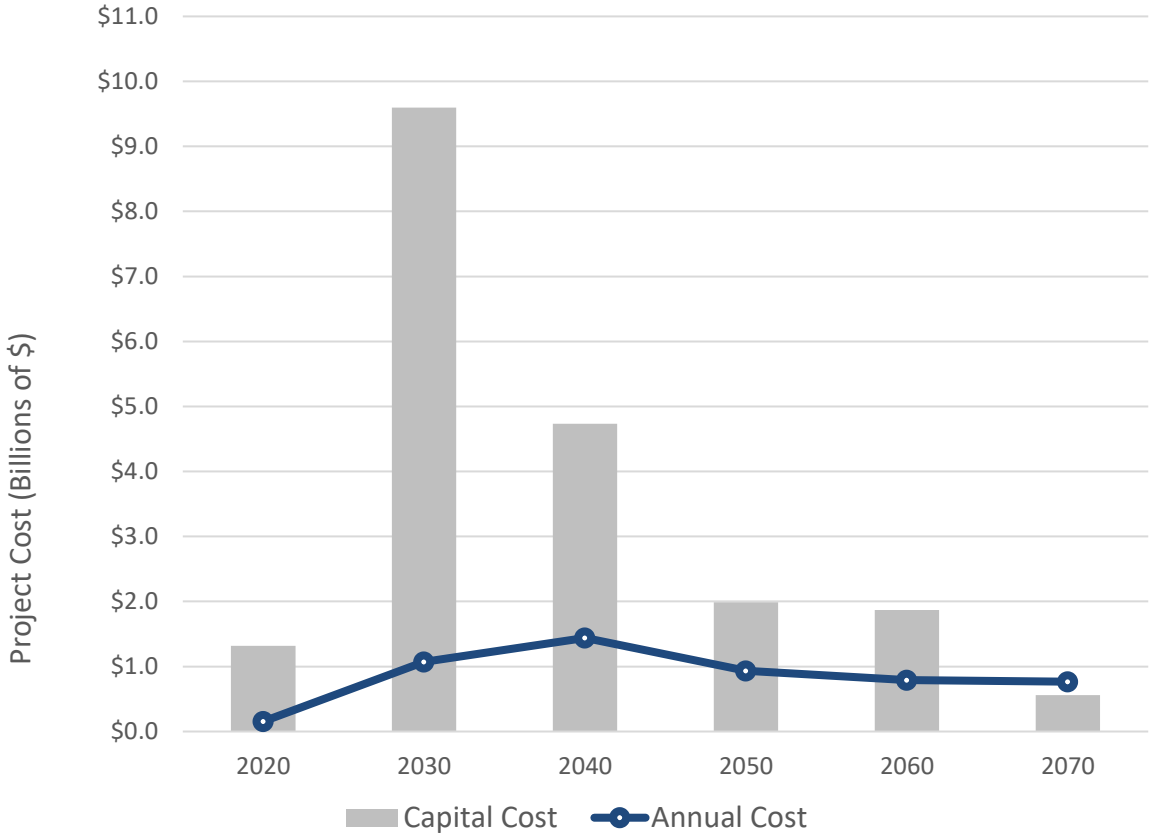
Section 5.5.4 summarizes WMS and project cost. The first paragraph of the section, on page 5-19, is revised to reflect the change in overall project cost. Specific changes are indicated in yellow shading.

The total capital costs identified for the 2021 Region H RWP total $20,068,973,262. These costs are distributed over the planning period as shown in Figure 5-2. Figure 5-2 also includes the annual costs anticipated over each decade of the plan. Detailed costs by project are shown in Table 5-A10 and Table 5-A11 in Appendix 5-A.

A.4.2.6 Revision of Data for Figure 5-2.

Underlying data for Figure 5-2 (page 5-20) was updated to reflect the proposed WMS and project. Note that due to the proportionally limited magnitude of change, the amendment has minimal visible impact on the figure. The amended figure is presented below.

Figure 5-2 – Region H Capital and Annual Costs



A.4.3 Changes to Chapter 6 – Impacts of the RWP

A.4.3.1 Addition to Table 6-1

Table 6-1 (pages 6-3 through 6-5) was revised to add the proposed WMS to the list of key recommended WMS and projects. The revised table is presented below, with the added information indicated with yellow shading.

Table 6 1 – Key Recommended Water Management Strategies and Projects

Conservation
Advanced Municipal Conservation
Irrigation Conservation
Water Loss Reduction
Conveyance
BWA Transmission Expansions

CHCRWA Transmission and Distribution Expansion
City of Houston GRP Transmission
COH, NHCRWA, and CHCRWA Shared Transmission
CWA Transmission Expansion
East Texas Transfer
GCWA Industrial Raw Water Line
Lake Livingston to SJRA Transfer
LNVA Neches-Trinity Basin Interconnect
NFBWA Phase 2 Distribution Segments
NHCRWA Distribution Expansion
NHCRWA Transmission Lines
Southeast Transmission Line Improvements
Surfside Beach Supply Infrastructure
WHCRWA Distribution Expansion
WHCRWA/NFBWA Transmission Line

Groundwater Development

Aquifer Storage and Recovery
Brackish Groundwater Development
BWA Brackish Groundwater Development
City of Houston Area 2 Groundwater Infrastructure
Expanded Use of Groundwater
GCWA Backup Well Development
Groveton Groundwater Expansion
SJRA Catahoula Aquifer Supplies

Groundwater Reduction Plans

CHCRWA GRP
City of Houston GRP
City of Missouri City GRP
City of Richmond GRP
City of Rosenberg GRP
City of Sugar Land IWRP
Fort Bend County MUD 25 GRP
Fort Bend County WC&ID No. 2 GRP
Montgomery County MUDs 8 and 9 GRP
NFBWA GRP
NHCRWA GRP
Porter SUD Joint GRP
River Plantation and East Plantation Joint GRP
SJRA GRP
WHCRWA GRP

Reuse

City of Houston Reuse
City of Pearland Reuse

Galveston County Industrial Reuse
NFBWA Member District Reuse
NHCRWA Member District Reuse
San Jacinto Basin Regional Return Flows
Wastewater Reclamation for Municipal Irrigation
Westwood Shores MUD Reuse
Surface Water Development
Allens Creek Reservoir
BRA System Operation Permit
Dow Reservoir and Pump Station Expansion
Freeport Seawater Desalination
Manvel Supply Expansion
NRG Cedar Bayou Desalination
Treatment
BWA Conventional Treatment Expansion
City of Houston Treatment Expansion
City of Houston West Water Purification Plant
GCWA Western Galveston County Treatment Expansion
Northeast Water Purification Plant Expansion
Pearland Surface Water Treatment Plant
SEWPP Additional Module
Other
Brazos Saltwater Barrier
GCWA Shannon Pump Station Expansion
LNVA Devers Pump Station Relocation

A.4.3.2 Addition to Section 6.1.1 Text

Section 6.1.1 summarizes impacts of WMS and projects on key parameters of water quality. The fifteenth paragraph of the section, on page 6-6, is revised to include the proposed WMS. Specific additions are indicated in yellow shading.

Conveyance and Treatment projects, including those related to Groundwater Reduction Plans (GRPs), Southeast Transmission Line Improvements, and the GCWA Shannon Pump Station Expansion are not expected to have any direct impact on the on key water quality parameters. However, they do facilitate the implementation of other projects that may have impacts. The development of Surfside Beach Supply Infrastructure will convey additional high-quality supplies, addressing current water quality limitations through blending. The LNVA Devers Pump Station Relocation will increase the capacity of an existing transfer to an agricultural canal system, and is not expected to have a direct impact on key water quality parameters.

A.4.4 Changes to Chapter 9 – Reporting of Financing Mechanisms for WMS

A.4.4.1 Addition to Table 9-1

Table 9-1 (pages 9-2 and 9-3) was revised to add the proposed project and associated details to the overview of key projects. The revised table is presented below, with the added information indicated with yellow shading.

Table 9-1 – Key Project Overview

Project	Potential Volume[1] (ac-ft)	Capital Cost ($)	Unit Cost ($/ac-ft)		Start Decade
			Start Decade	2070	
Conservation[2]					
Irrigation Conservation	93,562	$1,489,156	$133	$131	2020
Municipal Conservation (Advanced Conservation)	123,251	$2,211,236,519	$754	$591	2020
Municipal Conservation (Water Loss Reduction)	62,601	$891,822,048	$625	$578	2020
Conveyance					
BWA Transmission Expansion	26,211	$77,755,692	$248	$39	2030
CHCRWA Transmission and Internal Distribution	5,466	$17,202,167	$238	$16	2030
City of Houston GRP Transmission	27,216	$31,986,905	$91	$8	2030
COH, NHCRWA, and CHCRWA Shared Transmission	154,575	$545,329,786	$282	$24	2030
CWA Transmission Expansion	349,785	$119,336,981	$43	$19	2040
East Texas Transfer	250,000	$458,840,377	$146	$17	2050
GCWA Industrial Raw Water Line	33,600	$45,110,104	$104	$9	2020
Lake Livingston to SJRA Transfer	50,000	$245,492,975	$437	$92	2050
LNVA Neches-Trinity Basin Interconnect	67,000	$103,316,000	$135	$27	2040
NFBWA Phase 2 Distribution Segments	62,496	$83,859,522	$104	$9	2030
NHCRWA Distribution Expansion	143,360	$919,703,916	$489	$44	2030
NHCRWA Transmission Lines	143,360	$327,910,960	$185	$24	2030
Southeast Transmission Line Improvements	39,928	$119,413,067	$229	$19	2030
Surfside Beach Supply Infrastructure	323	$1,900,440	$450	$36	2020
WHCRWA Distribution Expansion	92,288	$276,977,822	$237	$26	2030
WHCRWA/NFBWA Transmission Line	169,030	$1,310,701,901	$613	$67	2030
Groundwater Development					
Aquifer Storage and Recovery	9,426	$222,907,186	$2,551	$2,551	2070
Brackish Groundwater Development[3]	Varies	Varies by project	Varies by WUG	Varies by WUG	2020
BWA Brackish Groundwater Development	3,136	$33,246,167	$579	$370	2030
City of Houston Area 2 Groundwater Infrastructure	50,400	$122,751,076	$403	$222	2030
Expanded Use of Groundwater[3]	31,000+	Varies by WUG	Varies by WUG	Varies by WUG	2020
GCWA Backup Well Development	1,120	$1,346,492	$169	$84	2040
Groveton Groundwater Expansion	242	$2,211,952	$699	$56	2020
SJRA Catahoula Aquifer Supplies	10,500	$18,200,411	$479	$358	2040
Groundwater Reduction Plans					

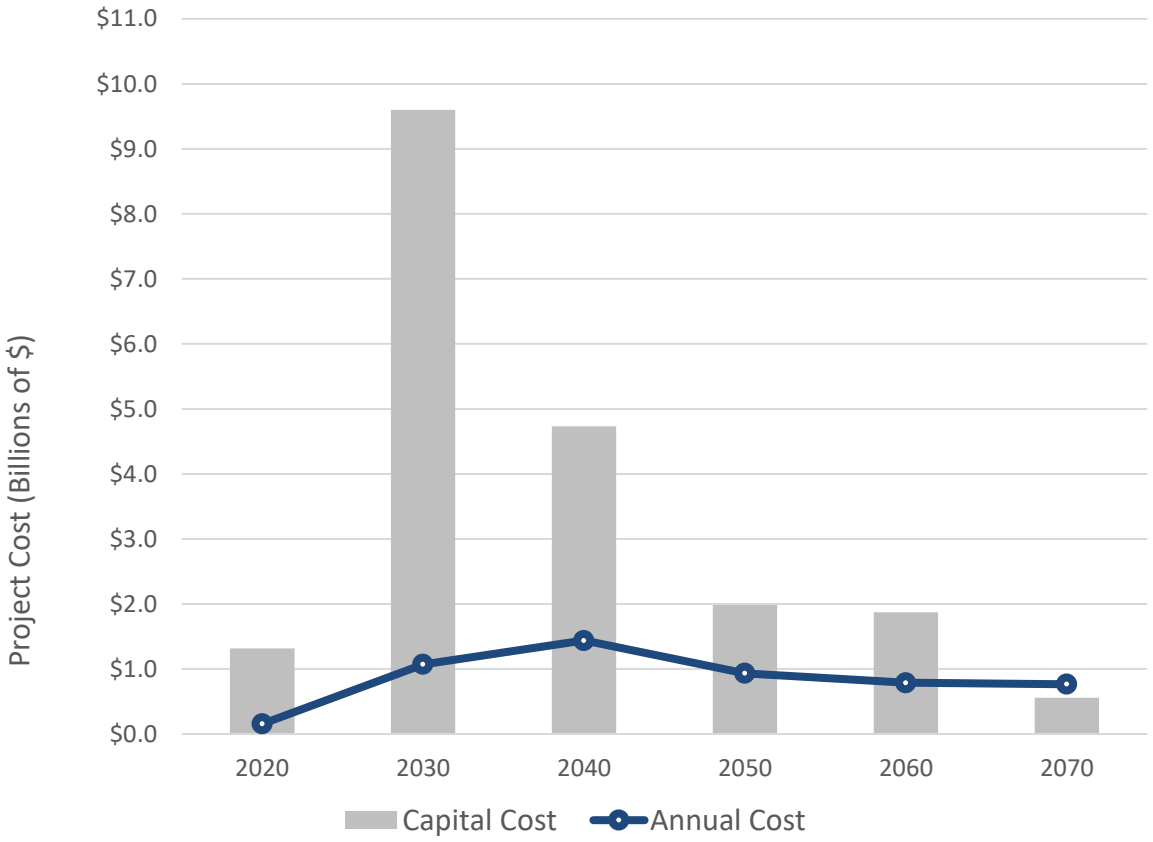
Project	Potential Volume[1] (ac-ft)	Capital Cost ($)	Unit Cost ($/ac-ft)		Start Decade
			Start Decade	2070	
CHCRWA GRP[4]	5,466	$0	$0	$0	2030
City of Houston GRP[4]	124,914	$0	$0	$0	2020
City of Missouri City GRP	25,760	$87,837,323	$405	$165	2030
City of Richmond GRP	7,178	$70,936,844	$1,108	$285	2020
City of Rosenberg GRP	3,920	$12,963,110	$261	$29	2030
City of Sugar Land IWRP	15,492	$133,134,039	$1,210	$390	2030
Fort Bend County MUD 25 GRP	1,120	$26,718,250	$2,541	$862	2030
Fort Bend County WC&ID No. 2 GRP	6,720	$63,535,966	$1,106	$440	2030
Montgomery County MUDs #8 and #9 GRP	2,240	$30,510,375	$1,875	$917	2020
NFBWA GRP[4]	62,496	$0	$0	$0	2030
NHCRWA GRP[4]	143,360	$0	$0	$0	2030
Porter SUD Joint GRP	2,240	$26,862,532	$1,542	$699	2020
River Plantation and East Plantation Joint GRP[5]	51	$0	$0	$0	2030
SJRA GRP	100,000	$998,910,850	$697	$340	2030
WHCRWA GRP[4]	92,288	$0	$0	$0	2030
Reuse					
City of Houston Reuse	242,554	$555,093,731	$373	$139	2040
City of Pearland Reuse	1,154	$12,648,000	$913	$142	2030
Galveston County Industrial Reuse	22,400	$90,746,960	$564	$279	2030
NFBWA Member District Reuse	3,816	$46,640,088	$1,695	$835	2020
NHCRWA Member District Reuse	300	$4,295,775	$1,913	$905	2020
San Jacinto Basin Regional Return Flows[4]	119,673	$0	$0	$0	2020
Wastewater Reclamation for Municipal Irrigation	19,776	$181,028,437	$1,308	$896	2030
Westwood Shores MUD Reuse	150	$2,031,251	$1,921	$968	2020
Surface Water Development					
Allens Creek Reservoir	99,650	$365,446,301	$211	$39	2040
BRA System Operation Permit[4]	78,276	$0	$0	$0	2020
Dow Reservoir and Pump Station Expansion	80,000	350,000,000	$373	$66	2030
Freeport Seawater Desalination	11,200	155,877,822	$2,273	$1,293	2040
Manvel Supply Expansion	15,680	$269,052,608	$1,488	$309	2030
NRG Cedar Bayou Desalination	22,400	$342,840,391	$2,637	$1,560	2030
Treatment					
BWA Conventional Treatment Expansion	8,400	$19,085,165	$351	$191	2030
City of Houston Treatment Expansion[4]	89,396	$0	$0	$0	2040
City of Houston West Water Purification Plant	103,385	$959,257,534	$1,418	$407	2040
GCWA Western Galveston County Treatment Expansion	22,400	$167,919,105	$894	$367	2030
Northeast Water Purification Plant Expansion	448,000	$2,179,413,588	$615	$272	2030
Pearland Surface Water Treatment Plant	22,400	$232,787,093	$973	$242	2030
SEWPP Additional Module	22,400	$97,597,266	$497	$191	2030
Other Infrastructure					

Project	Potential Volume[1] (ac-ft)	Capital Cost ($)	Unit Cost ($/ac-ft)		Start Decade
			Start Decade	2070	
Brazos Saltwater Barrier	10,000	$67,552,043	$517	$42	2040
GCWA Shannon Pump Station Expansion	162,400	$65,801,381	$35	$7	2030
LNVA Devers Pump Station Relocation	88,704	$17,570,019	$17	$4	2030

A.4.4.2 Revision of Data for Figure 9-1.

Underlying data for Figure 9-1 (page 9-4) was updated to reflect the proposed WMS and project. Note that due to the proportionally limited magnitude of change, the amendment has minimal visible impact on the figure. The amended figure is presented below.

Figure 9-1 – Region H Capital and Annual Costs



A.4.4.3 Revisions to Section 9.3 Text

Section 9.3 summarizes reporting of financing mechanisms for WMS. The second paragraph of the section, on page 9-5, is revised to reflect the additional project and presented below in italic text. Completed revisions are indicated in yellow shading, with potential locations of minor additional adjustments shown with blue shading.

Survey responses were returned by 23 sponsors (approximately 6.1 percent) of the 376 who received the survey. The surveys captured 78 projects and approximately $6.4 billion in identified capital

projects. Results demonstrated a need for approximately $819 million in State funding for project planning, design, permitting and acquisition costs and $4.7 billion for construction of projects. The total anticipated need for State funding totaled $5.5 billion, per the surveys. A tabular summary of the received surveys is included in ***Appendix 9-A***

A.4.5 Changes to Chapter 10 – Adoption of Plan and Public Participation

A.4.5.1 Addition of Section 10.4

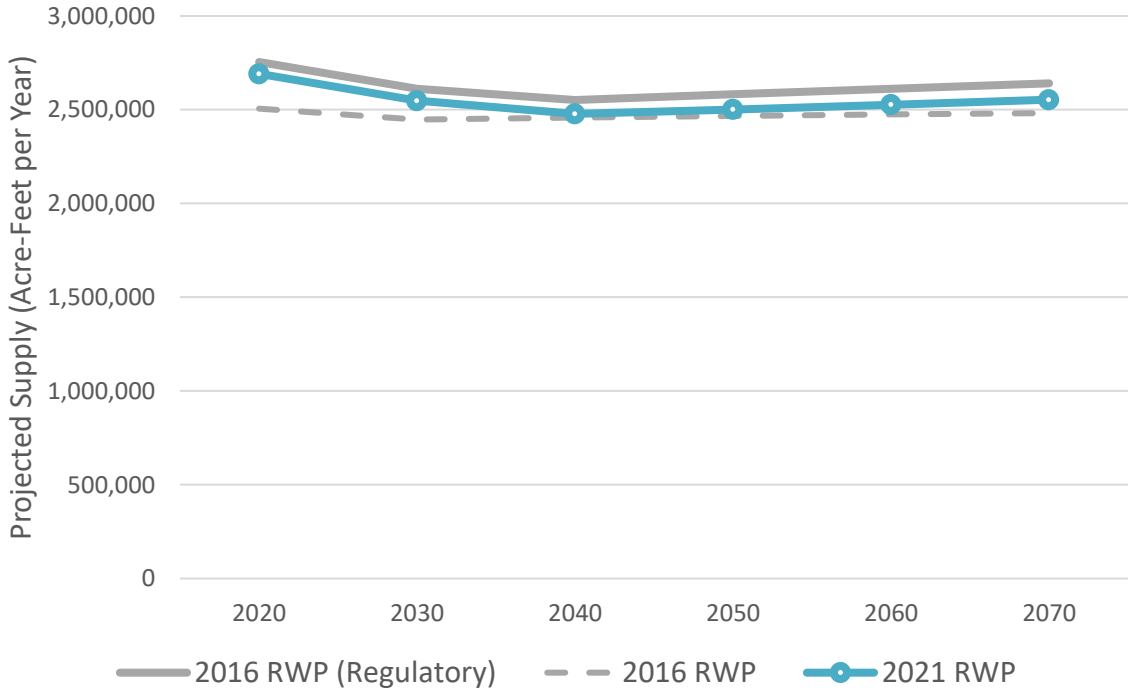
Upon determination of the category of the proposed amendment, associated public process, and subsequent adoption of the amendment to the 2021 Region H RWP, a new section, "Section 10.4: Amendment of the 2021 Regional Water Plan", will be added to pages 10-29 and 10-30 of Chapter 10. The new section will summarize the amendment request, dates of RWPG meetings and actions, the required public hearing process and public comment process, and amendment adoption.

A.4.6 Changes to Chapter 11 – Implementation and Comparison to Previous RWP

A.4.6.1 Revision of Data for Figure 11-10.

Underlying data for Figure 11-10 (page 11-15) was updated to reflect the change in allocated WMS supplies due to the proposed WMS and project. Note that due to the proportionally limited magnitude of change, the amendment has minimal visible impact on the figure. The amended figure is presented below.

Figure 11-10 – Comparison of WUG Allocations



A.4.6.2 Revisions to Section 11.3.4 Text

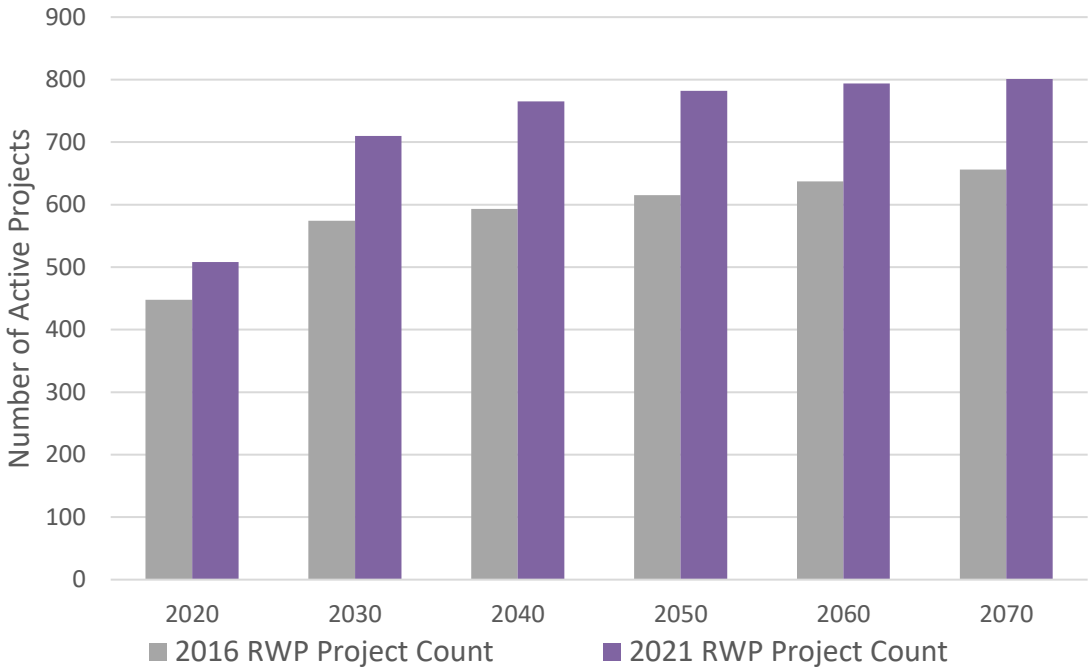
Section 11.3.4 compares the number of recommended and alternative WMS and projects in the 2021 RWP to the preceding 2016 RWP. The first paragraph of the section, on page 11-16, is revised to reflect the additional WMS and project and is presented below in italic text. Revisions are indicated in yellow shading.

In total, the RHWPG has recommended 61 WMS and 819 capital projects for the 2021 RWP, compared to 58 WMS and 656 capital projects identified in the 2016 RWP; the 2016 RWP included an additional 62 projects not associated with a capital cost. For purposes of this comparison, all components of a grouped WMS within TWDB's DB22 database are considered a single WMS. The number of capital projects identified in each RWP and actively associated with supply volumes in each decade are shown below in Figure 11-12.

A.4.6.3 Revision of Data for Figure 11-12.

Underlying data for Figure 11-12 (page 11-16) was updated to reflect the change in number of active recommended projects over time due to the proposed amendment. Note that due to the proportionally limited magnitude of change, the amendment has minimal visible impact on the figure. The amended figure is presented below.

Figure 11-12 – Comparison of Number of Active Projects

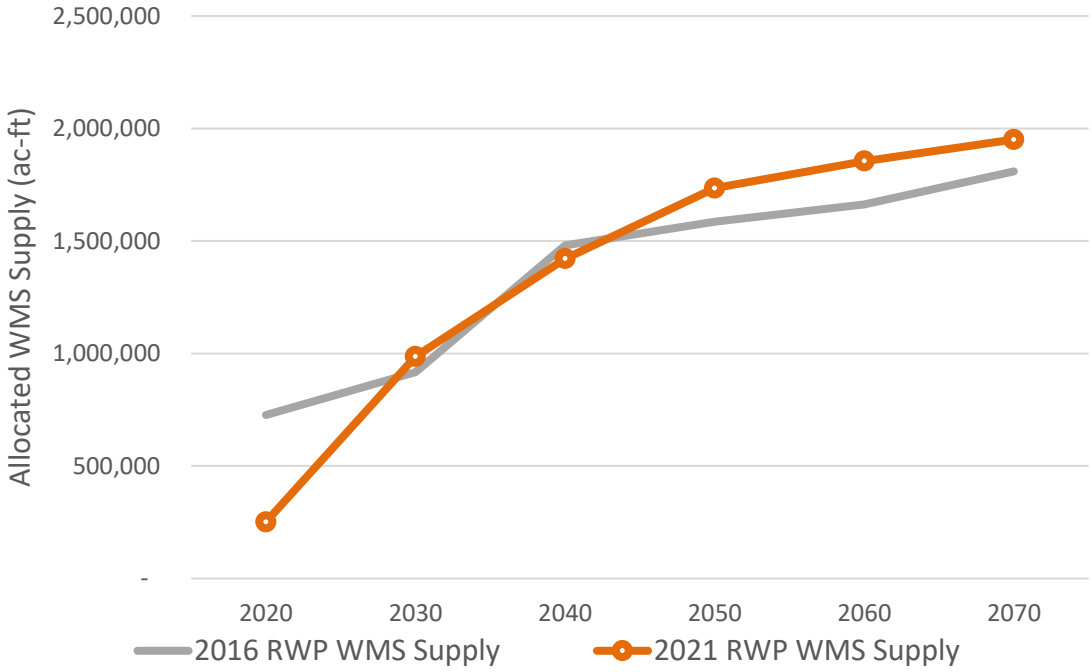


A.4.6.4 Revision of Data for Figure 11-13.

Underlying data for Figure 11-13 (page 11-17) was updated to reflect the change allocated WMS supply over time due to the proposed amendment. Note that due to the proportionally limited

magnitude of change, the amendment has minimal visible impact on the figure. The amended figure is presented below.

Figure 11-13 – Comparison of Allocated WMS Supply Volumes



A.4.6.5 Revisions to Section 11.4 Text

Section 11.4 compares the degree of regionalization of WMS and projects in the 2021 RWP to the preceding 2016 RWP. The second paragraph of the section, on page 11-17, is revised to reflect the additional WMS and project and is presented below in italic text. Revisions are indicated in yellow shading.

Regional strategies that meet the needs of multiple WUGs and achieve economies of scale are common in Region H. Several of the major water providers in Region H are Regional Water Authorities, which were created by the Texas Legislature to lead water planning and groundwater conversion efforts. Additionally, COH has developed important relationships with the regional water authorities and river authorities to coordinate interbasin transfers from the Trinity and Brazos River Basins to the largest demand centers in Region H. The Gulf Coast Water Authority also provides water to numerous municipal, agricultural, and industrial users in the southwestern part of Region H through the use of an extensive canal network, numerous supply sources, and planned projects for large-scale infrastructure. Many of these large-scale, cooperative strategies and projects have been prompted by the requirements of the FBSD and HGSD to significantly reduce groundwater use. The 2021 Region H RWP includes numerous strategies sponsored by these major water providers and other entities to develop long-term water supplies on a large geographic scale, sometimes including projects that span multiple counties and basins. Of the projects and strategies recommended in the 2021 RWP, 6 projects and 11 WMS involve multiple sponsors and/or wholesale water providers, and 28 recommended strategies would meet needs of multiple WUGs. These and other metrics of cooperative strategies in the 2021 RWP are compared to the 2016 RWP in Table 11-1. Overall, the number of strategies and

projects which are sponsored by multiple entities, use more than one water supply source, or serve supply to multiple WUGs have increased since the 2016 RWP. These results highlight the continued importance of regional approaches in Region H.

A.4.6.6 Revision of Data for Table 11-1.

Values in Table 11-1 (page 11-18) were updated to reflect the proposed WMS and project. The revised table is presented below, with the adjusted information indicated with yellow shading.

Table 11-1 – Assessment of Progress in Developing Regional Water Supplies and Strategies

Summary of Recommended WMS, Projects, and Providers in Region H	2016 RWP	2021 RWP
WMS[1] supplying multiple WUGs	24	28
WMS[1] with multiple sponsors / sellers	10	11
WMS[1] using multiple water sources	17	20
WMS[1] involving at least one transfer	32	43
Projects[2] with multiple sponsors	6	6
Region H wholesale water providers[3] serving multiple WUGs	40	51

[1] Excludes Municipal Conservation, Water Loss Reduction, and Expanded Use of Groundwater, which are employed on a localized, single-WUG basis.

[2] Limited to projects with non-zero capital costs that are required to implement WMS.

[3] Wholesale water providers here refer to any entity, which may or may not also qualify as a WUG, which sells water on a wholesale basis, including sales to non-municipal WUGs.

A.5 PROPOSED RWP MODIFICATIONS AND ADDITIONS TO VOLUME 2

A.5.1 Changes to Appendix 2-A – Major Water Provider Demand Summaries

Appendix 2-A to the 2021 RWP summarizes Major Water Provider (MWP) demands. The addition of the proposed WMS and project, and associated adjustment of existing supply allocations related to the project, result in changes to Table 2-A1 (MWP Water Demand by Use Category) and Table 2-A2 (MWP Water Demand Summary) in Appendix 2-A. Revisions to these tables are included in Attachment 1 to this report, with adjusted values indicated in yellow shading.

A.5.2 Changes to Appendix 3-D – Major Water Provider Supply Summaries

Appendix 3-D to the 2021 RWP summarizes MWP supplies. The addition of the proposed WMS and project results in changes to Table 3-D1 (MWP Water Supplies by Use Category) and Table 3-D2 (MWP Water Supply Summary) in Appendix 3-D. Revisions to these tables are included in Attachment 2 to this report, with adjusted values indicated in yellow shading.

A.5.3 Changes to Appendix 5-A – WMS Tables

Appendix 5-A to the 2021 RWP includes tables summarizing a number of key parameters related to WMS and projects. The addition of the proposed WMS and project results in changes to the following tables:

- Table 5-A3 – Scoring for Key Projects
- Table 5-A4 – Water Management Strategy and Project Relationships
- Table 5-A8 – Water Management Strategy Supply Allocations
- Table 5-A10 – Project Cost Summary (Sponsor-Level Data)
- Table 5-A11 – Project Cost Summary (Unit Cost)
- Table 5-A13 – WUG Management Supply Factors
- Table 5-A14 – MWP Management Supply Factors

Revised pages from these tables are included in Attachment 3 to this report, with added and adjusted values indicated in yellow shading.

A.5.4 Changes to Appendix 5-B – Project and WMS Technical Memoranda

A new project technical memorandum summarizing the proposed project is added to Appendix 5-B as Memorandum OTHR-005. The memorandum includes an overview of the project, supply development, environmental considerations, potential permitting and development requirements, cost analysis, strategy evaluation, and an assessment of WUG suitability. The memorandum is included in Attachment 4 to this report.

A.5.5 Changes to Appendix 6-B – Impacts to Resources

Appendix 6-B to the 2021 RWP summarizes impacts of WMS and projects on the agricultural, natural, and cultural resources of the region. The addition of the proposed WMS and project results in changes to Table 6-B-7 (Summary of Quantified Impacts to Agricultural, Natural, and Cultural Resources) Revisions to the table are included in Attachment 5 to this report, with added values indicated in yellow shading.

A.5.6 Changes to Appendix 9-A – Tabulated Survey Results

Appendix 9-A to the 2021 RWP tabulates results of the Infrastructure Finance Report survey distributed to sponsors of recommended projects in the Plan. The addition of the proposed WMS and project may necessitate adjustment of Table 9A-1 of Appendix 9-A to reflect the proposed project. The RWPG and project sponsor will coordinate with TWDB regarding procedures for Infrastructure Finance Report surveys for amendment and will update the appendix if appropriate.

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ATTACHMENT 1

REVISED APPENDIX 2-A TABLES

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Table 2-A1 – MWP Water Demand by Use Category

Major Water Provider	Category	MWP Demand* (ac-ft)					
		2020	2030	2040	2050	2060	2070
BRAZOS RIVER AUTHORITY	IRRIGATION	140	140	140	140	137	134
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	72,714	73,151	75,636	75,876	75,428	74,790
	MINING	0	0	0	0	0	0
	MUNICIPAL	72,739	72,372	72,157	74,104	77,647	83,783
	STEAM ELECTRIC POWER	83,000	83,000	83,000	83,000	83,000	83,000
BRAZOSPORT WATER AUTHORITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	1,120	1,120	1,120	1,120	1,120	1,120
	MINING	0	31	59	89	122	161
	MUNICIPAL	15,772	16,878	18,282	19,303	19,461	17,798
	STEAM ELECTRIC POWER	0	0	0	0	0	0
CHAMBERS-LIBERTY COUNTIES NAVIGATION DISTRICT	IRRIGATION	41,201	41,201	41,201	41,201	41,201	41,201
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	2,026	2,026	2,026	2,026	2,026	2,026
	STEAM ELECTRIC POWER	0	0	0	0	0	0
CLEAR LAKE CITY WATER AUTHORITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	1,792	1,792	1,792	1,792	1,792	1,792
	MINING	0	0	0	0	0	0
	MUNICIPAL	22,358	22,377	22,458	22,530	22,604	22,682
	STEAM ELECTRIC POWER	0	0	0	0	0	0
CONROE	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	17,145	21,163	23,032	24,796	26,741	28,837
	STEAM ELECTRIC POWER	0	0	0	0	0	0

Major Water Provider	Category	MWP Demand* (ac-ft)					
		2020	2030	2040	2050	2060	2070
DOW INC	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	164,424	164,092	163,760	163,428	163,096	162,764
	MINING	0	0	0	0	0	0
	MUNICIPAL	0	0	0	0	0	0
	STEAM ELECTRIC POWER	0	0	0	0	0	0
GALVESTON	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	16	16	16	16	16	16
	MINING	0	0	0	0	0	0
	MUNICIPAL	20,217	20,288	20,365	20,452	20,535	21,480
	STEAM ELECTRIC POWER	0	0	0	0	0	0
GULF COAST WATER AUTHORITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	104,076	112,913	113,213	113,210	113,232	113,261
	MINING	277	434	581	738	901	1,095
	MUNICIPAL	126,678	135,318	135,578	138,981	142,110	148,556
	STEAM ELECTRIC POWER	0	0	0	0	0	0
HOUSTON	IRRIGATION	26,874	26,874	26,874	26,874	26,874	26,874
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	370,945	371,223	371,223	370,653	370,653	370,653
	MINING	2,946	2,927	2,875	2,843	2,818	2,798
	MUNICIPAL	774,548	921,456	1,038,644	1,080,172	1,127,660	1,170,813
	STEAM ELECTRIC POWER	34,679	34,679	34,679	34,679	34,679	34,679
HUNTSVILLE	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	27,530	27,563	27,584	27,613	27,642	27,668
	STEAM ELECTRIC POWER	6,720	6,720	6,720	6,720	6,720	6,720

Major Water Provider	Category	MWP Demand* (ac-ft)					
		2020	2030	2040	2050	2060	2070
LEAGUE CITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	23,951	24,099	24,215	24,316	24,375	24,417
	STEAM ELECTRIC POWER	0	0	0	0	0	0
LOWER NECHES VALLEY AUTHORITY	IRRIGATION	89,673	89,673	89,673	89,673	89,673	89,673
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	70	76	83	89	95	103
	MUNICIPAL	7,083	7,373	7,698	8,031	8,406	8,790
	STEAM ELECTRIC POWER	0	0	0	0	0	0
MISSOURI CITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	11,726	15,501	15,920	16,159	17,450	18,567
	STEAM ELECTRIC POWER	0	0	0	0	0	0
NORTH FORT BEND WATER AUTHORITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	63,732	86,886	104,943	115,341	121,979	125,578
	STEAM ELECTRIC POWER	0	0	0	0	0	0
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	126,619	133,961	140,416	145,586	150,575	155,230
	STEAM ELECTRIC POWER	0	0	0	0	0	0

Major Water Provider	Category	MWP Demand* (ac-ft)					
		2020	2030	2040	2050	2060	2070
NRG	IRRIGATION	12,000	12,000	12,000	12,000	12,000	12,000
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	21,772	27,812	27,812	27,812	27,812	27,855
	MINING	0	58	110	167	228	306
	MUNICIPAL	0	0	0	0	0	0
	STEAM ELECTRIC POWER	136,456	136,432	136,408	136,383	136,359	136,335
PASADENA	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	5,040	5,040	5,040	5,040	5,040	5,040
	MINING	0	0	0	0	0	0
	MUNICIPAL	47,829	47,833	47,844	47,904	47,998	48,105
	STEAM ELECTRIC POWER	0	0	0	0	0	0
PEARLAND	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	22,773	23,626	24,856	26,219	27,732	29,197
	STEAM ELECTRIC POWER	0	0	0	0	0	0
SAN JACINTO RIVER AUTHORITY	IRRIGATION	1,733	1,733	1,733	1,733	1,733	1,733
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	71,397	83,927	83,927	83,927	83,927	83,927
	MINING	0	0	0	0	0	0
	MUNICIPAL	45,019	76,210	95,164	120,687	153,328	192,309
	STEAM ELECTRIC POWER	7,841	7,841	7,841	7,841	7,841	7,841
SUGAR LAND	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	647	647	647	647	647	647
	MINING	0	0	0	0	0	0
	MUNICIPAL	36,473	38,635	40,596	42,227	43,677	44,700
	STEAM ELECTRIC POWER	0	0	0	0	0	0

Major Water Provider	Category	MWP Demand* (ac-ft)					
		2020	2030	2040	2050	2060	2070
TEXAS CITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	609	609	609	609	609	609
	MINING	0	0	0	0	0	0
	MUNICIPAL	10,278	10,318	10,351	10,383	10,418	10,450
	STEAM ELECTRIC POWER	0	0	0	0	0	0
THE WOODLANDS	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	31,638	37,910	38,955	40,584	42,853	45,543
	STEAM ELECTRIC POWER	0	0	0	0	0	0
TRINITY RIVER AUTHORITY	IRRIGATION	27,620	27,620	27,620	27,620	27,620	27,620
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	32	32	32	32	32	32
	MUNICIPAL	282,363	282,363	282,363	282,363	282,363	282,363
	STEAM ELECTRIC POWER	6,720	6,720	6,720	6,720	6,720	6,720
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	79,404	78,637	84,982	89,482	91,089	92,568
	STEAM ELECTRIC POWER	0	0	0	0	0	0

**For this table, MWP water demand was calculated as the sum of MWP-associated existing supply allocations and recommended WMS allocations used to meet projected WUG need. Values shown include adjustment for reassignment of MWP-WUG existing supplies to other entities as part of recommended WMS to prevent double-counting of volume. The portion of recommended WMS allocations resulting in WUG-level surplus is excluded from this table. MWP demands as presented in this table are based on supply allocations rather than contractual obligations. Values represent projected MWP demands within Region H only and do not include demands associated with other regions.*

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Table 2-A2 – MWP Water Demand Summary

Major Water Provider	MWP Demand* (ac-ft)					
	2020	2030	2040	2050	2060	2070
BRAZOS RIVER AUTHORITY	228,593	228,663	230,933	233,120	236,212	241,707
BRAZOSPORT WATER AUTHORITY	16,892	18,029	19,461	20,512	20,703	19,079
CHAMBERS-LIBERTY COUNTIES NAVIGATION DISTRICT	43,227	43,227	43,227	43,227	43,227	43,227
CLEAR LAKE CITY WATER AUTHORITY	24,150	24,169	24,250	24,322	24,396	24,474
CONROE	17,145	21,163	23,032	24,796	26,741	28,837
DOW INC	164,424	164,092	163,760	163,428	163,096	162,764
GALVESTON	20,233	20,304	20,381	20,468	20,551	21,496
GULF COAST WATER AUTHORITY	231,031	248,665	249,372	252,929	256,243	262,912
HOUSTON	1,209,992	1,357,159	1,474,295	1,515,221	1,562,684	1,605,817
HUNTSVILLE	34,250	34,283	34,304	34,333	34,362	34,388
LEAGUE CITY	23,951	24,099	24,215	24,316	24,375	24,417
LOWER NECHES VALLEY AUTHORITY	96,826	97,122	97,454	97,793	98,174	98,566
MISSOURI CITY	11,726	15,501	15,920	16,159	17,450	18,567
NORTH FORT BEND WATER AUTHORITY	63,732	86,886	104,943	115,341	121,979	125,578
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	126,619	133,961	140,416	145,586	150,575	155,230
NRG	170,228	176,302	176,330	176,362	176,399	176,496
PASADENA	52,869	52,873	52,884	52,944	53,038	53,145
PEARLAND	22,773	23,626	24,856	26,219	27,732	29,197
SAN JACINTO RIVER AUTHORITY	125,990	169,711	188,665	214,188	246,829	285,810
SUGAR LAND	37,120	39,282	41,243	42,874	44,324	45,347
TEXAS CITY	10,887	10,927	10,960	10,992	11,027	11,059
THE WOODLANDS	31,638	37,910	38,955	40,584	42,853	45,543
TRINITY RIVER AUTHORITY	316,735	316,735	316,735	316,735	316,735	316,735
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	79,404	78,637	84,982	89,482	91,089	92,568

**For this table, MWP water demand was calculated as the sum of MWP-associated existing supply allocations and recommended WMS allocations used to meet projected WUG need. Values shown include adjustment for reassignment of MWP-WUG existing supplies to other entities as part of recommended WMS to prevent double-counting of volume. The portion of recommended WMS allocations resulting in WUG-level surplus is excluded from this table. MWP demands as presented in this table are based on supply allocations rather than contractual obligations. Values represent projected MWP demands within Region H only and do not include demands associated with other regions.*

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ATTACHMENT 2

REVISED APPENDIX 3-D TABLES

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Table 3-D1 – MWP Water Supplies by Use Category

Major Water Provider	Category	MWP Supply (ac-ft)*					
		2020	2030	2040	2050	2060	2070
BRAZOS RIVER AUTHORITY	IRRIGATION	140	140	140	140	137	134
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	72,714	73,151	73,373	73,608	73,148	72,497
	MINING	0	0	0	0	0	0
	MUNICIPAL	72,739	72,372	72,157	71,927	70,178	67,939
	STEAM ELECTRIC POWER	83,000	83,000	83,000	83,000	83,000	83,000
BRAZOSPORT WATER AUTHORITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	1,120	1,120	1,120	1,120	1,120	1,120
	MINING	0	0	0	0	0	0
	MUNICIPAL	15,772	15,772	15,772	15,772	15,772	15,772
	STEAM ELECTRIC POWER	0	0	0	0	0	0
CHAMBERS-LIBERTY COUNTIES NAVIGATION DISTRICT	IRRIGATION	41,201	41,201	41,201	41,201	41,201	41,201
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	2,026	2,026	2,026	2,026	2,026	2,026
	STEAM ELECTRIC POWER	0	0	0	0	0	0
CLEAR LAKE CITY WATER AUTHORITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	1,792	1,792	1,792	1,792	1,792	1,792
	MINING	0	0	0	0	0	0
	MUNICIPAL	22,358	22,377	22,458	22,530	22,604	22,682
	STEAM ELECTRIC POWER	0	0	0	0	0	0
CONROE	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	16,832	16,832	16,832	16,832	16,832	16,832
	STEAM ELECTRIC POWER	0	0	0	0	0	0

Major Water Provider	Category	MWP Supply (ac-ft)*					
		2020	2030	2040	2050	2060	2070
DOW INC	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	164,424	164,092	163,760	163,428	163,096	162,764
	MINING	0	0	0	0	0	0
	MUNICIPAL	0	0	0	0	0	0
	STEAM ELECTRIC POWER	0	0	0	0	0	0
GALVESTON	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	16	16	16	16	16	16
	MINING	0	0	0	0	0	0
	MUNICIPAL	20,217	20,288	20,365	20,452	20,535	20,625
	STEAM ELECTRIC POWER	0	0	0	0	0	0
GULF COAST WATER AUTHORITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	103,721	103,693	103,667	103,641	103,613	103,587
	MINING	0	0	0	0	0	0
	MUNICIPAL	123,869	123,822	123,778	123,730	123,680	123,630
	STEAM ELECTRIC POWER	0	0	0	0	0	0
HOUSTON	IRRIGATION	26,874	26,874	26,874	26,874	26,874	26,874
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	370,653	370,653	370,653	370,653	370,653	370,653
	MINING	0	0	0	0	0	0
	MUNICIPAL	769,969	720,112	688,000	691,965	696,540	701,340
	STEAM ELECTRIC POWER	29,711	29,711	29,711	29,711	29,711	29,711
HUNTSVILLE	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	27,530	27,563	27,584	27,613	27,642	27,668
	STEAM ELECTRIC POWER	6,720	6,720	6,720	6,720	6,720	6,720

Major Water Provider	Category	MWP Supply (ac-ft)*					
		2020	2030	2040	2050	2060	2070
LEAGUE CITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	23,951	24,099	24,215	24,316	24,375	24,417
	STEAM ELECTRIC POWER	0	0	0	0	0	0
LOWER NECHES VALLEY AUTHORITY	IRRIGATION	89,673	89,673	89,673	89,673	89,673	89,673
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	6,737	6,737	6,737	6,737	6,737	6,737
	STEAM ELECTRIC POWER	0	0	0	0	0	0
MISSOURI CITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	11,556	11,294	11,333	11,360	11,389	11,421
	STEAM ELECTRIC POWER	0	0	0	0	0	0
NORTH FORT BEND WATER AUTHORITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	63,732	53,956	60,760	64,917	67,136	68,269
	STEAM ELECTRIC POWER	0	0	0	0	0	0
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	122,956	87,499	62,014	63,022	64,003	64,923
	STEAM ELECTRIC POWER	0	0	0	0	0	0

Major Water Provider	Category	MWP Supply (ac-ft)*					
		2020	2030	2040	2050	2060	2070
NRG	IRRIGATION	12,000	12,000	12,000	12,000	12,000	12,000
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	0	0	0	0	0	0
	STEAM ELECTRIC POWER	131,488	131,464	131,440	131,415	131,391	131,367
PASADENA	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	5,040	5,040	5,040	5,040	5,040	5,040
	MINING	0	0	0	0	0	0
	MUNICIPAL	47,829	47,833	47,844	47,904	47,998	48,105
	STEAM ELECTRIC POWER	0	0	0	0	0	0
PEARLAND	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	22,773	23,626	24,856	26,219	27,732	29,197
	STEAM ELECTRIC POWER	0	0	0	0	0	0
SAN JACINTO RIVER AUTHORITY	IRRIGATION	1,733	1,733	1,733	1,733	1,733	1,733
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	63,701	62,457	61,395	60,626	61,450	62,454
	MINING	0	0	0	0	0	0
	MUNICIPAL	38,924	38,924	38,924	38,924	38,924	38,924
	STEAM ELECTRIC POWER	7,841	7,841	7,841	7,841	7,841	7,841
SUGAR LAND	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	647	647	647	647	647	647
	MINING	0	0	0	0	0	0
	MUNICIPAL	36,473	27,217	27,850	28,505	29,082	29,387
	STEAM ELECTRIC POWER	0	0	0	0	0	0

Major Water Provider	Category	MWP Supply (ac-ft)*					
		2020	2030	2040	2050	2060	2070
TEXAS CITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	609	609	609	609	609	609
	MINING	0	0	0	0	0	0
	MUNICIPAL	10,278	10,318	10,351	10,383	10,418	10,450
	STEAM ELECTRIC POWER	0	0	0	0	0	0
THE WOODLANDS	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	29,921	28,871	28,115	28,171	28,214	28,246
	STEAM ELECTRIC POWER	0	0	0	0	0	0
TRINITY RIVER AUTHORITY	IRRIGATION	27,620	27,620	27,620	27,620	27,620	27,620
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	32	32	32	32	32	32
	MUNICIPAL	282,363	282,363	282,363	282,363	282,363	282,363
	STEAM ELECTRIC POWER	6,720	6,720	6,720	6,720	6,720	6,720
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	IRRIGATION	0	0	0	0	0	0
	LIVESTOCK	0	0	0	0	0	0
	MANUFACTURING	0	0	0	0	0	0
	MINING	0	0	0	0	0	0
	MUNICIPAL	79,404	58,634	44,891	45,786	46,103	46,400
	STEAM ELECTRIC POWER	0	0	0	0	0	0

** The values in this table reflect the sum of MWP municipal self-supply as well as transfers to other entities. Existing but currently unutilized volumes are therefore not shown in the table. Values represent MWP supplies to entities within Region H only and do not include supplies for other regions.*

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Table 3-D2 – MWP Water Supply Summary

Major Water Provider	MWP Supply (ac-ft)*					
	2020	2030	2040	2050	2060	2070
BRAZOS RIVER AUTHORITY	228,593	228,663	228,670	228,675	226,463	223,570
BRAZOSPORT WATER AUTHORITY	16,892	16,892	16,892	16,892	16,892	16,892
CHAMBERS-LIBERTY COUNTIES NAVIGATION DISTRICT	43,227	43,227	43,227	43,227	43,227	43,227
CLEAR LAKE CITY WATER AUTHORITY	24,150	24,169	24,250	24,322	24,396	24,474
CONROE	16,832	16,832	16,832	16,832	16,832	16,832
DOW INC	164,424	164,092	163,760	163,428	163,096	162,764
GALVESTON	20,233	20,304	20,381	20,468	20,551	20,641
GULF COAST WATER AUTHORITY	227,590	227,515	227,445	227,371	227,293	227,217
HOUSTON	1,197,207	1,147,350	1,115,238	1,119,203	1,123,778	1,128,578
HUNTSVILLE	34,250	34,283	34,304	34,333	34,362	34,388
LEAGUE CITY	23,951	24,099	24,215	24,316	24,375	24,417
LOWER NECHES VALLEY AUTHORITY	96,410	96,410	96,410	96,410	96,410	96,410
MISSOURI CITY	11,556	11,294	11,333	11,360	11,389	11,421
NORTH FORT BEND WATER AUTHORITY	63,732	53,956	60,760	64,917	67,136	68,269
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	122,956	87,499	62,014	63,022	64,003	64,923
NRG	143,488	143,464	143,440	143,415	143,391	143,367
PASADENA	52,869	52,873	52,884	52,944	53,038	53,145
PEARLAND	22,773	23,626	24,856	26,219	27,732	29,197
SAN JACINTO RIVER AUTHORITY	112,199	110,955	109,893	109,124	109,948	110,952
SUGAR LAND	37,120	27,864	28,497	29,152	29,729	30,034
TEXAS CITY	10,887	10,927	10,960	10,992	11,027	11,059
THE WOODLANDS	29,921	28,871	28,115	28,171	28,214	28,246
TRINITY RIVER AUTHORITY	316,735	316,735	316,735	316,735	316,735	316,735
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	79,404	58,634	44,891	45,786	46,103	46,400

** The values in this table reflect the sum of MWP municipal self-supply as well as transfers to other entities. Existing but currently unutilized volumes are therefore not shown in the table. Values represent MWP supplies to entities within Region H only and do not include supplies for other regions.*

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ATTACHMENT 3

REVISED APPENDIX 5-A TABLES

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REVISED EXTERPT FROM TABLE 5-A3
SCORING FOR KEY PROJECTS

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WMS Project		Cost	Location	Water Quality	Environmental Land & Habitat	Impacts on Environmental Flows	Local Preference	Institutional Constraints / Risk of Implementability	Development Timeline	Sponsorship	Vulnerability	Impacts on Other WMS
REUS-007	Wastewater Reclamation for Industry	2	4	4	4	2	3	3	4	3	4	2
REUS-008	Wastewater Reclamation for Municipal Irrigation	1	5	3	5	2	3	3	5	3	5	3
REUS-009	Westwood Shores MUD Reuse	1	5	3	4	3	3	3	5	5	5	3
Surface Water Development												
SWDV-001	Allens Creek Reservoir	5	5	3	4	3	4	4	4	4	2	5
SWDV-002	BRA System Operation Permit	5	4	3	3	2	2	2	5	5	5	3
SWDV-003	Dow Reservoir and Pump Station Expansion	4	5	4	4	2	5	4	5	5	3	4
SWDV-004	Freeport Seawater Desalination	1	3	3	3	3	3	3	4	2	3	3
SWDV-005	Lake Somerville Augmentation	2	4	3	3	2	3	3	4	3	4	4
SWDV-006	Lone Star Lake	2	5	4	1	2	3	2	2	2	2	3
SWDV-007	Manvel Supply Expansion	1	5	3	3	2	4	4	4	4	3	3
SWDV-008	NRG Cedar Bayou Desalination	1	3	3	3	2	3	3	5	3	3	3
Treatment												
TRET-001	BWA Conventional Treatment Expansion	4	3	3	5	3	4	3	5	5	4	5
TRET-002	City of Houston Treatment Expansion	5	3	3	4	3	3	3	5	3	4	5
TRET-003	City of Houston West Water Purification Plant	1	5	3	3	3	3	2	4	3	4	5
TRET-004	GCWA Western Galveston County Treatment Expansion	2	3	3	3	3	3	2	5	3	4	5
TRET-005	Northeast Water Purification Plant Expansion	2	3	3	4	3	5	5	4	5	4	5
TRET-006	Pearland Surface Water Treatment Plant	2	4	3	4	3	4	3	5	4	5	3
TRET-007	SEWPP Additional Module	4	3	3	4	3	3	3	5	4	4	5
Other												
OTHR-001	Brazos Saltwater Barrier	3	5	5	2	2	4	2	4	3	3	5
OTHR-002	GCWA Shannon Pump Station Expansion	5	5	3	3	2	3	5	5	5	3	5
OTHR-003	Municipal Drought Management	1	5	3	5	3	2	5	5	3	5	2
OTHR-004	New and Expanded Contracts	5	4	3	5	2	3	5	5	3	5	5
OTHR-005	LNVA Devers Pump Station Relocation	5	5	3	3	3	3	5	5	5	3	5

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REVISED EXTERPT FROM TABLE 5-A4
WATER MANAGEMENT STRATEGY AND PROJECT RELATIONSHIPS

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Project	Project Type	Associated WMS
GCWA SHANNON PUMP STATION EXPANSION	WMS	GCWA GALVESTON COUNTY RAW WATER EXPANSION
		GCWA GALVESTON COUNTY TREATED WATER EXPANSION
		NEW / EXPANDED CONTRACT WITH GCWA
GCWA WESTERN GALVESTON COUNTY TREATMENT EXPANSION	WMS	GCWA GALVESTON COUNTY TREATED WATER EXPANSION
		NEW / EXPANDED CONTRACT WITH GCWA
GROVETON WELL DEVELOPMENT	WMS	GROVETON GROUNDWATER EXPANSION
IRRIGATION CONSERVATION, AUSTIN COUNTY	WUG	IRRIGATION CONSERVATION
IRRIGATION CONSERVATION, BRAZORIA COUNTY	WUG	IRRIGATION CONSERVATION
IRRIGATION CONSERVATION, CHAMBERS COUNTY	WUG	IRRIGATION CONSERVATION
IRRIGATION CONSERVATION, FORT BEND COUNTY	WUG	IRRIGATION CONSERVATION
IRRIGATION CONSERVATION, GALVESTON COUNTY	WUG	IRRIGATION CONSERVATION
IRRIGATION CONSERVATION, HARRIS COUNTY	WUG	IRRIGATION CONSERVATION
IRRIGATION CONSERVATION, LIBERTY COUNTY	WUG	IRRIGATION CONSERVATION
IRRIGATION CONSERVATION, WALLER COUNTY	WUG	IRRIGATION CONSERVATION
LAKE LIVINGSTON TO SJRA TRANSFER	WMS	NEW / EXPANDED CONTRACT WITH SJRA
		SJRA GRP
LNVA DEVERS PUMP STATION RELOCATION	WMS	LNVA DEVERS PUMP STATION RELOCATION
LNVA NECHES-TRINITY BASIN INTERCONNECT	WMS	LNVA NECHES-TRINITY BASIN INTERCONNECT
MANVEL SUPPLY EXPANSION - GROUNDWATER DEVELOPMENT	WMS	MANVEL SUPPLY EXPANSION
MANVEL SUPPLY EXPANSION - MUSTANG BAYOU RIGHT AND STORAGE	WMS	MANVEL SUPPLY EXPANSION
MANVEL SUPPLY EXPANSION - TREATMENT AND TRANSMISSION EXPANSION	WMS	MANVEL SUPPLY EXPANSION
MISSOURI CITY GRP INFRASTRUCTURE	WMS	MISSOURI CITY GRP
MONTGOMERY COUNTY MUDS 8 AND 9 GRP INFRASTRUCTURE	WMS	MONTGOMERY COUNTY MUDS 8 AND 9 GRP
MUNICIPAL CONSERVATION, ALVIN	WUG	MUNICIPAL CONSERVATION
MUNICIPAL CONSERVATION, ANAHUAC	WUG	MUNICIPAL CONSERVATION
MUNICIPAL CONSERVATION, ANGLETON	WUG	MUNICIPAL CONSERVATION
MUNICIPAL CONSERVATION, AUSTIN COUNTY WSC	WUG	MUNICIPAL CONSERVATION
MUNICIPAL CONSERVATION, BACLIFF MUD	WUG	MUNICIPAL CONSERVATION
MUNICIPAL CONSERVATION, BAKER ROAD MUD	WUG	MUNICIPAL CONSERVATION

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WATER MANAGEMENT STRATEGY SUPPLY ALLOCATIONS

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Water User Group	Water Management Strategy[1]	Seller	Supply Source	Allocated Supply Volume (ac-ft)					
				2020	2030	2040	2050	2060	2070
HOUSTON	CITY OF HOUSTON AREA 2 GROUNDWATER DEVELOPMENT	N/A	GULF COAST AQUIFER SYSTEM, HARRIS	0	36,234	39,259	42,619	46,372	50,376
	CITY OF HOUSTON GRP	N/A	ALLENS CREEK LAKE/RESERVOIR	0	0	34,875	34,875	69,750	69,750
			GULF COAST AQUIFER SYSTEM, HARRIS	0	0	4,060	4,060	4,059	4,059
			LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	0	5,036	5,043	5,045	5,046	5,047
			SAN JACINTO REGIONAL RETURN FLOWS	0	1,094	1,797	1,797	1,797	1,797
	CITY OF HOUSTON REUSE	N/A	SAN JACINTO COH REUSE	0	0	195,085	183,938	192,105	193,657
	EAST TEXAS TRANSFER	SABINE RIVER AUTHORITY	TOLEDO BEND LAKE/RESERVOIR	0	0	0	250,000	250,000	250,000
	MUNICIPAL CONSERVATION	N/A	MUNICIPAL CONSERVATION	11,745	19,117	22,886	27,709	30,664	35,985
	SOUTHEAST TRANSMISSION LINE EXPANSION	N/A	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	0	15,758	15,758	15,758	15,758	15,758
	WATER LOSS REDUCTION	N/A	WATER LOSS REDUCTION	4,080	12,326	20,673	29,252	38,172	47,390
HUMBLE	MUNICIPAL CONSERVATION	N/A	MUNICIPAL CONSERVATION	79	161	215	262	304	344
HUNTSVILLE	MUNICIPAL CONSERVATION	N/A	MUNICIPAL CONSERVATION	210	331	384	435	490	546
	WATER LOSS REDUCTION	N/A	WATER LOSS REDUCTION	49	145	232	237	242	246
IRRIGATION, AUSTIN	IRRIGATION CONSERVATION	N/A	IRRIGATION CONSERVATION	2,993	2,993	2,993	2,993	2,993	2,993
IRRIGATION, BRAZORIA	IRRIGATION CONSERVATION	N/A	IRRIGATION CONSERVATION	21,517	21,517	21,517	21,517	21,517	21,517
IRRIGATION, CHAMBERS	IRRIGATION CONSERVATION	N/A	IRRIGATION CONSERVATION	29,891	29,891	29,891	29,891	29,891	29,891
	LNVA DEVERS PUMP STATION RELOCATION	LOWER NECHES VALLEY AUTHORITY	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	0	5,052	5,052	5,052	5,052	5,052
	LNVA NECHES-TRINITY BASIN INTERCONNECT	LOWER NECHES VALLEY AUTHORITY	SAM RAYBURN-STEINHAGEN LAKE/RESERVOIR SYSTEM	0	0	33,500	33,500	33,500	33,500
IRRIGATION, FORT BEND	IRRIGATION CONSERVATION	N/A	IRRIGATION CONSERVATION	5,745	5,745	5,745	5,745	5,745	5,745
	RICHMOND GRP	RICHMOND	GULF COAST AQUIFER SYSTEM, FORT BEND	0	17	17	17	17	17
IRRIGATION, GALVESTON	IRRIGATION CONSERVATION	N/A	IRRIGATION CONSERVATION	2,062	2,062	2,062	2,062	2,062	2,062
IRRIGATION, HARRIS	IRRIGATION CONSERVATION	N/A	IRRIGATION CONSERVATION	39	39	39	39	39	39
IRRIGATION, LIBERTY	EXPANDED USE OF GROUNDWATER, LIBERTY	N/A	GULF COAST AQUIFER SYSTEM, LIBERTY	4,650	4,650	4,650	4,650	4,650	4,650
	IRRIGATION CONSERVATION	N/A	IRRIGATION CONSERVATION	23,035	23,035	23,035	23,035	23,035	23,035
	LNVA DEVERS PUMP STATION RELOCATION	LOWER NECHES VALLEY AUTHORITY	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	0	3,369	3,369	3,369	3,369	3,369
			TRINITY RUN-OF-RIVER, LIBERTY	0	665	665	665	665	665
	LNVA NECHES-TRINITY BASIN INTERCONNECT	LOWER NECHES VALLEY AUTHORITY	SAM RAYBURN-STEINHAGEN LAKE/RESERVOIR SYSTEM	0	0	33,500	33,500	33,500	33,500

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PROJECT COST SUMMARY (SPONSOR-LEVEL DATA)

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Project Name	Proj. Level	Sponsor	Capital Cost ($)	Annual Cost ($/year)					
				2020	2030	2040	2050	2060	2070
DOW RESERVOIR AND PUMP STATION EXPANSION	WMS	BRAZOSPORT WATER AUTHORITY	$350,000,000	$0	$29,876,377	$29,876,377	$5,250,000	$5,250,000	$5,250,000
		DOW INC	$0	$0	$0	$0	$0	$0	$0
EAST TEXAS TRANSFER	WMS	HOUSTON	$458,840,377	$0	$0	$0	$36,553,468	$36,553,468	$4,268,965
		LOWER NECHES VALLEY AUTHORITY	$0	$0	$0	$0	$0	$0	$0
		SABINE RIVER AUTHORITY	$0	$0	$0	$0	$0	$0	$0
FORT BEND MUD 25 GRP INFRASTRUCTURE	WMS	FORT BEND COUNTY MUD 25	$26,718,250	$0	$2,845,442	$2,845,442	$965,517	$965,517	$965,517
FORT BEND WCID 2 GRP INFRASTRUCTURE - PHASE 1	WMS	FORT BEND COUNTY WCID 2	$31,767,983	$0	$3,714,803	$3,714,803	$1,479,574	$1,479,574	$1,479,574
FORT BEND WCID 2 GRP INFRASTRUCTURE - PHASE 2	WMS	FORT BEND COUNTY WCID 2	$31,767,983	$0	$0	$3,714,803	$3,714,803	$1,479,574	$1,479,574
FREEPORT SEAWATER DESALINATION	WMS	DOW INC	$155,877,822	$0	$0	$25,452,781	$25,452,781	$14,485,050	$14,485,050
GALVESTON COUNTY INDUSTRIAL REUSE INFRASTRUCTURE	WMS	GULF COAST WATER AUTHORITY	$90,746,960	$0	$12,631,630	$12,631,630	$6,246,577	$6,246,577	$6,246,577
GCWA BACKUP WELL DEVELOPMENT	WMS	GULF COAST WATER AUTHORITY	$1,346,492	$0	$0	$188,849	$188,849	$0	$0
GCWA INDUSTRIAL RAW WATER LINE	WMS	GULF COAST WATER AUTHORITY	$45,110,104	$3,490,917	$3,490,917	$316,921	$316,921	$316,921	$316,921
GCWA SHANNON PUMP STATION EXPANSION	WMS	GULF COAST WATER AUTHORITY	$65,801,381	$0	$5,732,960	$5,732,960	$1,103,104	$1,103,104	$1,103,104
GCWA WESTERN GALVESTON COUNTY TREATMENT EXPANSION	WMS	GULF COAST WATER AUTHORITY	$167,919,105	$0	$20,026,650	$20,026,650	$8,211,681	$8,211,681	$8,211,681
GROVETON WELL DEVELOPMENT	WMS	GROVETON	$2,211,952	$169,182	$169,182	$13,547	$13,547	$13,547	$13,547
IRRIGATION CONSERVATION, AUSTIN COUNTY	WUG	IRRIGATION, AUSTIN	$43,758	$399,558	$399,558	$396,480	$396,480	$396,480	$396,480
IRRIGATION CONSERVATION, BRAZORIA COUNTY	WUG	IRRIGATION, BRAZORIA	$358,717	$2,841,889	$2,841,889	$2,816,649	$2,816,649	$2,816,649	$2,816,649
IRRIGATION CONSERVATION, CHAMBERS COUNTY	WUG	IRRIGATION, CHAMBERS	$457,755	$3,976,181	$3,976,181	$3,943,972	$3,943,972	$3,943,972	$3,943,972
IRRIGATION CONSERVATION, FORT BEND COUNTY	WUG	IRRIGATION, FORT BEND	$92,166	$761,425	$761,425	$754,940	$754,940	$754,940	$754,940
IRRIGATION CONSERVATION, GALVESTON COUNTY	WUG	IRRIGATION, GALVESTON	$30,154	$275,303	$275,303	$273,182	$273,182	$273,182	$273,182
IRRIGATION CONSERVATION, HARRIS COUNTY	WUG	IRRIGATION, HARRIS	$570	$5,213	$5,213	$5,173	$5,173	$5,173	$5,173
IRRIGATION CONSERVATION, LIBERTY COUNTY	WUG	IRRIGATION, LIBERTY	$352,849	$3,064,003	$3,064,003	$3,039,177	$3,039,177	$3,039,177	$3,039,177
IRRIGATION CONSERVATION, WALLER COUNTY	WUG	IRRIGATION, WALLER	$153,186	$1,083,199	$1,083,199	$1,072,421	$1,072,421	$1,072,421	$1,072,421
LAKE LIVINGSTON TO SJRA TRANSFER	WMS	SAN JACINTO RIVER AUTHORITY	$245,492,975	$0	$0	$0	$21,855,114	$21,855,114	$4,581,964
LNVA DEVERS PUMP STATION RELOCATION	WMS	LOWER NECHES VALLEY AUTHORITY	$17,570,019	$0	$1,552,293	$1,552,293	$316,048	$316,048	$316,048
LNVA NECHES-TRINITY BASIN INTERCONNECT	WMS	LOWER NECHES VALLEY AUTHORITY	$103,316,000	$0	$0	$9,066,000	$9,066,000	$1,797,000	$1,797,000
MANVEL SUPPLY EXPANSION - GROUNDWATER DEVELOPMENT	WMS	MANVEL	$1,559,906	$157,751	$157,751	$0	$0	$0	$0

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PROJECT COST SUMMARY (UNIT COST)

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Project Name	Proj. Level	Unit Cost ($/ac-ft)					
		2020	2030	2040	2050	2060	2070
GCWA WESTERN GALVESTON COUNTY TREATMENT EXPANSION	WMS	$0	$894	$894	$367	$367	$367
GROVETON WELL DEVELOPMENT	WMS	$699	$699	$56	$56	$56	$56
LAKE LIVINGSTON TO SJRA TRANSFER	WMS	$0	$0	$0	$437	$437	$92
LNVA DEVERS PUMP STATION RELOCATION	WMS	$0	$17	$17	$4	$4	$4
LNVA NECHES-TRINITY BASIN INTERCONNECT	WMS	$0	$0	$135	$135	$27	$27
MANVEL SUPPLY EXPANSION - GROUNDWATER DEVELOPMENT	WMS	$477	$477	$0	$0	$0	$0
MANVEL SUPPLY EXPANSION - MUSTANG BAYOU RIGHT AND STORAGE	WMS	$0	$818	$818	$366	$366	$366
MANVEL SUPPLY EXPANSION - TREATMENT AND TRANSMISSION EXPANSION	WMS	$0	$1,463	$1,463	$288	$288	$288
MISSOURI CITY GRP INFRASTRUCTURE	WMS	$0	$405	$405	$165	$165	$165
MONTGOMERY COUNTY MUDS 8 AND 9 GRP INFRASTRUCTURE	WMS	$1,875	$1,875	$917	$917	$917	$917
NFBWA MEMBER DISTRICT REUSE INFRASTRUCTURE	WMS	$1,695	$1,695	$835	$835	$835	$835
NFBWA PHASE 2 DISTRIBUTION SEGMENTS	WMS	$0	$104	$104	$9	$9	$9
NHCRWA DISTRIBUTION EXPANSION - 2025 PHASE	WMS	$0	$269	$269	$22	$22	$22
NHCRWA DISTRIBUTION EXPANSION - 2035 PHASE	WMS	$0	$0	$220	$220	$21	$21
NHCRWA DISTRIBUTION EXPANSION - 2045 PHASE	WMS	$0	$0	$0	$7	$7	$0
NHCRWA MEMBER DISTRICT REUSE INFRASTRUCTURE	WMS	$1,913	$1,913	$905	$905	$905	$905
NHCRWA TRANSMISSION LINES	WMS	$0	$185	$185	$24	$24	$24
NRG CEDAR BAYOU DESALINATION	WMS	$0	$2,637	$2,637	$1,560	$1,560	$1,560
PEARLAND REUSE INFRASTRUCTURE	WMS	$854	$913	$717	$142	$142	$142
PEARLAND SURFACE WATER TREATMENT PLANT DEVELOPMENT	WMS	$0	$973	$973	$242	$242	$242
PORTER SUD GRP INFRASTRUCTURE - PHASE 1	WMS	$1,346	$1,346	$577	$577	$577	$577
PORTER SUD GRP INFRASTRUCTURE - PHASE 2	WMS	$0	$2,131	$2,131	$1,064	$1,064	$1,064
RICHMOND GRP INFRASTRUCTURE	WMS	$0	$1,055	$1,055	$377	$377	$377
RICHMOND REUSE INFRASTRUCTURE	WMS	$1,108	$1,108	$156	$156	$156	$156
ROSENBERG GRP INFRASTRUCTURE	WMS	$0	$261	$261	$29	$29	$29
SEWPP ADDITIONAL MODULE	WMS	$0	$497	$497	$191	$191	$191
SJRA AQUIFER STORAGE AND RECOVERY	WMS	$0	$0	$0	$0	$0	$2,551
SJRA CATAHOULA AQUIFER SUPPLIES	WMS	$0	$0	$479	$479	$358	$358

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WUG MANAGEMENT SUPPLY FACTORS

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WUG*	Management Supply Factor					
	2020	2030	2040	2050	2060	2070
HARRIS COUNTY MUD 49	1.6	1.3	1.1	1.1	1.1	1.1
HARRIS COUNTY MUD 5	1.0	1.1	1.1	1.1	1.1	1.1
HARRIS COUNTY MUD 50	1.7	1.8	1.8	1.8	1.8	1.9
HARRIS COUNTY MUD 55	2.9	2.9	2.9	2.8	2.6	2.5
HARRIS COUNTY MUD 58	1.0	1.0	1.0	1.0	1.0	1.0
HARRIS COUNTY MUD 6	1.2	1.0	1.0	1.0	1.0	1.0
HARRIS COUNTY MUD 8	1.4	1.5	1.5	1.5	1.6	1.6
HARRIS COUNTY MUD 96	1.0	1.1	1.1	1.1	1.1	1.1
HARRIS COUNTY UD 14	1.0	1.0	1.0	1.0	1.0	1.0
HARRIS COUNTY UD 15	1.0	1.0	1.0	1.0	1.0	1.0
HARRIS COUNTY WCID 1	1.2	1.3	1.3	1.3	1.3	1.3
HARRIS COUNTY WCID 133	1.0	1.0	1.0	1.0	1.0	1.0
HARRIS COUNTY WCID 156	1.1	1.1	1.1	1.1	1.1	1.1
HARRIS COUNTY WCID 50	1.0	1.1	1.1	1.1	1.1	1.1
HARRIS COUNTY WCID 70	1.0	1.0	1.0	1.0	1.0	1.0
HARRIS COUNTY WCID 74	1.0	1.0	1.0	1.0	1.0	1.0
HARRIS COUNTY WCID 89	5.9	6.0	6.1	6.1	6.2	6.1
HARRIS COUNTY WCID 96	2.3	2.0	1.8	1.8	1.8	1.8
HARRIS COUNTY WCID-FONDREN ROAD	1.1	1.1	1.1	1.1	1.1	1.1
HARRIS-MONTGOMERY COUNTIES MUD 386	1.4	1.1	1.1	1.1	1.1	1.1
HEMPSTEAD	1.0	1.0	1.0	1.0	1.0	1.0
HILLCREST VILLAGE	1.0	1.1	1.1	1.1	1.1	1.1
HILLTOP LAKES WSC	1.0	1.0	1.1	1.1	1.1	1.1
HILSHIRE VILLAGE	1.0	1.0	1.0	1.1	1.0	1.1
HITCHCOCK	1.5	1.7	1.6	1.5	1.4	1.4
HMW SUD	1.0	1.0	1.0	1.0	1.0	1.0
HOUSTON	1.1	1.0	1.4	1.8	1.8	1.7
HUMBLE	1.0	1.1	1.1	1.1	1.1	1.1
HUNTSVILLE	2.9	2.8	2.8	2.8	2.7	2.7
IRRIGATION, AUSTIN	1.5	1.5	1.5	1.5	1.5	1.5
IRRIGATION, BRAZORIA	0.6	0.6	0.6	0.6	0.6	0.6
IRRIGATION, CHAMBERS	1.3	1.4	1.6	1.6	1.6	1.6
IRRIGATION, FORT BEND	1.2	1.2	1.2	1.2	1.2	1.2
IRRIGATION, GALVESTON	0.5	0.5	0.5	0.5	0.5	0.5
IRRIGATION, HARRIS	1.6	1.6	1.6	1.6	1.6	1.6
IRRIGATION, LEON	1.0	1.0	1.0	1.0	1.0	1.0
IRRIGATION, LIBERTY	1.8	1.9	2.7	2.7	2.7	2.7

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MWP MANAGEMENT SUPPLY FACTORS

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Table 5-A14 – MWP Management Supply Factors

MWP*	Management Supply Factor					
	2020	2030	2040	2050	2060	2070
BRAZOS RIVER AUTHORITY	1.0	1.0	1.0	1.1	1.1	1.0
BRAZOSPORT WATER AUTHORITY	1.0	1.8	1.6	1.6	1.6	1.5
CHAMBERS-LIBERTY COUNTIES NAVIGATION DISTRICT	1.0	1.0	1.0	1.0	1.0	1.0
CLEAR LAKE CITY WATER AUTHORITY	1.0	1.0	1.0	1.0	1.1	1.1
CONROE	1.0	1.1	1.1	1.1	1.0	1.0
DOW INC	1.1	1.5	1.7	1.7	1.7	1.7
GALVESTON	1.0	1.7	1.7	1.7	1.8	1.7
GULF COAST WATER AUTHORITY	1.1	1.4	1.4	1.4	1.4	1.4
HOUSTON	1.0	1.2	1.2	1.4	1.4	1.4
HUNTSVILLE	1.0	1.0	1.0	1.0	1.0	1.0
LEAGUE CITY	1.0	2.1	2.1	2.1	2.1	2.1
LOWER NECHES VALLEY AUTHORITY	1.0	1.1	1.8	1.8	1.8	1.8
MISSOURI CITY	1.2	2.0	2.0	2.0	1.9	1.9
NORTH FORT BEND WATER AUTHORITY	1.1	1.4	1.3	1.2	1.2	1.2
NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY	1.0	1.7	1.5	1.5	1.5	1.4
NRG	1.0	1.1	1.1	1.1	1.1	1.1
PASADENA	1.0	1.0	1.0	1.0	1.0	1.0
PEARLAND	1.0	2.0	2.0	2.0	1.9	1.9
SAN JACINTO RIVER AUTHORITY	1.0	1.0	1.0	1.0	1.0	1.0
SUGAR LAND	1.1	1.2	1.2	1.2	1.2	1.2
TEXAS CITY	1.0	2.2	2.2	2.2	2.3	2.3
THE WOODLANDS	1.0	1.0	1.0	1.0	1.0	1.0
TRINITY RIVER AUTHORITY	1.0	1.0	1.0	1.0	1.0	1.0
WEST HARRIS COUNTY REGIONAL WATER AUTHORITY	1.0	1.9	1.7	1.6	1.6	1.6

**The Management Supply Factors shown in this table reflect total MWP-related water supply allocations divided by MWP demand. MWP-level surpluses which remain unassigned to a WUG are excluded from the calculation. Values in this table represent MWP Management Supply Factors within Region H only and do not include demands, supplies, or projects for other regions.*

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ATTACHMENT 4

ADDITIONAL APPENDIX 5-B TECHNICAL MEMORANDUM

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REGION H PROJECT ANALYSIS TECHNICAL MEMORANDUM

Project Name:	LNVA Devers Pump Station Relocation
Project ID:	OTHR-005
Project Type:	Existing Surface Water Source
Potential Supply Quantity (Rounded):	88,704 ac-ft/yr (79 MGD)
Implementation Decade:	2030 (2025)
Development Timeline:	1 year
Project Capital Cost:	$17,570,019 (Sept. 2018)
Unit Water Cost (Rounded):	$17 per ac-ft (during loan period) $4 per ac-ft (after load period)

Strategy Description

The Lower Neches Valley Authority (LNVA) is a major water supplier to irrigators in the eastern portion of Region H, including rice production in Chambers and Liberty County. A substantial portion of this supply is provided through LNVA's Devers Canal System, which diverts water from the Trinity River at the Devers 1st Pump Station near Moss Bluff, TX for conveyance through a canal network to points of use. In order to meet the needs of current and future customers and increase deliverable supply, LNVA has identified the need to develop a new Devers 1st Pump Station. The new pump station will be located adjacent to the current pump station, limiting the required permitting and the need for development of additional conveyance to connect to existing canal infrastructure. This project does not require a new water right appropriation because it is associated with infrastructure capacity related to the use of existing rights.

Strategy Analyses

The project analyses for the LNVA Devers Pump Station Relocation project include evaluations of the potential supply to be created, environmental factors involved in the project, permitting and development considerations, and an analysis of project cost.

Supply Development

The LNVA Devers Pump Station Relocation project will increase deliverable supplies from existing sources and will not require a new water right appropriation. The proposed infrastructure will increase pumping capacity to allow existing LNVA owned or contracted surface water supply to be diverted from the Trinity River and delivered to LNVA's customers. Major project components include development of a new intake structure, high-capacity pump station, and discharge structures to connect the pump station to the Devers Canal System. The new facility has a planned capacity of 200,000 gpm, resulting in an additional 55,000 gpm (88,704 ac-ft/yr) of reliable pumping capacity.

Environmental Considerations

The enhanced infrastructure will facilitate an increase in diversion capacity for the LNVA Devers Canal system. Impacts on instream flows and bay and estuary flows are anticipated to be minimal, as the proposed project increases supply from existing water rights to levels observed in prior historical conditions; the project does not develop new surface water sources. Diversions will be made from existing water rights and at the existing diversion location. Infrastructure development may result in some surface disturbance from construction that could require mitigation; however, this is expected to be minimal as the proposed infrastructure has a limited footprint and will be developed on LNVA's existing pump station site adjacent to existing facilities.

Permitting and Development

The development of this strategy may require some permitting due to surface disturbance from the construction of pump station infrastructure. This is expected to be minimal, as construction is anticipated to occur on the sponsor's existing property and in close proximity to the existing pump station site. Because the supply source is provided by existing water rights and will be delivered through LNVA's Devers system, permitting of new water rights to add a diversion point will not be required.

Cost Analysis

Planning level cost estimates for this strategy are included in the table below. Capital costs include planning, design, real estate, environmental and permitting, and construction of pump station infrastructure. The annual cost was estimated assuming a debt service of 3.5% for 20 years, in accordance with TWDB regional water planning cost assumptions. Costs are presented in September 2018 equivalent costs in *Table 1*.

Table 1 – LNVA Devers Pump Station Relocation Cost Estimate

OPINION OF PROBABLE CONSTRUCTION COST						September 2018
ITEM	DESCRIPTION		QUANTITY	UNIT	UNIT PRICE	TOTAL
PROJECT CAPITAL COST SUMMARY						
1	CONSTRUCTION COST		1	LS	$12,641,906	$12,641,906
2	ENGINEERING, FINANCIAL, AND LEGAL SERVICES AND CONTINGENCIES		1	LS	$4,424,667	$4,424,667
3	LAND AND EASEMENTS		1	LS	$3,241	$3,241
4	ENVIRONMENTAL - STUDIES AND MITIGATION		1	LS	$32,405	$32,405
5	INTEREST DURING CONSTRUCTION		1	LS	$467,800	$467,800
	PROJECT CAPITAL COST					**$17,570,019**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2020**	**2030**	**2040**	**2050**	**2060**	**2070**
1	DEBT SERVICE	$0	$1,236,245	$1,236,245	$0	$0	$0
2	OPERATION AND MAINTENANCE (O&M)	$0	$316,048	$316,048	$316,048	$316,048	$316,048
3	PUMPING ENERGY COSTS	$0	$0	$0	$0	$0	$0
4	PURCHASE COST OF WATER	$0	$0	$0	$0	$0	$0
	TOTAL ANNUAL COST	**$0**	**$1,552,293**	**$1,552,293**	**$316,048**	**$316,048**	**$316,048**

ITEM	DESCRIPTION	ANNUAL TOTAL					
ANNUAL COST SUMMARY		**2020**	**2030**	**2040**	**2050**	**2060**	**2070**
1	ANNUAL COST	$0	$1,552,293	$1,552,293	$316,048	$316,048	$316,048
2	YIELD	-	88,704	88,704	88,704	88,704	88,704
3	UNIT COST	$0	$17	$17	$4	$4	$4
	TOTAL UNIT COST						**$9**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
CONSTRUCTION COST SUMMARY					
1	PUMP STATIONS	1	LS	$12,641,906	$12,641,906
	PROJECT COST				**$12,641,906**

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
OPERATION AND MAINTENANCE (O&M) COST SUMMARY					
1	PUMP STATIONS	2.5	%	$12,641,906	$316,048
	ANNUAL OPERATION AND MAINTENANCE COST				**$316,048**

Water Management Strategy Evaluation

Based on the analysis provided above, the LNVA Devers Pump Station Relocation project was evaluated across eleven different criteria for the purpose of quick comparison against alternative strategies that may be incorporated into the Regional Water Plan. The results of this evaluation can be seen in the table below.

CRITERIA	RATING	EXPLANATION
Cost	5	Project is a very low-cost alternative for making more water available in the LNVA Devers System.
Location	5	Project is associated with an existing diversion site and conveyance infrastructure serving a large area.
Water Quality	3	No known issues related to water quality.
Environmental Land and Habitat	3	Environmental impacts can be mitigated. Limited concerns.
Environmental Flows	3	Project will increase diversion capacity from existing sources to levels observed in prior conditions and is anticipated to have minimal impacts on environmental flows.
Local Preference	3	No known significant opposition.
Institutional Constraints	5	Property and facilities to be improved already owned by sponsor.
Development Timeline	5	Project can be developed in a relatively short period of time.
Sponsorship	5	The project sponsor, LNVA, is committed to the project and is actively evaluating final design.
Vulnerability	3	Moderate risk associated with development of a structure in a coastal area.
Impacts on Other WMS	5	Project will increase overall LNVA system reliability, positively impacting customer supply. Potential synergy with other project(s). No negative impacts on other WMS or projects.

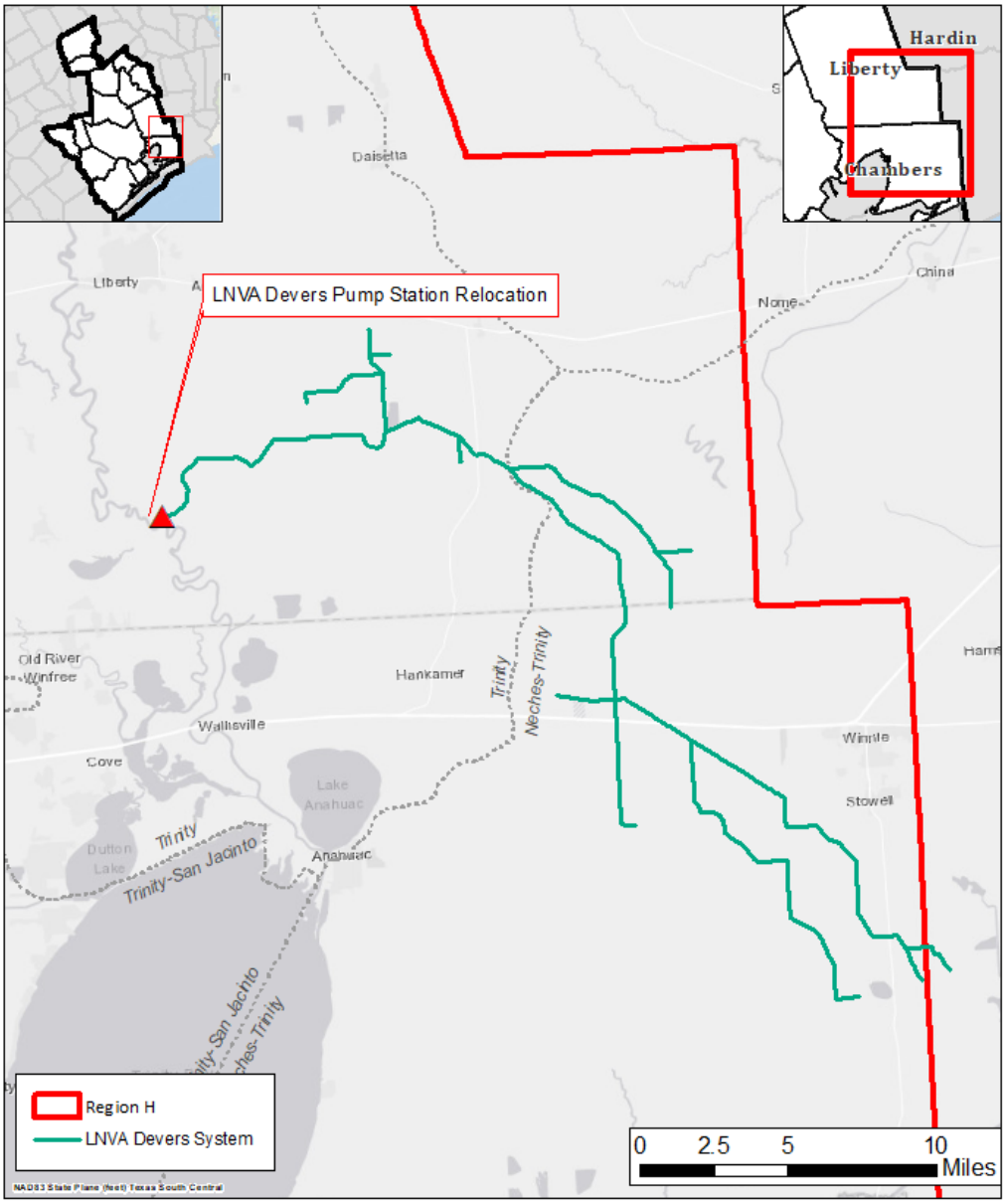
The LNVA Devers Pump Station Relocation will facilitate diversions made from existing water rights. The project is anticipated to positively impact agricultural land and production through increased supply reliability. The project is not anticipated to impact vulnerable species.

Water User Group Application

The LNVA Devers Pump Station Relocation project was evaluated on a basis of several criteria to determine the Water User Groups (WUGs) to which it may be applied. Consideration was given to the proximity of the project to identified needs, the volume of the supply made available, the quality of the water provided, and the unit cost of the strategy as well as other factors that may relate to the suitability of the strategy to the WUGs served.

CRITERIA	WUG SUITABILITY
Proximity	The benefits of the pump station relocation would be experienced by LNVA customers supplied by the LNVA Devers System, with points of demand serviced through existing canal infrastructure.
Size	The project is sized in accordance with the available source, anticipated future demands, and provision for system infrastructure redundancy.
Water Quality	The project is not anticipated to impact water quality. This project will convey raw water, which is suitable for irrigation use.
Unit Cost	The unit cost, which is relatively low, is appropriate to the irrigation use within the LNVA Devers System.
Other Factors	This project is identified primarily for irrigation customers in Chamber and Liberty Counties but could also potentially supply other customers with future needs.

Location Map



REGION H Water Planning Group

LNVA Devers Pump Station Relocation Location Map

ATTACHMENT 5

REVISED APPENDIX 6-B TABLE

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Table 6-B-7 – Summary of Quantified Impacts to Agricultural, Natural, and Cultural Resources

Key WMS and Project Overview					Agricultural Impacts		Wildlife Habitat				Environmental Water Needs		Bays, Estuaries, and Arms of the Gulf of Mexico		Cultural Resources	
Name	Technical Memorandum	Considered or Recommended	Primary Counties	Primary Development Setting	Agricultural Impact Description	Score	Project Acreage Description	Score	Environmental Land and Habitat Impact Description	Score	Instream Flow Impact Description	Score	Bay and Estuary Impact Description	Score	Cultural Resource Impact Description	Score
Advanced Municipal Conservation and Water Loss Reduction	CNSV-001	Recommended	All	Urban	None	5	None	5	Low	5	None or Limited	3	None or Limited	3	None	5
Irrigation Conservation	CNSV-002	Recommended	Multiple	Rural	Positive	5	High	1	Medium Low	4	None or Limited	3	None or Limited	3	None	5
BWA Transmission Expansions	CONV-001	Recommended	Brazoria	Rural	None	5	Medium Low	4	Low	5	None or Limited	3	None or Limited	3	Low	5
CHCRWA Transmission and Internal Distribution	CONV-002	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
City of Houston GRP Transmission	CONV-003	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
COH, NHCRWA, and CHCRWA Shared Transmission	CONV-004	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
CWA Transmission Expansion	CONV-005	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
East Texas Transfer	CONV-006	Recommended	Multiple	Rural	Medium Low	4	Medium Low	4	Medium High	2	Moderate Decrease	2	Moderate Decrease	2	Low	5
GCWA Industrial Raw Water Line	CONV-007	Recommended	Galveston	Urban	None	5	Low	5	Medium Low	4	None or Limited	3	None or Limited	3	Low	5
Lake Livingston to SJRA Transfer	CONV-008	Recommended	Multiple	Rural	Medium Low	4	Medium Low	4	Medium High	2	Moderate Decrease	2	Moderate Decrease	2	Low	5
LNVA Neches-Trinity Basin Interconnect	CONV-009	Recommended	Liberty	Rural	Positive	5	Low	5	Medium	3	Moderate Decrease	2	Moderate Decrease	2	Low	5
NFBWA Phase 2 Distribution Segments	CONV-010	Recommended	Fort Bend	Urban	None	5	Medium Low	4	Medium	3	None or Limited	3	None or Limited	3	Low	5
NHCRWA Distribution Expansion	CONV-011	Recommended	Harris	Urban	None	5	Medium Low	4	Medium	3	None or Limited	3	None or Limited	3	Low	5
NHCRWA Transmission Lines	CONV-012	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
Southeast Transmission Line Improvements	CONV-013	Recommended	Harris	Urban	None	5	Low	5	Low	5	None or Limited	3	None or Limited	3	Low	5
Surfside Beach Supply Infrastructure	CONV-014	Recommended	Brazoria	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
WHCRWA Distribution Expansion	CONV-015	Recommended	Harris	Urban	None	5	Medium Low	4	Medium	3	None or Limited	3	None or Limited	3	Low	5
WHCRWA/NFBWA Transmission Line	CONV-016	Recommended	Harris	Urban	None	5	Medium Low	4	Medium	3	None or Limited	3	None or Limited	3	Low	5
Aquifer Storage and Recovery	GWDV-001	Recommended	Montgomery	Urban	None	5	Low	5	Medium	3	Moderate Decrease	2	Moderate Decrease	2	Low	5
Brackish Groundwater Development and Groundwater Blending	GWDV-002	Recommended	Montgomery	Urban	None	5	Low	5	Medium Low	4	Moderate Increase	4	Moderate Increase	4	Low	5
BWA Brackish Groundwater Development	GWDV-003	Recommended	Brazoria	Urban	None	5	Low	5	Medium	3	Moderate Increase	4	Moderate Increase	4	Low	5
City of Houston Area 2 Groundwater Infrastructure	GWDV-004	Recommended	Harris	Urban	None	5	Low	5	Medium	3	Moderate Increase	4	Moderate Increase	4	Low	5
Expanded Use of Groundwater	GWDV-005	Recommended	Multiple	Mixed	Positive	5	Low	5	Medium Low	4	Moderate Increase	4	Moderate Increase	4	Low	5
Forestar Houston County Project	GWDV-006	Considered	Houston	Rural	Medium Low	4	Medium Low	4	Medium High	2	Moderate Increase	4	Moderate Increase	4	Low	5
Forestar Liberty County Project	GWDV-007	Considered	Liberty	Rural	Medium Low	4	Medium Low	4	Medium High	2	Moderate Increase	4	Moderate Increase	4	Low	5
GCWA Backup Well Development	GWDV-008	Recommended	Galveston	Rural	None	5	Low	5	Medium	3	Moderate Increase	4	Moderate Increase	4	Low	5
Groveton Groundwater Expansion	GWDV-009	Recommended	Trinity	Urban	None	5	Low	5	Low	5	None or Limited	3	None or Limited	3	Low	5
SJRA Catahoula Aquifer Supplies	GWDV-010	Recommended	Montgomery	Urban	None	5	Low	5	Low	5	Moderate Increase	4	Moderate Increase	4	Low	5
CHCRWA GRP	GWRP-001	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
City of Houston GRP	GWRP-002	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
City of Missouri City GRP	GWRP-003	Recommended	Fort Bend	Urban	None	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
City of Richmond GRP	GWRP-004	Recommended	Fort Bend	Urban	Positive	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
City of Rosenberg GRP	GWRP-005	Recommended	Fort Bend	Urban	None	5	Low	5	Medium	3	Moderate Decrease	2	Moderate Decrease	2	Low	5
City of Sugar Land IWRP	GWRP-006	Recommended	Fort Bend	Urban	None	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
Fort Bend County MUD 25 GRP	GWRP-007	Recommended	Fort Bend	Urban	None	5	Low	5	Low	5	Moderate Decrease	2	Moderate Decrease	2	Low	5
Fort Bend County WC&ID No. 2 GRP	GWRP-008	Recommended	Fort Bend	Urban	None	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
Montgomery County MUDs 8 and 9 GRP	GWRP-009	Recommended	Montgomery	Urban	None	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
NFBWA GRP	GWRP-010	Recommended	Fort Bend	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
NHCRWA GRP	GWRP-011	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
Porter SUD Joint GRP	GWRP-012	Recommended	Montgomery	Urban	None	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5

Key WMS and Project Overview					Agricultural Impacts		Wildlife Habitat				Environmental Water Needs		Bays, Estuaries, and Arms of the Gulf of Mexico		Cultural Resources	
Name	Technical Memorandum	Considered or Recommended	Primary Counties	Primary Development Setting	Agricultural Impact Description	Score	Project Acreage Description	Score	Environmental Land and Habitat Impact Description	Score	Instream Flow Impact Description	Score	Bay and Estuary Impact Description	Score	Cultural Resource Impact Description	Score
River Plantation and East Plantation Joint GRP	GWRP-013	Recommended	Montgomery	Urban	None	5	Low	5	Low	5	Moderate Decrease	2	Moderate Decrease	2	Low	5
SJRA GRP	GWRP-014	Recommended	Montgomery	Mixed	Medium Low	4	Medium Low	4	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
WHCRWA GRP	GWRP-015	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
City of Houston Reuse	REUS-001	Recommended	Harris	Urban	None	5	Medium Low	4	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
City of Pearland Reuse	REUS-002	Recommended	Brazoria, Harris	Urban	None	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
Galveston County Industrial Reuse	REUS-003	Recommended	Galveston	Urban	None	5	Low	5	Medium Low	4	None or Limited	3	Moderate Decrease	2	Low	5
NFBWA Member District Reuse	REUS-004	Recommended	Fort Bend	Urban	None	5	Medium Low	4	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
NHCRWA Member District Reuse	REUS-005	Recommended	Harris	Urban	None	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
San Jacinto Basin Regional Return Flows	REUS-006	Recommended	Harris, Montgomery	Mixed	None	5	Low	5	Low	5	Moderate Decrease	2	Moderate Decrease	2	None	5
Wastewater Reclamation for Industry	REUS-007	Considered	Harris	Urban	None	5	Medium Low	4	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
Wastewater Reclamation for Municipal Irrigation	REUS-008	Recommended	Multiple	Rural	None	5	Medium Low	4	Low	5	Moderate Decrease	2	Moderate Decrease	2	Low	5
Westwood Shores MUD Reuse	REUS-009	Recommended	Trinity	Urban	None	5	Low	5	Medium Low	4	None or Limited	3	None or Limited	3	Low	5
Allens Creek Reservoir	SWDV-001	Recommended	Austin	Rural	Medium	3	Medium High	2	Medium Low	4	None or Limited	3	None or Limited	3	Medium	3
BRA System Operation Permit	SWDV-002	Recommended	Multiple	Rural	Positive	5	None	5	Medium	3	Moderate Decrease	2	Moderate Decrease	2	None	5
Dow Reservoir and Pump Station Expansion	SWDV-003	Recommended	Brazoria	Rural	Medium Low	4	Medium Low	4	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Medium	3
Freeport Seawater Desalination	SWDV-004	Recommended	Brazoria	Urban	None	5	Low	5	Medium	3	None or Limited	3	Moderate Decrease	2	Low	5
Lake Somerville Augmentation	SWDV-005	Considered	Burleson, Brazos	Rural	Medium Low	4	Medium Low	4	Medium	3	Moderate Decrease	2	Moderate Decrease	2	Low	5
Lone Star Lake	SWDV-006	Considered	Montgomery	Rural	Medium Low	4	Medium	3	High	1	Moderate Decrease	2	Moderate Decrease	2	Medium High	2
Manvel Supply Expansion	SWDV-007	Recommended	Brazoria	Mixed	Medium Low	4	Medium Low	4	Medium	3	Moderate Decrease	2	Moderate Decrease	2	Medium Low	4
NRG Cedar Bayou Desalination	SWDV-008	Recommended	Brazoria	Urban	None	5	Low	5	Medium	3	None or Limited	3	Moderate Decrease	2	Low	5
BWA Treatment Expansion	TRET-001	Recommended	Brazoria	Urban	None	5	Low	5	Low	5	None or Limited	3	None or Limited	3	Low	5
City of Houston Treatment Expansion	TRET-002	Recommended	Harris	Urban	None	5	Low	5	Medium Low	4	None or Limited	3	None or Limited	3	Low	5
City of Houston West Water Purification Plant	TRET-003	Recommended	Harris, Fort Bend, Waller	Urban	Medium Low	4	Medium Low	4	Medium	3	None or Limited	3	None or Limited	3	Medium Low	4
GCWA Western Galveston County Treatment Expansion	TRET-004	Recommended	Galveston	Rural	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Medium Low	4
Northeast Water Purification Plant Expansion	TRET-005	Recommended	Harris	Urban	None	5	Medium Low	4	Medium Low	4	None or Limited	3	None or Limited	3	Low	5
Pearland Surface Water Treatment Plant	TRET-006	Recommended	Brazoria	Urban	None	5	Low	5	Medium Low	4	None or Limited	3	None or Limited	3	Low	5
SEWPP Additional Module	TRET-007	Recommended	Harris	Urban	None	5	Low	5	Medium Low	4	None or Limited	3	None or Limited	3	Low	5
Brazos Saltwater Barrier	OTHR-001	Recommended	Brazoria	Rural	None	5	Low	5	Medium High	2	Moderate Decrease	2	Moderate Decrease	2	Low	5
GCWA Shannon Pumping Plant Expansion	OTHR-002	Recommended	Fort Bend	Rural	None	5	Low	5	Medium	3	Moderate Decrease	2	Moderate Decrease	2	Low	5
Municipal Drought Management	OTHR-003	Considered	All	Urban	None	5	None	5	Low	5	None or Limited	3	None or Limited	3	None	5
New and Expanded Contracts	OTHR-004	Recommended	Multiple	Mixed	None	5	None	5	Low	5	Moderate Decrease	2	Moderate Decrease	2	None	5
LNVA Devers Pump Station Relocation	OTHR-005	Recommended	Chambers, Liberty	Rural	Positive	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5

Section 2

Documentation of Minor Amendment Status.

REGION H
Water Planning Group

Texas Water Development Board

P.O. Box 13231, 1700 N. Congress Ave.
Austin, TX 78711-3231, www.twdb.texas.gov
Phone (512) 463-7847, Fax (512) 475-2053

July 7, 2023

Mr. Mark Evans, Chair
Region H Regional Water Planning Group
c/o San Jacinto River Authority
P.O. Box 329
Conroe, Texas 77305

Dear Mr. Evans:

I have reviewed Region H's request, and based on the request and supporting materials, I have determined that amending the Region H 2021 Regional Water Plan (RWP) to include the Lower Neches Valley Authority (LNVA) Devers Pump Station Relocation water management strategy and associated project constitutes a minor amendment under 31 Texas Administrative Code (TAC) §357.51(c).

If the Region H Regional Water Planning Group adopts the proposed minor amendment, the planning group will need to submit the following to the Texas Water Development Board (TWDB):

1. documentation of the planning group action adopting this minor amendment in the form of a cover letter,
2. an addendum to the 2021 Region H RWP updating the plan accordingly, and
3. updated DB22 data to reflect all the associated changes to the 2021 Region H RWP and the 2022 State Water Plan.

Please note that the final addendum to the 2021 Region H RWP must include any public comments received on the proposed amendment and the region's response to comments.

After receipt of all required information, the TWDB Board will consider approving the Region H amendment at a regularly scheduled meeting, and then may amend the 2022 State Water Plan, as appropriate.

If Region H makes any substantive changes to the project components or configuration during the minor amendment process, the TWDB will need to review the modified proposed amendment to ensure that any other changes still meet all of the criteria under 31 TAC §357.51(c).

If you have any questions concerning this approval or its associated requirements, please contact Heather Rose, Region H Planner, at 512-475-1558.

Sincerely,

Jeff Walker Digitally signed by Jeff Walker Date: 2023.07.10 10:38:55 -05'00'

Jeff Walker
Executive Administrator

Section 3

Summary of Proposed Changes to 2021 Regional Water Plan / State Water Plan Database (DB22).

REGION H
Water Planning Group

DRAFT Amendment to 2021 Region H Regional Water Plan:
LNVA Devers Pump Station Relocation DB22 Proposed Adjustments

Overview

This workbook summarizes anticipated revisions to TWDB DB22 data in order to implement the proposed amendment to the 2021 Region H Regional Water Plan for the LNVA Devers Pump Station Relocation Water Management Strategy and project.

Notes

The structure of this summary is based upon the Regional Water Plan data query provided to the Region H Water Planning Group by TWDB in October 2020. Please note that this workbook omits the tabs of that data summary not anticipated to be impacted by the proposed amendment.

Elements of DB22 data expected to require changes to adopted numerical entries are indicated by orange text.

2021 Regional Water Plan Data - Summary of Revisions to Existing Water User Group (WUG) Water Supplies					
2021 Regional Water Plan Data - Existing Water User Group (WUG) Water Supplies	Direct Source Entity Name	TRINITY RIVER AUTHORITY	LOWER NECHES VALLEY AUTHORITY	TRINITY RIVER AUTHORITY	TRINITY RIVER AUTHORITY
	Direct Source Entity Primary Region	C	I	C	C
	Seller Entity Name	TRINITY RIVER AUTHORITY	LOWER NECHES VALLEY AUTHORITY	TRINITY RIVER AUTHORITY	TRINITY RIVER AUTHORITY
	Seller Entity Primary Region	C	I	C	C
	WUG Entity Name	IRRIGATION, CHAMBERS	IRRIGATION, LIBERTY	IRRIGATION, LIBERTY	IRRIGATION, LIBERTY
	WUG Entity Primary Region	H	H	H	H
	WUG Split Region	H	H	H	H
	WUG Split County	CHAMBERS	LIBERTY	LIBERTY	LIBERTY
	WUG Split Basin	NECHES-TRINITY	NECHES-TRINITY	NECHES-TRINITY	TRINITY
	WUG Entity Type	WUG/WWP	WUG/WWP	WUG/WWP	WUG/WWP
	WUG Type	IRRIGATION	IRRIGATION	IRRIGATION	IRRIGATION
	WUG Subtype	IRRIGATION	IRRIGATION	IRRIGATION	IRRIGATION
	Source Name	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	TRINITY RUN-OF-RIVER	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM
	Source Summary Name	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	TRINITY RUN-OF-RIVER	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM
	Source Detail		MULTIPLE / 08-4277, 08-5271, 08-5739		
	Source Region	H	H	H	H
	Source County	RESERVOIR	LIBERTY	RESERVOIR	RESERVOIR
	Source Basin	TRINITY	TRINITY	TRINITY	TRINITY
	Salinity	FRESH	FRESH	FRESH	FRESH
	Source Type	SURFACE WATER	SURFACE WATER	SURFACE WATER	SURFACE WATER
	Source Subtype	RESERVOIR SYSTEM	RUN-OF-RIVER	RESERVOIR SYSTEM	RESERVOIR SYSTEM
	Groundwater MAG Type	N/A	N/A	N/A	N/A
WUG Existing Supplies by Planning Decade (acre-feet/year)	ES2020	16,499	1,067	5,400	5,601
	ES2030	16,499	1,067	5,400	5,601
	ES2040	16,499	1,067	5,400	5,601
	ES2050	16,499	1,067	5,400	5,601
	ES2060	16,499	1,067	5,400	5,601
	ES2070	16,499	1,067	5,400	5,601
Revised WUG Existing Supplies by Planning Decade (acre-feet/year)	ES2020	11,447	402	3,746	3,886
	ES2030	11,447	402	3,746	3,886
	ES2040	11,447	402	3,746	3,886
	ES2050	11,447	402	3,746	3,886
	ES2060	11,447	402	3,746	3,886
	ES2070	11,447	402	3,746	3,886

2021 Regional Water Plan Data - Summary of Revisions to Water User Group (WUG) Needs				
DRAFT 2021 Regional Water Plan Data - Water User Group (WUG) Needs Analysis Summary	**WUG Entity Name**	IRRIGATION, CHAMBERS	IRRIGATION, LIBERTY	IRRIGATION, LIBERTY
	WUG Entity Primary Region	H	H	H
	WUG Split Region	H	H	H
	WUG Split County	CHAMBERS	LIBERTY	LIBERTY
	WUG Split Basin	NECHES-TRINITY	NECHES-TRINITY	TRINITY
	WUG Entity Type	WUG/WWP	WUG/WWP	WUG/WWP
	WUG Type	IRRIGATION	IRRIGATION	IRRIGATION
	WUG Subtype	IRRIGATION	IRRIGATION	IRRIGATION
Total WUG Existing Supplies by Planning Decade (acre-feet/year)	**ES2020**	132,494	29,504	22,424
	ES2030	132,494	29,504	22,424
	ES2040	132,494	29,504	22,424
	ES2050	132,494	29,504	22,424
	ES2060	132,494	29,504	22,424
	ES2070	132,494	29,504	22,424
Revised Total WUG Existing Supplies by Planning Decade (acre-feet/year)	**ES2020**	127,442	27,185	20,709
	ES2030	127,442	27,185	20,709
	ES2040	127,442	27,185	20,709
	ES2050	127,442	27,185	20,709
	ES2060	127,442	27,185	20,709
	ES2070	127,442	27,185	20,709
WUG Projected Demands by Planning Decade (acre-feet/year)	**D2020**	102,655	15,332	15,969
	D2030	102,655	15,332	15,969
	D2040	102,655	15,332	15,969
	D2050	102,655	15,332	15,969
	D2060	102,655	15,332	15,969
	D2070	102,655	15,332	15,969
WUG Calculated Needs/Surplus by Planning Decade (acre-feet/year)	**NS2020**	29,839	14,172	6,455
	NS2030	29,839	14,172	6,455
	NS2040	29,839	14,172	6,455
	NS2050	29,839	14,172	6,455
	NS2060	29,839	14,172	6,455
	NS2070	29,839	14,172	6,455
WUG Calculated Needs/Surplus by Planning Decade (acre-feet/year)	**NS2020**	24,787	11,853	4,740
	NS2030	24,787	11,853	4,740
	NS2040	24,787	11,853	4,740
	NS2050	24,787	11,853	4,740
	NS2060	24,787	11,853	4,740
	NS2070	24,787	11,853	4,740
WUG Calculated Needs by Planning Decade (acre-feet/year). Surpluses are updated to zero so that true needs can be calculated.	**N2020**	0	0	0
	N2030	0	0	0
	N2040	0	0	0
	N2050	0	0	0
	N2060	0	0	0
	N2070	0	0	0

2021 Regional Water Plan Data - Summary of Water Management Strategy (WMS) Supplies Allocated to Water User Groups (WUGs)					
DRAFT 2021 Regional Water Plan Data - Water Management Strategy (WMS) Supplies Allocated to Water User Groups (WUGs)	Water Management Strategy Name	LOWER NECHES VALLEY AUTHORITY	LOWER NECHES VALLEY AUTHORITY	LOWER NECHES VALLEY AUTHORITY	LOWER NECHES VALLEY AUTHORITY
	WMS Sponsor Region	I	I	I	I
	WMS Source Use Type	IRRIGATION, CHAMBERS	IRRIGATION, LIBERTY	IRRIGATION, LIBERTY	IRRIGATION, LIBERTY
	WMS Sponsor/Seller Entity Related to Customer Supply Reallocation	H	H	H	H
	Seller Entity Related to Customer Supply Reallocation Primary Region	H	H	H	H
	Entity Transferring Supply through WMS	CHAMBERS	LIBERTY	LIBERTY	LIBERTY
	Entity Transferring Supply through WMS Primary Region	NECHES-TRINITY	NECHES-TRINITY	NECHES-TRINITY	TRINITY
	Source Name	IRRIGATION	IRRIGATION	IRRIGATION	IRRIGATION
	Source Summary Name (Used in Interactive State Water Plan application to aggregate data)	IRRIGATION	IRRIGATION	IRRIGATION	IRRIGATION
	Source Detail	ASSIGNED	ASSIGNED	ASSIGNED	ASSIGNED
	Source Region	0	0	0	0
	Source County	5,052	665	1,654	1,715
	Source Basin	5,052	665	1,654	1,715
	Salinity	5,052	665	1,654	1,715
	Source Type	5,052	665	1,654	1,715
	Source Subtype	5,052	665	1,654	1,715
	Source Status	0	0	0	0
	Groundwater MAG Type	171	171	171	171
	WMS Seller Entity	171	171	171	171
	WMS Seller Entity Primary Region	35	35	35	35
	WMS WUG Recipient Entity	35	35	35	35
	WMS WUG Recipient Entity Primary Region	35	35	35	35
	WMS WUG Recipient Split Region	NO	NO	NO	NO
	WMS WUG Recipient Split County	NO	NO	NO	NO
	WMS WUG Recipient Split Basin	Other surface water	Other surface water	Other surface water	Other surface water
	WMS WUG Recipient WUG Type	Transfer/Transaction	Transfer/Transaction	Transfer/Transaction	Transfer/Transaction
	WMS WUG Recipient WUG Subtype	Recommended	Recommended	Recommended	Recommended
	ASSIGNED				
WMS WUG Supplies by Planning Decade (acre-feet/year)	SS2020	0	0	0	0
	SS2030	5,052	665	1,654	1,715
	SS2040	5,052	665	1,654	1,715
	SS2050	5,052	665	1,654	1,715
	SS2060	5,052	665	1,654	1,715
	SS2070	5,052	665	1,654	1,715
WMS WUG Supply Unit Costs by Planning Decade (acre-feet/year)	UC2020	0	0	0	0
	UC2030	171	171	171	171
	UC2040	171	171	171	171
	UC2050	35	35	35	35
	UC2060	35	35	35	35
	UC2070	35	35	35	35
	Treated Water	NO	NO	NO	NO
	New or Amended Water Right Related to a Non-exempt IBT Required?	NO	NO	NO	NO
	WMS Type	Other surface water	Other surface water	Other surface water	Other surface water
	WMS Description	Transfer/Transaction	Transfer/Transaction	Transfer/Transaction	Transfer/Transaction
	WMS WUG Recommendation Type	Recommended	Recommended	Recommended	Recommended
	WMS Group				
	WMS Group Sponsor Region				
	WMS Comments				
	WMS WUG Supply Comments				

2021 Regional Water Plan Data - Summary of Water Management Strategy (WMS) Project Data		
DRAFT 2021 Regional Water Plan Data - Water Management Strategy (WMS) Project Data	**WMS Project Name**	LNVA DEVERS PUMP STATION RELOCATION
	WMS Project Sponsor Region	H
	Capital Cost	$17,570,019
	Online Decade	2030
	Project Sponsors	LOWER NECHES VALLEY AUTHORITY
	Project Components	PUMP STATION
	Project Level Recommendation Type	RECOMMENDED
	Project Comments	

2021 Regional Water Plan Data - Summary of Water Management Strategy (WMS) Project Sponsor Data		
DRAFT 2021 Regional Water Plan Data - Water Management Strategy (WMS) Project Sponsor Data	WMS Project Name	LNVA DEVERS PUMP STATION RELOCATION
	WMS Project Sponsor Region	H
	Project Sponsor Entity	LOWER NECHES VALLEY AUTHORITY
	Project Sponsor Entity Primary Region	I
	Capital Cost	$17,570,019
	Term Of Debt Service	20
	First Year Funding Required	2020
	Project Sponsor Comments	
	WMS Project Recommendation Type	Recommended

2021 Regional Water Plan Data - Summary of Water Management Strategy (WMS) Project & WMS Water User Group (WUG) Recipient Relationships					
DRAFT 2021 Regional Water Plan Data - Water Management Strategy (WMS) Project & WMS Water User Group (WUG) Recipient Relationships	**WMS Project Name**	LNVA DEVERS PUMP STATION RELOCATION	LNVA DEVERS PUMP STATION RELOCATION	LNVA DEVERS PUMP STATION RELOCATION	LNVA DEVERS PUMP STATION RELOCATION
	WMS Project Sponsor Region	H	H	H	H
	Capital Cost *Costs repeat if a project is connected with more than one WMS WUG Split.	17570019	17570019	17570019	17570019
	Project Level Recommendation Type	RECOMMENDED	RECOMMENDED	RECOMMENDED	RECOMMENDED
	Project WUG Level Recommendation Type	RECOMMENDED	RECOMMENDED	RECOMMENDED	RECOMMENDED
	WMS Project Tier Rank	1	1	1	1
	Water Management Strategy Name	LNVA DEVERS PUMP STATION RELOCATION	LNVA DEVERS PUMP STATION RELOCATION	LNVA DEVERS PUMP STATION RELOCATION	LNVA DEVERS PUMP STATION RELOCATION
	WMS Sponsor Region	H	H	H	H
	WMS Source Use Type	Existing Surplus	Existing Surplus	Existing Surplus	Existing Surplus
	Source Name	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	TRINITY RUN-OF-RIVER	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM
	Source Summary Name (Used in Interactive State Water Plan application to aggregate data)	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	TRINITY RUN-OF-RIVER	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM
	Source Detail		MULTIPLE / 08-4277, 08-5271, 08-5739		
	Source Region	H	H	H	H
	Source County	RESERVOIR	LIBERTY	RESERVOIR	RESERVOIR
	Source Basin	TRINITY	TRINITY	TRINITY	TRINITY
	Salinity	FRESH	FRESH	FRESH	FRESH
	Source Type	SURFACE WATER	SURFACE WATER	SURFACE WATER	SURFACE WATER
	Source Subtype	RESERVOIR SYSTEM	RUN-OF-RIVER	RESERVOIR SYSTEM	RESERVOIR SYSTEM
	Source Status	BOTH	BOTH	BOTH	BOTH
	Groundwater MAG Type	N/A	N/A	N/A	N/A
	WMS Level Recommendation Type	RECOMMENDED	RECOMMENDED	RECOMMENDED	RECOMMENDED
	WMS WUG Level Recommendation Type	RECOMMENDED	RECOMMENDED	RECOMMENDED	RECOMMENDED
	WMS Seller Entity	LOWER NECHES VALLEY AUTHORITY	LOWER NECHES VALLEY AUTHORITY	LOWER NECHES VALLEY AUTHORITY	LOWER NECHES VALLEY AUTHORITY
	WMS Seller Entity Primary Region	I	I	I	I
	WMS WUG Recipient Entity	IRRIGATION, CHAMBERS	IRRIGATION, LIBERTY	IRRIGATION, LIBERTY	IRRIGATION, LIBERTY
	WMS WUG Recipient Entity Primary Region	H	H	H	H
	WMS WUG Recipient Split Region	H	H	H	H
	WMS WUG Recipient Split County	CHAMBERS	LIBERTY	LIBERTY	LIBERTY
	WMS WUG Recipient Split Basin	NECHES-TRINITY	NECHES-TRINITY	NECHES-TRINITY	TRINITY
	WMS WUG Recipient WUG Type	IRRIGATION	IRRIGATION	IRRIGATION	IRRIGATION
	WMS WUG Recipient WUG Subtype	IRRIGATION	IRRIGATION	IRRIGATION	IRRIGATION
WMS WUG Supplies by Planning Decade (acre-feet/year) *Strategy supplies will repeat if the same WMS/WUG combination is listed with more than one project.	**SS2020**	0	0	0	0
	SS2030	5,052	665	1,654	1,715
	SS2040	5,052	665	1,654	1,715
	SS2050	5,052	665	1,654	1,715
	SS2060	5,052	665	1,654	1,715
	SS2070	5,052	665	1,654	1,715
	Project Connection Level	WMS	WMS	WMS	WMS
	WMS Type	OTHER SURFACE WATER	OTHER SURFACE WATER	OTHER SURFACE WATER	OTHER SURFACE WATER
	WMS Description	TRANSFER/TRANSACTION	TRANSFER/TRANSACTION	TRANSFER/TRANSACTION	TRANSFER/TRANSACTION
	WMS Group Name				

2021 Regional Water Plan Data - Summary of Water User Group (WUG) Final Needs Analysis after Water Management Strategies (WMS)				
DRAFT 2021 Regional Water Plan Data - Water User Group (WUG) Final Needs Analysis after Water Management Strategies (WMS)	**WUG Entity Name**	IRRIGATION, CHAMBERS	IRRIGATION, LIBERTY	IRRIGATION, LIBERTY
	WUG Entity Primary Region	H	H	H
	WUG Split Region	H	H	H
	WUG Split County	CHAMBERS	LIBERTY	LIBERTY
	WUG Split Basin	NECHES-TRINITY	NECHES-TRINITY	TRINITY
	WUG Entity Type	WUG/WWP	WUG/WWP	WUG/WWP
	WUG Type	IRRIGATION	IRRIGATION	IRRIGATION
	WUG Subtype	IRRIGATION	IRRIGATION	IRRIGATION
Projected Demand by Planning Decade (acre-feet/year)	**D2020**	102,655	15,332	15,969
	D2030	102,655	15,332	15,969
	D2040	102,655	15,332	15,969
	D2050	102,655	15,332	15,969
	D2060	102,655	15,332	15,969
	D2070	102,655	15,332	15,969
Total Recommended Demand Reduction through WMS by Planning Decade (acre-feet/year)	**DR2020**	23,630	8,458	8,543
	DR2030	23,630	8,458	8,543
	DR2040	23,630	8,458	8,543
	DR2050	23,630	8,458	8,543
	DR2060	23,630	8,458	8,543
	DR2070	23,630	8,458	8,543
Total WUG Existing Supplies by Planning Decade (acre-feet/year)	**ES2020**	132,494	29,504	22,424
	ES2030	132,494	29,504	22,424
	ES2040	132,494	29,504	22,424
	ES2050	132,494	29,504	22,424
	ES2060	132,494	29,504	22,424
	ES2070	132,494	29,504	22,424
Revised Total WUG Existing Supplies by Planning Decade (acre-feet/year)	**ES2020**	127,442	27,185	20,709
	ES2030	127,442	27,185	20,709
	ES2040	127,442	27,185	20,709
	ES2050	127,442	27,185	20,709
	ES2060	127,442	27,185	20,709
	ES2070	127,442	27,185	20,709
Total Existing Supplies Transferred to Another Entity Based on a Demand Reduction Strategy by Planning Decade (acre-feet/year)	**DRT2020**	0	0	0
	DRT2030	0	0	0
	DRT2040	0	0	0
	DRT2050	0	0	0
	DRT2060	0	0	0
	DRT2070	0	0	0
Total WUG Supply Reduced through Recommended WMS by Planning Decade (acre-feet/year)	**WSR2020**	0	0	0
	WSR2030	0	0	0
	WSR2040	0	0	0
	WSR2050	0	0	0
	WSR2060	0	0	0
	WSR2070	0	0	0
Total Recommended WMS WUG Supply Received by Planning Decade (acre-feet/year)	**SS2020**	0	0	0
	SS2030	0	0	0
	SS2040	33,500	16,750	16,750
	SS2050	33,500	16,750	16,750
	SS2060	33,500	16,750	16,750
	SS2070	33,500	16,750	16,750
Revised Total Recommended WMS WUG Supply Received by Planning Decade (acre-feet/year)	**SS2020**	0	0	0
	SS2030	5,052	2,319	1,715
	SS2040	38,552	19,069	18,465
	SS2050	38,552	19,069	18,465
	SS2060	38,552	19,069	18,465
	SS2070	38,552	19,069	18,465
Unmet Needs/Surplus after WMS Implementation by Planning Decade (acre-feet/year)	**UNS2020**	53,469	22,630	14,998
	UNS2030	53,469	22,630	14,998
	UNS2040	86,969	39,380	31,748
	UNS2050	86,969	39,380	31,748
	UNS2060	86,969	39,380	31,748
	UNS2070	86,969	39,380	31,748
Revised Unmet Needs/Surplus after WMS Implementation by Planning Decade (acre-feet/year)	**UNS2020**	48,417	20,311	13,283
	UNS2030	53,469	22,630	14,998
	UNS2040	86,969	39,380	31,748
	UNS2050	86,969	39,380	31,748
	UNS2060	86,969	39,380	31,748
	UNS2070	86,969	39,380	31,748
Unmet Needs after Recommended WMS Implementation by Planning Decade (acre-feet/year)	**UN2020**	0	0	0
	UN2030	0	0	0
	UN2040	0	0	0
	UN2050	0	0	0
	UN2060	0	0	0
	UN2070	0	0	0