REGION H
Water Planning Group

WATER MANAGEMENT STRATEGY COMMITTEE MEETING MATERIALS

January 17, 2025

Common Region H Terms and Conversion Factors

List of Abbreviations

CRU	Collective Reporting Unit
DCP	Drought Contingency Plan
DFC	Desired Future Condition
DOR	Drought of Record
EA	Executive Administrator
EPA	Environmental Protection Agency
FWSD	Fresh Water Supply District
GAM	Groundwater Availability Model
GCD	Groundwater Conservation District
GMA	Groundwater Management Area
GPCD	Gallons Per Capita Per Day
GRP	Groundwater Reduction Plan
IFR	Infrastructure Finance Report
IPP	Initially Prepared Plan
MAG	Modeled Available Groundwater
MPC	Master Planned Community
MUD	Municipal Utility District
MWP	Major Water Provider
PCS	Plumbing Code Savings
PDSI	Palmer Drought Severity Index
PWS	Public Water Supply
RFPG	Regional Flood Planning Group
RHWPG	Region H Water Planning Group
ROR	Run-of-River
RWP	Regional Water Plan
RWPA	Regional Water Planning Area
RWPG	Regional Water Planning Group
SWIFT	State Water Implementation Fund for Texas
SWP	State Water Plan
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TPWD	Texas Parks and Wildlife Department
TWC	Texas Water Code
TWDB	Texas Water Development Board
UCM	Unified Costing Model
URS	Unique Reservoir Site
USS	Unique Stream Segment
WAM	Water Availability Model
WCID	Water Control and Improvement District
WCP	Water Conservation Plan
WMS	Water Management Strategy
WRAP	Water Rights Analysis Package
WUG	Water User Group
WWP	Wholesale Water Provider

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

Region H Water Planning Group
Water Management Strategy Committee
9:30 AM Friday
January 17, 2025
Freese and Nichols Houston Office
10497 Town and Country Way, Suite 500, Houston, TX 77024

AGENDA

1. Call to order.
2. Introductions.
3. Review and approve minutes of October 24, 2023 meeting.
4. **Receive public comments on specific issues related to agenda items 5 through 8**. (Public comments limited to 3 minutes per speaker)
5. Discuss Committee activities and schedule.
6. Discuss water management strategy (WMS) recommendations for the Region H 2026 Regional Water Plan consider making recommendations to the Region H Water Planning Group (RHWPG).
7. Receive update from Consultant Team regarding drought management as a potential WMS and consider making recommendations to the RHWPG.
8. Discuss options for utilization of remaining unallocated Task 5 funds and consider making recommendations to the RHWPG.
9. **Receive public comments**. (Public comments limited to 3 minutes per speaker)
10. Adjourn.

Persons with disabilities who plan to attend this meeting and would like to request auxiliary aids or services are requested to contact Philip Taucer at (713) 600-6835 at least three business days prior to the meeting so that appropriate arrangements can be made.

Agenda Item 3

Review and approve minutes of October 24, 2023 meeting.

REGION H
Water Planning Group

REGION H WATER PLANNING GROUP
WATER MANAGEMENT STRATEGY COMMITTEE
MINUTES OF COMMITTEE MEETING
OCTOBER 24, 2023

A meeting of the Region H Water Planning Group (RHWPG) Water Management Strategy (WMS) Committee was held at 10:00 a.m., October 24, 2023, at the Freese and Nichols Houston office. A notice of said meeting was posted as required by law.

MEMBERS PRESENT: John Bartos, Brad Brunett, Jun Chang, Jace Houston, Ken Kramer, Ivan Langford

DESIGNATED ALTERNATES: Ekaterina Fitos for Yvonne Forrest, Jason Garrard for Glenn Lord, Veronica Osegueda for Mike Turco, Jake Hollingsworth for Brandon Wade, Mesha Gardner for Cynthia Wagener

MEMBERS ABSENT: Kevin Ward

NON-MEMBERS PRESENT: Bill Ervin (H-GAC), Krystal Boggs (NHCRWA)

CONSULTANT TEAM: Philip Taucer, Danielle Fagan

1. CALL TO ORDER

The meeting was called to order at 10:00 a.m.

2. INTRODUCTIONS

Mr. Bartos welcomed the committee members and guests to the meeting and attendees introduced themselves.

3. REVIEW AND APPROVE MINUTES OF OCTOBER 30, 2019 MEETING.

The committee passed a motion made by Mr. Langford and seconded by Mr. Kramer to approve the minutes of the WMS Committee meeting on October 30, 2019.

4. RECEIVE PUBLIC COMMENTS ON SPECIFIC ISSUES RELATED TO AGENDA ITEMS 5 THROUGH 11.

There were no public comments.

5. DISCUSS COMMITTEE ACTIVITIES AND SCHEDULE.

Mr. Taucer provided a summary of anticipated WMS committee activities and topic areas for the current planning cycle, as well as an update to the 2026 Regional Water Plan (RWP) schedule referencing various due dates. The Committee discussed potential timing of its next meeting, which is anticipated for the first quarter of 2024.

6. **DISCUSS WATER MANAGEMENT STRATEGY (WMS) RECOMMENDATIONS FROM THE REGION H 2021 REGIONAL WATER PLAN (RWP).**

Mr. Taucer provided a brief review of the recommended WMS from the 2021 RWP for Region H. Key items included an overview of relevant Plan terminology, relative contributions of different WMS types to recommended future supply, major recommended WMS and projects by category, timing of implementation, and regional and statewide projected WMS costs. Ms. Rose provided additional information regarding TWDB funding programs and available funding amounts.

7. **DISCUSS THE PROCESS FOR IDENTIFYING POTENTIALLY FEASIBLE WMS FOR THE 2026 RWP AND CONSIDER MAKING RECOMMENDATIONS TO THE REGION H WATER PLANNING GROUP (RHWPG).**

Mr. Taucer explained the process applied by the RHWPG in the 2021 RWP to identify potentially feasible Water Management Strategies (WMS) and recommended applying a similar process for the 2021 RWP. The process would consist of identifying still-viable strategies from the prior RWP, those identified as part of the RWP scope development process, and other requests for inclusion by sponsors. After discussion, the Committee recommended a similar process be applied for the 2026 RWP.

8. **DISCUSS THE PROCESS FOR EVALUATING POTENTIALLY FEASIBLE WMS FOR THE 2026 RWP AND CONSIDER MAKING RECOMMENDATIONS TO THE RHWPG.**

Mr. Taucer explained the joint process of identifying shortages and evaluating potential Strategies based on dual WUG and WMS matrix criteria. The Committee discussed other potential factors as part of the assessment of WMS matrix criteria, including timing, scale of projects, regionalization benefit, and general criticality. After discussion, the Committee recommended retaining the overall methodology from the prior planning cycle, with the addition of a rating category for regionalization to the evaluation matrix.

9. **DISCUSS THE PROCESS FOR IDENTIFYING INFEASIBLE WMS AND CONSIDER MAKING RECOMMENDATIONS TO THE RHWPG.**

Mr. Taucer explained that infeasible WMS and WMS projects are defined as those that sponsors have not taken affirmative steps toward implementation. Further he explained that if any projects were identified as infeasible, steps could be taken to amend the plan to adjust online decade, amend the plan to remove it, or amend the plan to replace it. He provided a brief overview of the challenges in executing the analysis as well as summarizing preliminary results and recommended categorizations. The Committee discussed analysis assumptions and recommended that for the current cycle projects for which no sponsor response was received would be categorized as feasible in the absence of other evidence of infeasibility. The Committee further recommended that Chapter 8 of the RWP include a recommendation that terminology used for the process be adjusted to avoid confusion with the process for identifying potentially feasible WMS.

10. **DISCUSS PRELIMINARY SCOPE AND BUDGET FOR REQUESTING TASK 5 FUNDS FOR THE INITIATION OF DETAILED INVESTIGATION INTO POTENTIAL WATER MANAGEMENT STRATEGIES AND CONSIDER MAKING RECOMMENDATIONS TO THE RHWPG.**

Mr. Taucer provided an overview of the process regarding notice to proceed (NTP) for the WMS analyses which includes a scope and fee request and Texas Water Development Board approval. An

initial list of potential WMS subtasks and approximate funding amounts were also presented. The Committee discussed the potential options, including anticipated methodologies for municipal and industrial conservation and reuse analyses. The Committee recommended discussion of the draft NTP, with minor adjustments, with the full RHWPG in December.

11. DISCUSS ADDITIONAL POTENTIAL WATER MANAGEMENT STRATEGY FOCUS AREAS FOR THE 2026 RWP.

The Committee discussed other potential Water Management Strategy focus areas that could be examined under subsequent NTP requests, applicable to future RWP cycles, or could be relevant to agency, legislative, or policy recommendations. Items discussed included new requirements for examining projects with both flood management and water supply benefit, examination of various elements of conservation analysis, and possible future assessment of community-scale rainwater collection and storage. The Committee recommended that Chapter 8 of the RWP include a recommendation for support of investigations regarding the Brazos River Alluvium.

12. RECEIVE PUBLIC COMMENTS.

There were no public comments.

13. ADJOURN

Without objection, the meeting was adjourned at 12:02 p.m.

Agenda Item 5

Discuss Committee activities and schedule.

REGION H
Water Planning Group

Agenda Item 5
Committee Activities and Schedule

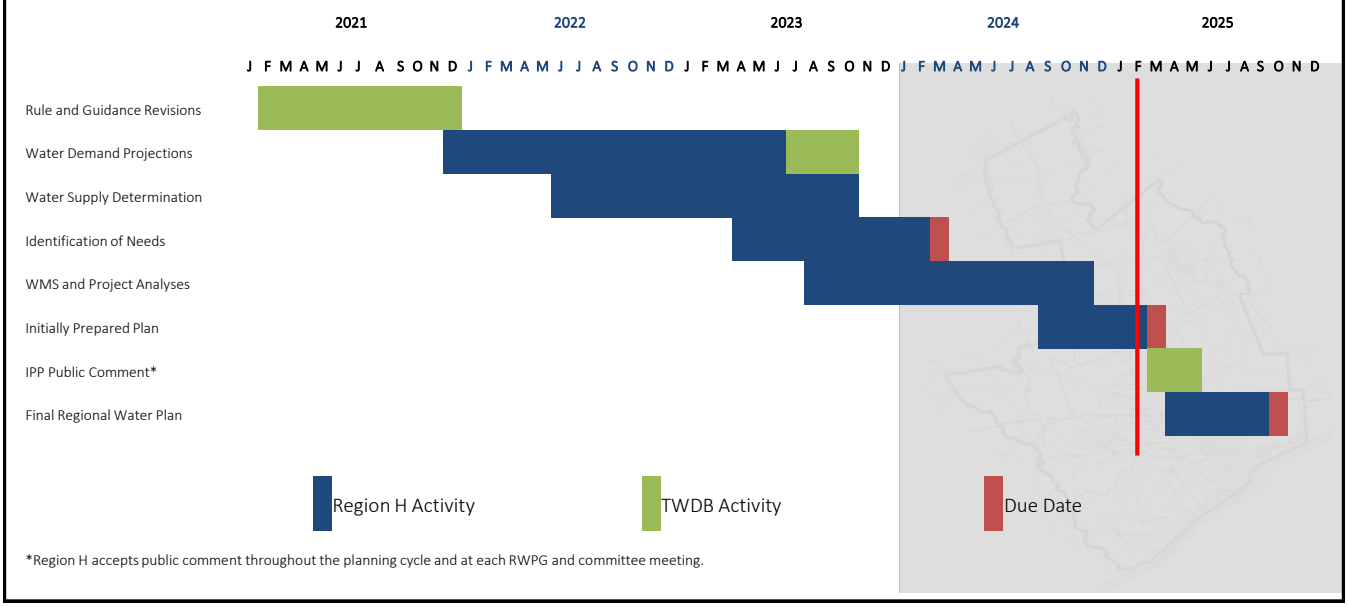
Before IPP

- General assessment
- Special cases
- Drought management

After IPP Assessing post-IPP changes

- Stakeholder and public comments
- Lessons learned
- Planning for 7th cycle

Agenda Item 5
Committee Activities and Schedule



*Region H accepts public comment throughout the planning cycle and at each RWPG and committee meeting.

Agenda Item 5
Committee Activities and Schedule

Date	Scheduled Events/Tasks
01/2025	WMS Committee Meeting
02/2025	RWPG Meeting and IPP Approval
04/2025	IPP Public Hearings
05/2025	RWPG Meeting
06/2025	89th Texas Legislature closes
10/2025	RWP due to TWDB

Agenda Item 6

Discuss water management strategy (WMS) recommendations for the Region H 2026 Regional Water Plan consider making recommendations to the Region H Water Planning Group (RHWPG).

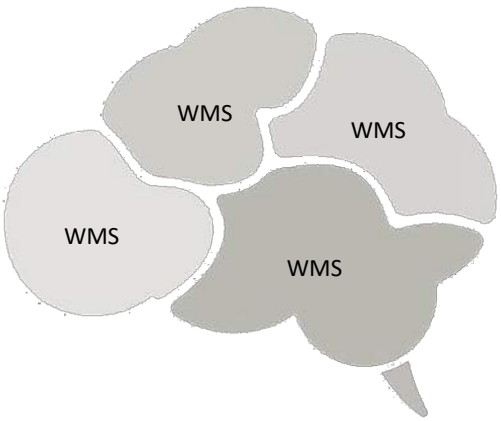
REGION H
Water Planning Group

Agenda Item 6
WMS Recommendations

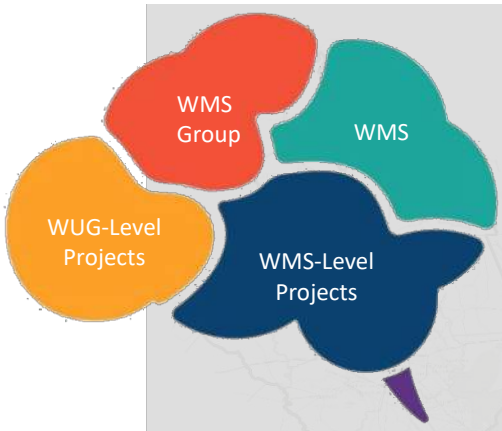
Primary Topics for Today

- Data structure recap
- WMS / project summary
- Special topics
- Fine tuning
- Discussion and Recommendations

Agenda Item 6
WMS Recommendations – Data Structure

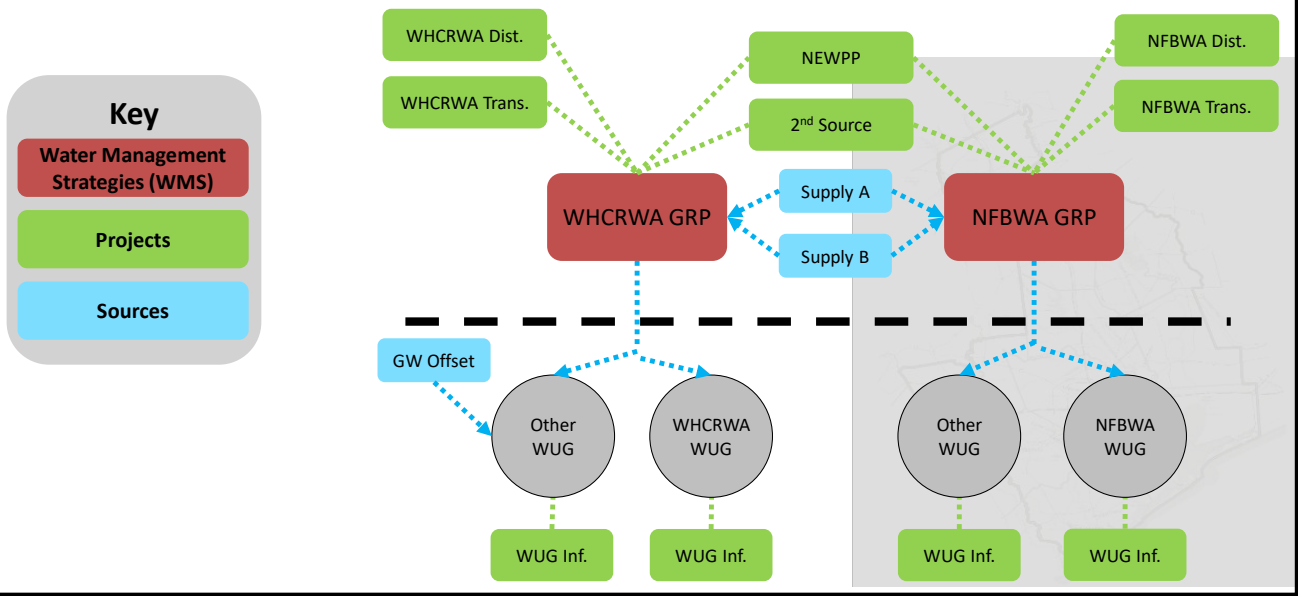


Early RWPs



New RWPs

Agenda Item 6
WMS Recommendations – Data Structure



Agenda Item 6
WMS Recommendations – Applied WMS

Conservation

- Municipal, **Industrial**, Irrigation, Loss Reduction

Groundwater

- Brackish GW, COH Area 2 GW, Expanded Use, GCWA Well Development, **Fairchilds Infrastructure**

GRPs

- COH, RWAs, Fort Bend MUD 25, Fort Bend WCID 2, Missouri City, Montgomery MUDs 8 & 9, **Montgomery County Supply Expansion**, Richmond, Rosenberg, Sugar Land

Agenda Item 6
WMS Recommendations – Applied WMS

Reuse

- COH Reuse, **League City Effluent**, Pearland Reuse, Texas City Industrial Complex Reuse
  WW Reclamation for Mun. Irrigation, other small WMS

Surface Water Availability Expansion

- Brazos SWB, BWSC Reservoir and Pump Station Exp., **GCWA Coastal Desalination**

Interbasin Transfer

- East Texas Transfer, LNVA Neches-Trinity Basin Interconnect

Agenda Item 6
WMS Recommendations – Applied WMS

Infrastructure-Driven Strategies

- **BAWA East SWTP Expansion**, **Harris County MUD 50 SWTP**, **LNVA Devers Pump Station Relocation**, Manvel Supply Expansion, Pearland SWTP, Southeast Transmission Line Expansion

New / Expanded Contracts with Provider

- BRA, BWA, COH, GCWA, Industrial Supply Reallocation, SJRA

Agenda Item 6
WMS Recommendations - Projects

Demand Management

2030

- Advanced Municipal Conservation
- Water Loss Reduction
- **Industrial Conservation**
- Irrigation Conservation
- Sugar Land Advanced Loss Reduction and AMI

Agenda Item 6
WMS Recommendations - Projects

Groundwater Development

2030

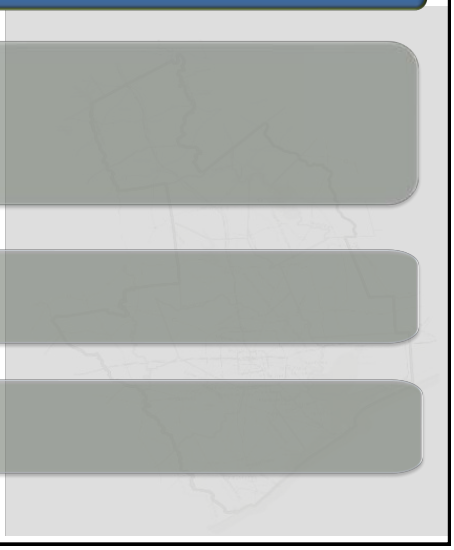
- COH Area 2 GW Infrastructure
- **COH Repump and GW Plant Improvements**
- **Fairchilds Supply Infrastructure**
- WUG-Level Expanded Groundwater
- WUG-Level Brackish Projects

2040

- GCWA Groundwater Well Development

2080

- SJRA Catahoula Aquifer Supplies



Agenda Item 6
WMS Recommendations - Projects

Direct and Indirect Reuse

2030

- **League City Effluent Reuse**
- NHCRWA Member District Reuse Infrastructure
- NFBWA Member District Reuse Infrastructure
- River Plantation Reuse Expansion
- San Jacinto Basin Regional Return Flows
- Sugar Land Reuse Infrastructure
- Wastewater Reclamation for Municipal Irrigation (MPCs)
- Westwood Shores MUD Reuse

2040

- City of Houston Reuse
- Pearland Reuse Infrastructure
- Texas City Industrial Complex Reuse

Agenda Item 6
WMS Recommendations - Projects

Water Treatment

2030

- **BAWA East SWTP Expansion**
- BWA Brackish Groundwater Treatment
- BWA Conventional Treatment Expansion
- City of Houston Northeast Water Purification Plant Expansion
- **City of Houston Southeast Water Purification Plant Expansion**
- GRP Treatment Inf. – Fort Bend MUD 25, Fort Bend WCID 2, Missouri City, Sugar Land, etc.
- Pearland SWTP

2040

- **City of Houston East Water Purification Plant Enhancement**

Agenda Item 6
WMS Recommendations - Projects

Major Transmission and Distribution

2030

- BWA Transmission Expansion
- CHCRWA Transmission and Distribution
- COH GRP Transmission
- **COH Transmission Expansion**
- GRP Transmission Projects (Richmond, Rosenberg, etc.)
- **Manvel Supply Expansion**
- NFBWA Phase 2 Distribution Segments
- NHCRWA Transmission and Distribution Projects
- Southeast Transmission Improvements
- WHCRWA/NFBWA Transmission Line
- WHCRWA Distribution Expansion

Agenda Item 6
WMS Recommendations - Projects

Major Transmission and Distribution

2040

- CWA Transmission Expansion
- LNVA Neches-Trinity Basin Interconnect
- **Montgomery County Supply Expansion**

2050

- East Texas Transfer

Agenda Item 6
WMS Recommendations - Projects

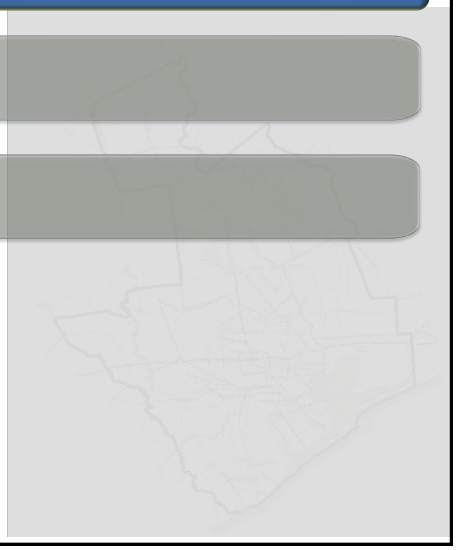
Surface Water Development

2030

- BWSC Reservoir and Pump Station Expansion

2040

- Allens Creek Reservoir
- **GCWA Coastal Desalination**



Agenda Item 6
WMS Recommendations - Projects

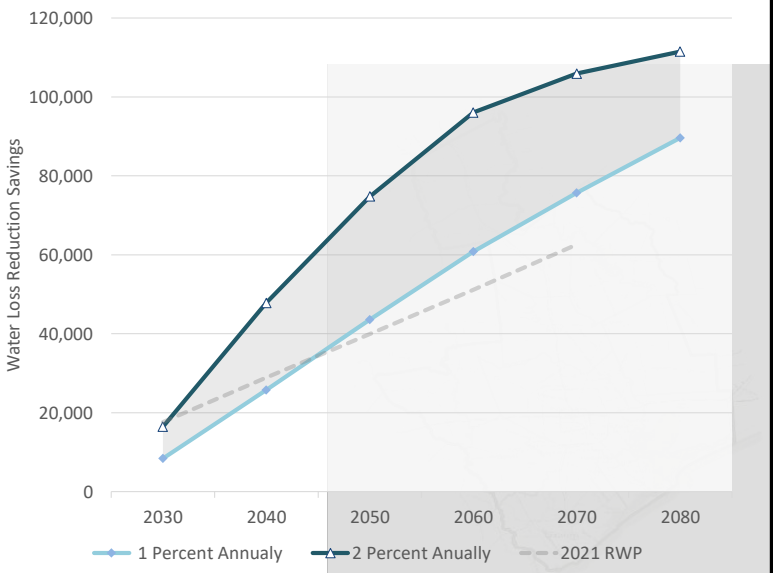
Other Major Projects

2030

- Brazos Saltwater Barrier
- **GCWA Canal Lining and Loss Mitigation**
- GCWA Shannon Pump Station Expansion
- **LNVA Devers Pump Station Relocation**

Agenda Item 6
WMS Recommendations – Water Loss Reduction

- WUG distribution systems
- Real losses
- Max. 2018-2022 TWDB data
- Target WUG losses > 10%
- Gradual annual reduction until target reached



Agenda Item 6
WMS Recommendations – Industrial Conservation

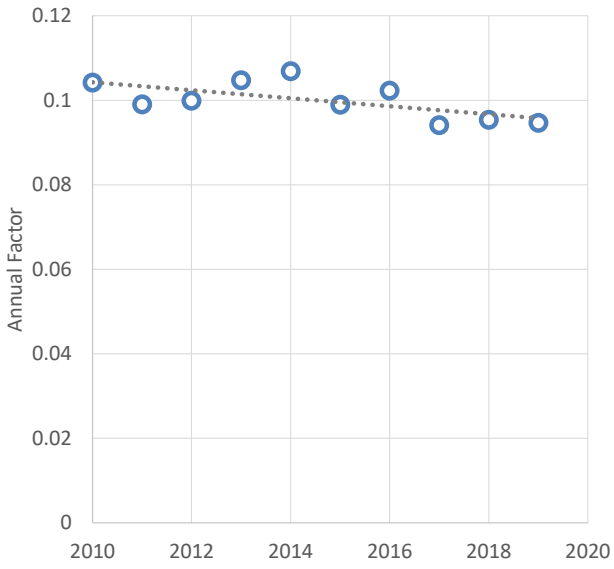
Challenges

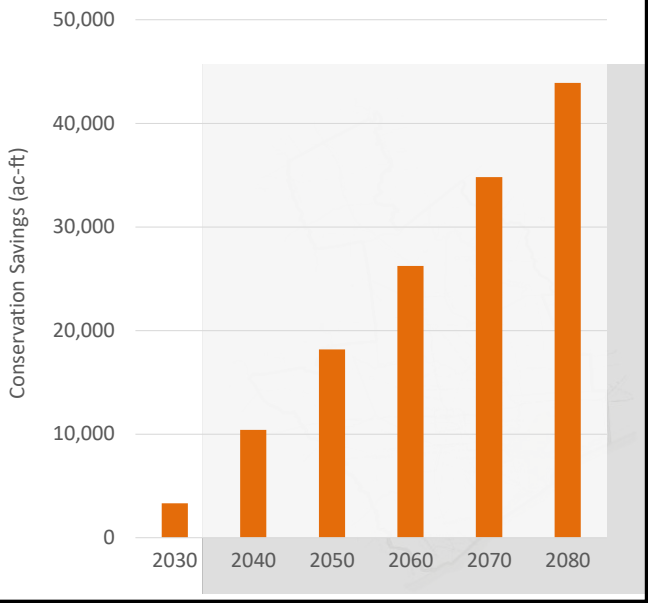
- Diversified region
- Aggregated data
- Existing efficiencies
- Implementation and timing facility-dependent
- Variable economics

Methodology

- TWDB Water Use Survey
  - 2010-2019 data
  - By NAICS category
  - Adjust for name and DBA changes
  - Examine possible trends
- Manufacturing focus
- Normalized per-facility usage to address
  - Regional growth
  - New facilities

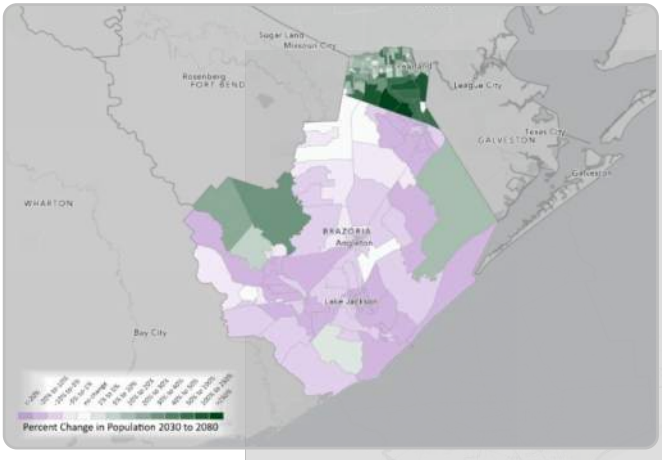
Agenda Item 6
WMS Recommendations – Industrial Conservation



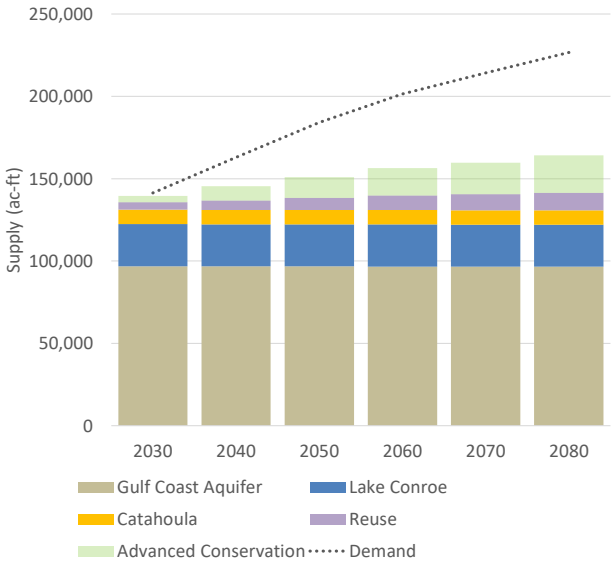


Agenda Item 6
WMS Recommendations – Groundwater Limitations

- Brazoria County challenges
  - Localized heavy growth
  - Groundwater-centric areas
  - Demands exceeding groundwater
- Solutions
  - Surface water where viable
  - MAG Peak Factor
- Temporary – availability reallocation

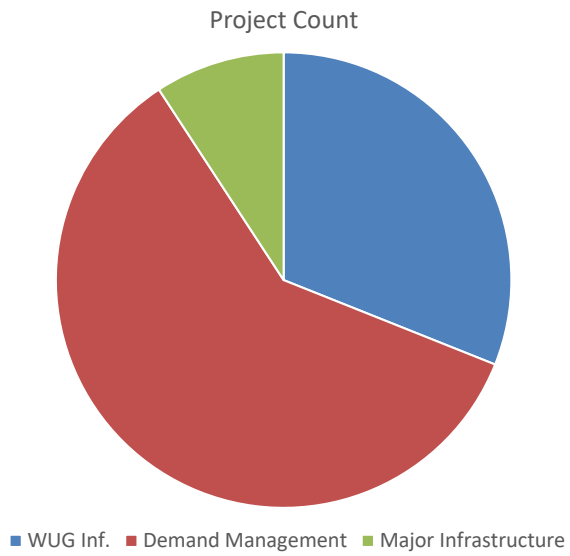


Agenda Item 6
WMS Recommendations – Groundwater Limitations



- Montgomery County challenges
  - Demands exceed groundwater availability
  - Evolving regulation over time
- Montgomery County Supply Expansion
- Lake Conroe and other sources
  - Differences in timing and magnitude
  - Different projections
  - Higher MAG
  - Other entity supply (reuse, brackish)
  - Aggressive conservation

Agenda Item 6
WMS Recommendations – WUG Infrastructure Expansions



The Benefits

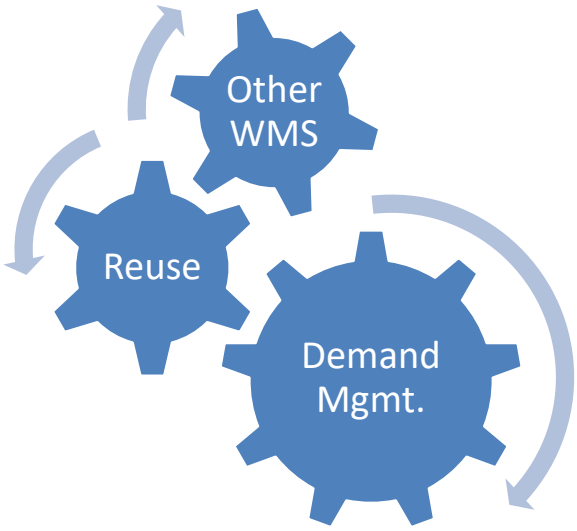
- Avoidance of amendments
- Avoids underestimation of cost
- Avenue of contact with WUGs
- Standardized approach to address unknowns

Agenda Item 6
WMS Recommendations – WUG Infrastructure Expansions

The Challenges

- Uncertainty and limited feedback
- Potentially Infeasible analysis
- Data volume
- Less favorable project scales

Agenda Item 6
WMS Recommendations – Potential Fine Tuning



- Fine-tuning allocations
  - Conservation and reuse ripples
  - Interregional adjustments
- Project details and costs
- Implementation status

Agenda Item 6
WMS Recommendations – Discussion and Recommendations

- Technical elements
- Messaging
- Pre- vs. Post-IPP adjustments

Draft 2026 RWP
WMS and Project Summaries

REGION H
Water Planning Group

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Table 1. Key Project Overview

Project	Potential Volume[1] (ac-ft)	Capital Cost ($)	Unit Cost ($/ac-ft)		Start Decade
			Start Decade	2080	
Conservation[2]					
Industrial Conservation	43,892	$305,856,311	$540	$247	2030
Irrigation Conservation	103,799	$2,521,185	$157	$155	2030
Municipal Conservation (Advanced Conservation)	140,597	$4,130,874,617	$1,770	$617	2030
Municipal Conservation (Water Loss Reduction)	89,637	$1,647,604,552	$761	$726	2030
Conveyance					
BWA Transmission and Storage Expansion	16,800	$84,794,502	$437	$82	2030
CHCRWA Transmission and Internal Distribution	5,466	$22,717,067	$314	$22	2030
City of Houston GRP Transmission	51,789	$260,640,042	$347	$50	2030
City of Houston Transmission Expansion	483,280	$508,742,379	$83	$11	2030
CWA Transmission Expansion	454,720	$497,255,512	$128	$28	2040
East Texas Transfer	250,000	$591,526,599	$189	$23	2050
LNVA Neches-Trinity Basin Interconnect	67,000	$127,821,515	$165	$31	2040
Manvel Supply Expansion	7,840	$62,235,692	$475	$57	2030
NFBWA Phase 2 Distribution Segments	62,496	$129,366,992	$166	$21	2030
NHCRWA Distribution Expansion	143,360	$1,228,464,604	$346	$60	2030
NHCRWA Transmission Lines	143,360	$453,864,685	$255	$32	2030
Southeast Transmission Line Improvements	57,575	$159,151,172	$213	$18	2030
WHCRWA Distribution Expansion	92,288	$391,325,873	$256	$36	2030
WHCRWA/NFBWA Transmission Line	169,030	$622,459,204	$297	$38	2030
Groundwater Development					
Brackish Groundwater Development[3]	Varies	Varies by WUG	Varies	Varies	2030
BWA Brackish Groundwater Development	13,440	$74,055,688	$830	$442	2030
City of Houston Area 2 Groundwater Infrastructure	50,400	$150,754,783	$482	$271	2030
City of Houston Repump and GW Plant Improvements	97,440	$173,600,899	$287	$45	2030
Expanded Use of Groundwater[3]	41,178	Varies by WUG	Varies	Varies	2030
Fairchilds Supply Infrastructure	2,128	$103,900,000	$3,337	$862	2030
GCWA Groundwater Well Development	35,840	$28,564,015	$118	$62	2040
SJRA Catahoula Aquifer Supplies	10,500	$34,912,379	$650	$650	2080
Groundwater Reduction Plans					
CHCRWA GRP[4]	5,466	$0	$0	$0	2030
City of Houston GRP[4]	60,766	$0	$0	$0	2030
City of Missouri City GRP	11,200	$58,835,350	$608	$239	2030
City of Richmond GRP	6,720	$85,626,919	$1,252	$355	2030
City of Rosenberg GRP	3,920	$17,081,984	$344	$37	2030
City of Sugar Land IWRP	16,724	$205,801,341	$1,716	$511	2030
Fort Bend County MUD 25 GRP	1,120	$11,567,244	$784	$58	2030
Fort Bend County WCID 2 GRP	6,720	$71,687,468	$1,144	$393	2030
Montgomery County MUDs 8 and 9 Supply Expansion	2,240	$53,547,608	$3,061	$1,379	2030

Project	Potential Volume[1] (ac-ft)	Capital Cost ($)	Unit Cost ($/ac-ft)		Start Decade
			Start Decade	2080	
Montgomery County Supply Expansion	75,000	$779,670,291	$829	$387	2030
NFBWA GRP[4]	62,496	$0	$0	$0	2030
NHCRWA GRP[4]	143,360	$0	$0	$0	2030
WHCRWA GRP[4]	92,288	$0	$0	$0	2030
Reuse					
City of Houston Reuse	191,139	$820,816,940	$536	$213	2040
City of Pearland Reuse	1,154	$24,161,522	$1,565	$210	2040
League City Effluent Reuse	11,200	$4,686,566	$66	$4	2030
NFBWA Member District Reuse	4,280	$58,450,435	$1,708	$747	2030
NHCRWA Member District Reuse	300	$5,441,580	$2,206	$929	2030
River Plantation Reuse[5]	25	$0	$0	$0	2030
San Jacinto Basin Regional Return Flows[4]	100,445	$0	$0	$0	2030
Texas City Industrial Complex Reuse	11,200	$45,700,000	$344	$57	2040
Wastewater Reclamation for Municipal Irrigation	15,139	$310,466,162	$3,172	$1,458	2030
Westwood Shores MUD Reuse	150	$2,476,273	$2,162	$1,001	2030
Surface Water Development					
Allens Creek Reservoir	99,650	$493,919,561	$279	$47	2040
BWSC Reservoir and Pump Station Expansion	80,000	$507,286,280	$574	$128	2030
GCWA Coastal Desalination	22,400	$283,297,581	$2,207	$1,317	2040
Treatment					
BAWA East SWTP Expansion	13,440	$124,515,458	$868	$217	2030
BWA Conventional Treatment Expansion	8,400	$23,244,186	$400	$205	2030
City of Houston EWPP Enhancement	470,400	$5,000,000,000	$1,492	$744	2040
Harris County MUD 50 Surface Water Treatment Plant	560	$22,804,420	$4,994	$2,129	2030
Northeast Water Purification Plant Expansion	340	$2,153,107,392	$649	$355	2030
Pearland Surface Water Treatment Plant	22,400	$261,245,745	$1,170	$349	2030
SEWPP Expansion	134,400	$1,116,248,913	$457	$353	2030
Other Infrastructure					
Brazos Saltwater Barrier	10,000	$77,571,019	$596	$51	2030
GCWA Canal Lining and Loss Mitigation	8,960	$12,393,000	$111	$13	2030
GCWA Shannon Pump Station Expansion	201,600	$81,410,301	$120	$27	2030
LNVA Devers Pump Station Relocation	88,704	$21,337,986	$21	$4	2030

1. *Volumes listed in this table represent the maximum anticipated volume associated with the projects rather than new increments of yield. Volumes shown in this table may overlap and are not necessarily additive.*
2. *It should be noted that costs for municipal water conservation programs represent a total cost for offsetting a unit volume of water at the point of delivery. A number of strategies require multiple projects or project components (source generation, treatment, transmission, etc.) working in conjunction to meet needs at points of use. Therefore, the additive nature of these costs must be considered when they are compared with and contrasted against conservation programs.*
3. *Includes brackish groundwater projects implemented under Expanded Use of Groundwater. Costs vary by WUG.*
4. *Costs, including construction costs, engineering, legal, and permitting fees, land acquisition, and other capital costs, are included under associated infrastructure projects.*
5. *Supply generated through expanded use of existing infrastructure. Cost estimated to be minimal.*

Table 2. WMS and Key Project Relationships

Water Management Strategy*	WMS Project Name
Additional Supply from BRA	Allens Creek Reservoir
Additional Supply from GCWA	Allens Creek Reservoir
	GCWA Canal Lining and Loss Mitigation
	GCWA Shannon Pump Station Expansion
BAWA East SWTP Expansion	BAWA East SWTP Expansion
Brackish Groundwater Supplies	WUG Infrastructure Expansion (WUG-level projects)
Brazos Saltwater Barrier	Brazos Saltwater Barrier
BWSC Reservoir and Pump Station Expansion	BWA Conventional Treatment Expansion
	BWA Transmission and Storage Expansion
	BWSC Reservoir and Pump Station Expansion
CHCRWA GRP	CHCRWA Transmission and Internal Distribution
	Northeast Water Purification Plant Expansion
City of Houston Area 2 Groundwater Development	City of Houston Area 2 Groundwater Infrastructure
City of Houston GRP	City of Houston EWPP Enhancement
	City of Houston GRP Transmission
	City of Houston Repump and Groundwater Plant Improvements
	City of Houston Transmission and Distribution Expansion
	CWA Transmission Expansion
	Northeast Water Purification Plant Expansion
	SEWPP Expansion
City of Houston Reuse	City of Houston Reuse
City of Pearland Reuse	City of Pearland Reuse
East Texas Transfer	East Texas Transfer
Expanded Use of Groundwater	Expanded Use of Groundwater (WUG-level projects)
Fairchilds Supply Infrastructure	Fairchilds Supply Infrastructure
Fort Bend MUD 25 GRP	Fort Bend MUD 25 GRP
Fort Bend WCID 2 GRP	Fort Bend WCID 2 GRP
GCWA Coastal Desalination	GCWA Coastal Desalination
	GCWA Shannon Pump Station Expansion
GCWA Groundwater Well Development	GCWA Groundwater Well Development
Harris County MUD 50 SWTP	Harris County MUD 50 SWTP
Industrial Conservation	Industrial Conservation
Irrigation Conservation	Irrigation Conservation
League City Effluent Reuse	League City Effluent Reuse
LNVA Devers Pump Station Relocation	LNVA Devers Pump Station Relocation
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 Supply Expansion	Montgomery County MUDs 8 and 9 Supply Expansion
Montgomery County Supply Expansion	Montgomery County Supply Expansion
	SJRA Catahoula Aquifer Supplies
Municipal Conservation	Adv. Municipal Conservation (WUG-level projects)

Water Management Strategy*	WMS Project Name
New / Expanded Contract with BWA	BWA Brackish Groundwater Development
	BWA Transmission and Storage Expansion
New / Expanded Contract with City of Houston	City of Houston EWPP Enhancement
	City of Houston Repump and Groundwater Plant Improvements
	City of Houston Reuse
	Northeast Water Purification Plant Expansion
New / Expanded Contract with GCWA	Allens Creek Reservoir
	GCWA Canal Lining and Loss Mitigation
	GCWA Shannon Pump Station Expansion
New / Expanded Contract with Regional Providers	WUG Infrastructure Expansion (WUG-level projects)
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
	NHCRWA Distribution Expansion
	NHCRWA Transmission Lines
	Northeast Water Purification Plant Expansion
NHCRWA Member District Reuse	NHCRWA Member District Reuse Infrastructure
Pearland SWTP	Pearland Surface Water Treatment Plant
Richmond GRP	Allens Creek Reservoir
	City of Richmond GRP
Rosenberg GRP	BWA Conventional Treatment Expansion
	City of Rosenberg GRP
Southeast Transmission Line Expansion	SEWPP Expansion
	Southeast Transmission Line Improvements
Sugar Land IWRP	Sugar Land Advanced Demand Management
	Sugar Land IWRP
Texas City Industrial Complex Reuse	Texas City Industrial Complex Reuse
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 (DB27) may vary slightly from those shown in this summary table where necessary due to the DB27 data structure and to properly reflect project phasing and project type.*

Table 3. Supply Source Increases Associated with Recommended WMS

Source	Yield Type	New or Increased Source Supply (ac-ft)					
		2030	2040	2050	2060	2070	2080
Conservation							
Industrial Conservation	New	3,320	10,414	18,171	26,242	34,806	43,892
Irrigation Conservation	New	103,799	103,799	103,799	103,799	103,799	103,799
Municipal Conservation	New	42,816	80,546	94,539	111,293	119,921	140,597
Water Loss Reduction	New	8,389	25,726	43,579	60,827	75,740	89,637
Groundwater							
Gulf Coast Aquifer System, Montgomery (Catahoula Formation)	Increased	745	1,322	1,744	1,979	2,237	12,976
Surface Water							
Allens Creek Lake/Reservoir	New	0	99,650	99,650	99,650	99,650	99,650
Brazos Run-of-River, Brazoria	Increased	10,000	10,000	10,000	10,000	10,000	10,000
Harris Reservoir	New	80,000	80,000	80,000	80,000	80,000	80,000
Gulf of Mexico Saline	New	0	22,400	22,400	22,400	22,400	22,400
Reuse							
Direct Reuse, County-Other, Montgomery	Increased	215	838	1,465	1,952	2,320	2,570
Direct Reuse, Fort Bend County MUD 25	Increased	68	68	68	68	68	68
Direct Reuse, Galveston County Industries	New	0	11,200	11,200	11,200	11,200	11,200
Direct Reuse, League City	Increased	5,600	6,720	7,840	8,960	10,080	11,200
Direct Reuse, Master Planned Communities, Brazoria County	New	42	110	192	228	269	313
Direct Reuse, Master Planned Communities, Chambers County	New	22	126	281	429	589	771
Direct Reuse, Master Planned Communities, Fort Bend County	New	517	1,817	3,189	4,326	5,472	6,517
Direct Reuse, Master Planned Communities, Harris County	New	852	1,616	2,119	2,393	2,893	3,252
Direct Reuse, Master Planned Communities, Liberty County	New	66	232	434	653	866	1,097
Direct Reuse, Master Planned Communities, Waller County	New	36	92	196	327	468	619
Direct Reuse, Missouri City	New	579	678	725	747	786	804
Direct Reuse, North Fort Bend Water Authority	Increased	4,280	4,280	4,280	4,280	4,280	4,280
Direct Reuse, North Harris County Regional Water Authority	Increased	300	300	300	300	300	300
Direct Reuse, Pearland	New	0	314	1,154	1,154	1,154	1,154
Direct Reuse, Quail Valley UD	Increased	59	84	94	140	164	188
Direct Reuse, River Plantation MUD	Increased	25	25	25	25	25	25
Direct Reuse, Sienna Plantation	Increased	2,706	2,785	2,903	2,955	3,013	3,092
Direct Reuse, Sugar Land	Existing	1,232	1,680	2,912	2,912	2,912	2,912
Direct Reuse, Westwood Shores MUD	New	150	150	150	150	150	150
Indirect Reuse, Houston	New	0	159,855	163,963	165,839	165,168	165,705
San Jacinto Regional Return Flows	New	75,463	77,888	93,415	96,281	99,677	100,445

**Includes savings volumes for Sugar Land Advanced Demand Management.*

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Draft 2026 RWP
Impacts Analysis

REGION H
Water Planning Group

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Appendix 6-B – Impacts to Resources

6-B-1. OVERVIEW

The Region H Water Planning Group (RHWPG), in developing the 2026 Regional Water Plan (RWP), balanced meeting water needs with good stewardship of the water, agricultural, and natural resources within the region to promote a balance of economic, social, aesthetic, and ecological viability. The Region H strategy selection and evaluation process, described in ***Chapter 5***, included application of rating criteria for impacts to environmental land and habitat, instream flows, and bay and estuary inflow. As part of the evaluation of impacts of the 2026 RWP, the RHWPG conducted a quantitative assessment of potential impacts of strategies and projects on agricultural and natural resources in accordance with Title 31, Texas Administrative Code (TAC) § 357.34(e)(3) and Texas Water Development Board (TWDB) guidance.

Multiple agricultural and environmental impacts matrices were developed to quantify and compare the potential impacts of strategies and projects. Impact matrices were developed to take into consideration the following categories:

- Agricultural Resources
- Wildlife Habitat – Project Acreage
- Wildlife Habitat – Environmental Land and Habitat
- Environmental Water Needs
- Bays, Estuaries, and Arms of The Gulf of Mexico
- Cultural Resources

Each category was quantitatively assessed, with a corresponding ranking from 1 to 5 assigned based upon the results of this assessment. Where possible, numerical inputs such as total project acreage or acreage impacted were utilized as inputs to the evaluation process. Where numerical inputs were not available or variable, impacts were categorized by level of impact and assigned a corresponding ranking. Evaluation methodologies and ranking assignments for each category are discussed in the following sections.

6-B-2. AGRICULTURAL RESOURCES

Potential impacts to agricultural resources were quantified and scored based on direct impacts to agricultural acreage; strategies and projects in the RWP are not expected to reduce the availability of firm water supplies of irrigation users. A quantitative assessment was conducted to assess the impact to agricultural acreage for each key project. Where data on disturbed or developed acreage was not available from project sponsors, acreage was estimated using project-specific assumptions or based upon project components types and standard RWP assumptions on component acreage as applied in the TWDB Unified Costing Model. This assessment considered the infrastructure required for a project, as well as the presence of agricultural resources in the project area. *Table 6-B-1* describes the quantitative thresholds used to score each key project for its impact on agricultural acreage and resources.

The following assumptions and observations were made for this criterion:

- Non-infrastructure projects do not impact agricultural lands or production.
- Projects developed in an urban setting do not impact agricultural lands or production.
- WUG-level infrastructure, pipelines, and groundwater wells can generally be located in areas avoiding most or all agricultural impacts.
- If the location of a project is known and data is available to estimate impacts to agricultural resources, this information was used to evaluate the project and assign an impact score.
- Scoring for groundwater reduction plans (GRPs) considered whether the associated infrastructure is reflected in the RWP as a direct GRP component or included under one or more other key projects.
- For projects that have positive impacts to agricultural resources and/or provide additional water supply or demand management to agriculture, the project is rated as "positive".

Table 6-B-1 – Agricultural Resources Impact Scoring Matrix

Estimated Agricultural Acres Impacted	Impact Description	Agricultural Resources Score
>10,000 acres	High Impact	1
5,001-10,000 acres	Medium High	2
2,001-5,000 acres	Medium	3
101-2,000 acres	Medium Low	4
1-100 acres	Low	5
No area impacted	None	5
Positive acreage impacts and provides water supply or demand management to agriculture	Positive	5

6-B-3. WILDLIFE HABITAT – PROJECT ACREAGE

This criterion evaluates the potential degree of impact to wildlife habitat based on total estimated project acreage. A quantitative assessment was conducted to estimate the total acreage impacted by the infrastructure of each key project. Where data on disturbed or developed acreage was not available from project sponsors, acreage was estimated using project-specific assumptions or based upon project components types and standard RWP assumptions on component acreage as applied in the TWDB Unified Costing Model. This estimate of total acreage was applied to evaluate and assign a score to each key project for this criteria, based on the quantitative thresholds shown in *Table 6-B-2.* It should be noted that application of total acreage is a highly conservative indicator of potential wildlife habitat impact, as many of the key projects recommended in the 2026 RWP are associated with infrastructure expansion at existing water facility sites or would be developed in heavily urbanized areas.

The following assumptions and observations were made for this criterion:

- If the location of the project is known and data is available regarding impacts to specific wildlife habitats or a detailed study has been conducted, this information was used to evaluate a project and assign an impact score.
- Non-infrastructure projects do not impact wildlife habitat.
- The majority of projects evaluated require infrastructure that will have low impact on wildlife habitat acreage.
- Scoring for GRPs considered whether the associated infrastructure is reflected in the RWP as a direct GRP component or included under one or more other key projects.
- Projects with potential medium high to high impacts to habitat acreage are expected to be those with a large geographic footprint, including reservoirs.

Table 6-B-2 –Habitat Project Acreage Impact Scoring Matrix

Summary	Impact Description	Wildlife Habitat Score
>10,000 acres	High	1
5,001-10,000 acres	Medium High	2
2,001-5,000 acres	Medium	3
101-2,000 acres	Medium Low	4
1-100 acres	Low	5
Non-infrastructure projects	None	5

6-B-4. WILDLIFE HABITAT - ENVIRONMENTAL LAND AND HABITAT

This criterion evaluates the degree of potential environmental land and habitat impacts based on project-specific considerations associated with development setting, degree of expected disturbance, impacts to surrounding areas, mitigation opportunities, and degree of opposition. *Table 6-B-3* explains the categories used to evaluate and score each key project for impacts on environmental land and habitat.

The "Environmental Land and Habitat" criterion was also evaluated and scored for each key project under the second phase (the Matrix Evaluation phase) of WMS evaluation described in ***Section 5.3.4*** of the RWP. The scoring for this criterion is consistent with the Region H WMS Rating Criteria matrix in ***Table 5-2***. More detailed discussions regarding environmental land and habitat impacts for each key project can be found in the technical memoranda in ***Appendix 5-B***.

The following assumptions and observations were made for this criterion:

- If environmental land impacts have been already been evaluated in a detailed study, this information was used to evaluate a project and assign an impact score.
- Non-infrastructure projects do not impact wildlife habitat.
- Projects with anticipated development on existing water facility sites or in urban settings are typically expected to have low to medium impacts.
- Large scale conveyance projects are typically expected to have medium impacts due to urbanized settings or the ability to select routes to reduce habitat impacts.

Table 6-B-3 – Environmental Land and Habitat Impact Scoring Matrix

Summary	Impact Description	Wildlife Habitat Score
Significant environmental issues and opposition.	High	1
Some environmental issues and opposition.	Medium High	2
Environmental impacts can be mitigated. Limited concerns.	Medium	3
Minimal mitigation of impacts needed. Minimal concerns.	Medium Low	4
Limited or no known impacts.	Low	5

6-B-5. ENVIRONMENTAL WATER NEEDS

This criterion evaluates the degree of impact that a project could have on an area's overall environmental water needs. Water is vital to the environmental health of a region. Therefore, it is imperative to consider the extent to which water supply projects could impact the amount of water that will be available to the environment, and how this could affect environmental needs and health. The evaluation of environmental water needs focused on impacts to instream flows regimes upstream and downstream of the project. While Senate Bill 3 environmental flow parameters were considered as part of the evaluation process, the assessment of environmental water needs was not constrained to statutory flow requirements and incorporated project and site-specific considerations regarding potential impacts to both upstream and downstream flows. *Table 6-B-4* presents the categories used to evaluate and score each key project for this criterion. More detailed discussions regarding environmental flows, including instream flows, for each key project can be found in their respective technical memoranda in ***Appendix 5-B***.

The following assumptions and observations were made for this criterion:

- If impacts on environmental water needs and instream flows have been already been evaluated in a detailed study, this information was used to evaluate a project and assign an impact score.
- Groundwater development projects, excluding aquifer storage and recovery, potentially increase instream flows through return flows from points of use.

- The majority of recommended treatment and transmission projects do not directly impact instream flows directly, as they are supplied through other source development projects.
- Source development projects such as intake expansions, reuse, and reservoir development are typically associated with reduced instream flows.
- Scoring for GRPs considered whether the associated infrastructure is reflected in the RWP as a direct GRP component or included under one or more other key projects.

Table 6-B-4 – Environmental Water Needs Impact Scoring Matrix

Environmental Water Needs	Impact Description	Environmental Needs Score
Significantly reduces instream flows.	Significant Decrease	1
Reduces instream flows.	Moderate Decrease	2
Limited or no impact.	None or Limited	3
Increases instream flows.	Moderate Increase	4
Significantly increases instream flows.	Significant Increase	5

6-B-6. BAYS, ESTUARIES, AND ARMS OF THE GULF OF MEXICO

This criterion evaluates the degree of potential environmental impact that the implementation of a project could have on nearby bays and estuaries, as well as arms of the Gulf of Mexico. Region H includes the Galveston and Trinity Bay estuaries and touches portions of the Gulf of Mexico. As a result, some projects included in the 2026 Region H Water Plan could have an environmental impact on these bays, estuaries, or the Gulf of Mexico. This criterion was primarily evaluated based on the degree of impact that a project could have on bay and estuary (B&E) flows. While Senate Bill 3 environmental flow parameters were considered as part of the evaluation process, the assessment of bay and estuary impacts was not constrained to statutory flow requirements and incorporated project and site-specific considerations regarding potential impacts to flows. It should be noted that the TCEQ water right permitting process as well as the rules for RWP development preclude the inclusion of strategy or project supply availability inconsistent with established instream flow requirements. *Table 6-B-5* depicts the categories used to evaluate and score each key project for this criterion. More detailed discussions regarding environmental flows, including B&E flows, for each key project can be found in the technical memoranda in ***Appendix 5-B***.

The following assumptions and observations were made for this criterion:

- If impacts to environmental flows into bays and estuaries or the Gulf of Mexico have been evaluated in a detailed study, this information was used to evaluate a project and assign an impact score.
- Groundwater development projects, excluding aquifer storage and recovery, potentially increase flows through return flows from points of use.

- The majority of recommended treatment and transmission projects do not directly impact bay and estuary inflows directly, as they are supplied through other source development projects.
- Source development projects such as intake expansions, reuse, and reservoir development are typically associated with reduced bay and estuary inflows.
- Scoring for GRPs considered whether the associated infrastructure is reflected in the RWP as a direct GRP component or included under one or more other key projects.

Table 6-B-5 – Bay and Estuary Scoring Matrix

Environmental Water Needs	Impact Description	Environmental Needs Score
Significantly reduces B&E inflow.	Significant Decrease	1
Reduces B&E flows.	Moderate Decrease	2
Limited or no impact.	None or Limited	3
Increases B&E flows.	Moderate Increase	4
Significantly increases B&E flows.	Significant Increase	5

6-B-7. CULTURAL RESOURCES

This criterion evaluates the degree to which a project could impact cultural resources located within the area. Cultural resources are defined as the collective evidence of the past activities and accomplishments of people. Locations, buildings, and features with scientific, cultural, or historic value are considered to be cultural resources. *Table 6-B-6* lists the categories used to evaluate and score each key project for this criterion.

The following assumptions and observations were made for this criterion:

- If impacts to cultural resources have been discussed in a detailed study, this information was used to evaluate a project and assign an impact score.
- Non-infrastructure projects do not impact cultural resources.
- In most cases, Region H projects are expected to have no or low impact on cultural resources because they are located in areas that avoid areas of known cultural resources.
- Impacts to cultural resources can often be avoided during detailed design. Many of the projects in the RWP have not yet reached this point, but would be expected during the detailed design phase to investigate options for avoiding and mitigating impacts.
- Projects that primarily involve wells, conveyance, or development of infrastructure at existing facilities or heavily developed areas were assumed to have a low impact on cultural resources.
- New treatment and facilities that have siting flexibility to mitigate impacts to cultural resources were assumed to have a medium low impact.

- Reservoirs were assumed to have a medium to medium high impact, depending upon where the site will be located.

Table 6-B-6 – Cultural Resources Scoring Matrix

Summary	Impact Description	Cultural Resources Score
Projects with known high cultural impacts	High	1
Reservoirs with potential for above-average cultural impacts or development on natural lands	Medium High	2
Default assumption for reservoirs primarily on pre-disturbed sites	Medium	3
New treatment and other facilities with some flexibility in siting	Medium Low	4
Wells, transmission, development at existing facility or heavily developed area	Low	5
Non-infrastructure projects	None	5

6-B-8. SUMMARY OF IMPACTS ANALYSIS

Results of the analyses of impacts to agricultural, natural, and cultural resources for key WMS and projects evaluated in the RWP are summarized in *Table 6-B-7*. The table provides reference information on locations, development settings, and recommendation status. The table also provides reference information on the corresponding technical memoranda included in ***Appendix 5-B*** for each key water management strategy and project.

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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
Adv. 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
Industrial Conservation	CNSV-002	Recommended	Multiple	Urban	None	5	None	5	Low	5	None or Limited	3	None or Limited	3	None	5
Irrigation Conservation	CNSV-003	Recommended	Multiple	Rural	Positive	5	High	1	Medium Low	4	None or Limited	3	None or Limited	3	None	5
BWA Transmission and Storage Expansion	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
City of Houston Transmission Expansion	CONV-004	Recommended	Harris	Urban	None	5	Medium Low	4	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
LNVA Neches-Trinity Basin Interconnect	CONV-007	Recommended	Liberty	Rural	Positive	5	Low	5	Medium	3	Moderate Decrease	2	Moderate Decrease	2	Low	5
Manvel Supply Expansion	CONV-008	Recommended	Brazoria	Mixed	Medium Low	4	Medium Low	4	Medium	3	None or Limited	3	None or Limited	2	Low	5
NFBWA Phase 2 Distribution Segments	CONV-009	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-010	Recommended	Harris	Urban	None	5	Medium Low	4	Medium	3	None or Limited	3	None or Limited	3	Low	5
NHCRWA Transmission Lines	CONV-011	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
Southeast Transmission Line Improvements	CONV-012	Recommended	Harris	Urban	None	5	Low	5	Low	5	None or Limited	3	None or Limited	3	Low	5
WHCRWA Distribution Expansion	CONV-013	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-014	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	Considered	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
City of Houston Repump and Groundwater Plant Improvements	GWDV-005	Recommended	Harris	Urban	None	5	Low	5	Medium	3	Moderate Increase	4	Moderate Increase	4	Low	5
Expanded Use of Groundwater	GWDV-006	Recommended	Multiple	Mixed	Positive	5	Low	5	Medium Low	4	Moderate Increase	4	Moderate Increase	4	Low	5
Fairchilds Supply Infrastructure	GWDV-007	Recommended	Fort Bend	Rural	None	5	Low	5	Low	5	Moderate Increase	4	Moderate Increase	4	Low	5
GCWA Groundwater Well Development	GWDV-008	Recommended	Galveston	Rural	None	5	Low	5	Medium	3	Moderate Increase	4	Moderate Increase	4	Low	5
SJRA Catahoula Aquifer Supplies	GWDV-009	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 WCID 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 Supply Expansion	GWRP-009	Recommended	Montgomery	Urban	None	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
Montgomery County Supply Expansion	GWRP-010	Recommended	Montgomery	Mixed	Medium Low	4	Medium Low	4	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
NFBWA GRP	GWRP-011	Recommended	Fort Bend	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
NHCRWA GRP	GWRP-012	Recommended	Harris	Urban	None	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
WHCRWA GRP	GWRP-013	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

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
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
League City Effluent Reuse	REUS-003	Recommended	Galveston	Urban	None	5	Medium Low	4	Medium Low	4	Moderate Decrease	2	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
River Plantation Reuse	REUS-006	Recommended	Montgomery	Urban	None	5	Low	5	Low	5	Moderate Decrease	2	Moderate Decrease	2	Low	5
San Jacinto Basin Regional Return Flows	REUS-007	Recommended	Harris, Montgomery	Mixed	None	5	Low	5	Low	5	Moderate Decrease	2	Moderate Decrease	2	None	5
Texas City Industrial Complex Reuse	REUS-008	Recommended	Galveston	Urban	None	5	Low	5	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Low	5
Wastewater Reclamation for Industry	REUS-009	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-010	Recommended	Multiple	Rural	None	5	Medium Low	4	Low	5	Moderate Decrease	2	Moderate Decrease	2	Low	5
Westwood Shores MUD Reuse	REUS-011	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
BWSC Reservoir and Pump Station Expansion	SWDV-002	Recommended	Brazoria	Rural	Medium Low	4	Medium Low	4	Medium Low	4	Moderate Decrease	2	Moderate Decrease	2	Medium	3
GCWA Coastal Desalination	SWDV-003	Recommended	Galveston	Urban	None	5	Low	5	Medium	3	None or Limited	3	Moderate Decrease	2	Low	5
Lake Somerville Augmentation	SWDV-004	Considered	Burleson, Brazos	Rural	Medium Low	4	Medium Low	4	Medium	3	Moderate Decrease	2	Moderate Decrease	2	Low	5
Lake Whitney Reallocation	SWDV-005	Considered	Bosque, Hill	Rural	None	5	Low	5	Low	5	Moderate Increase	4	None or Limited	3	Low	5
BAWA East SWTP Expansion	TRET-001	Recommended	Chambers	Urban	None	5	Low	5	Medium Low	4	None or Limited	3	None or Limited	3	Low	5
BWA Conventional Treatment Expansion	TRET-002	Recommended	Brazoria	Urban	None	5	Low	5	Low	5	None or Limited	3	None or Limited	3	Low	5
City of Houston EWPP Enhancement	TRET-003	Recommended	Harris	Urban	None	5	Medium Low	4	Medium Low	4	None or Limited	3	None or Limited	3	Low	5
Harris County MUD 50 Surface Water Treatment Plant	TRET-004	Recommended	Harris	Urban	None	5	Low	5	Medium Low	4	None or Limited	3	None or Limited	3	Low	5
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 Expansion	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 Canal Lining and Loss Mitigation	OTHR-002	Recommended	Fort Bend	Rural	None	5	Low	5	Low	5	None or Limited	3	None or Limited	3	Low	5
GCWA Shannon Pump Station Expansion	OTHR-003	Recommended	Fort Bend	Rural	None	5	Low	5	Medium	3	Moderate Decrease	2	Moderate Decrease	2	Low	5
LNVA Devers Pump Station Relocation	OTHR-004	Recommended	Chambers, Liberty	Rural	Positive	5	Low	5	Medium	3	None or Limited	3	None or Limited	3	Low	5
Municipal Drought Management	OTHR-005	Considered	All	Urban	None	5	None	5	Low	5	None or Limited	3	None or Limited	3	None	5
New and Expanded Contracts	OTHR-006	Recommended	Multiple	Mixed	None	5	None	5	Low	5	Moderate Decrease	2	Moderate Decrease	2	None	5

Agenda Item 7

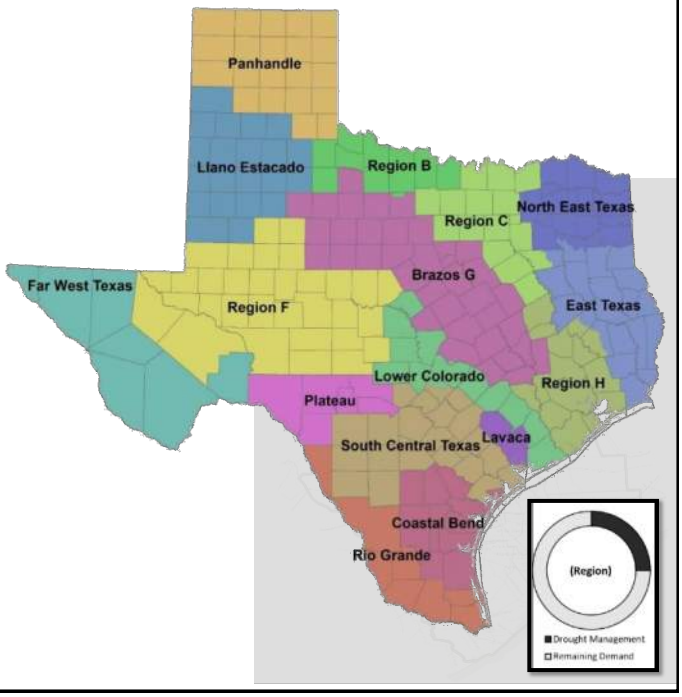
Receive update from Consultant Team regarding drought management as a potential WMS and consider making recommendations to the RHWPG.

REGION H
Water Planning Group

Agenda Item 7
Drought Management

- Updated analysis
  - Response to recent droughts
  - Adjust for conservation WMS
  - Efficacy factor(s)
  - Needs as limiting factor
- Time for fresh look
  - How are other RWPGs approaching?
  - Potential savings scenarios?
  - Pros and cons?

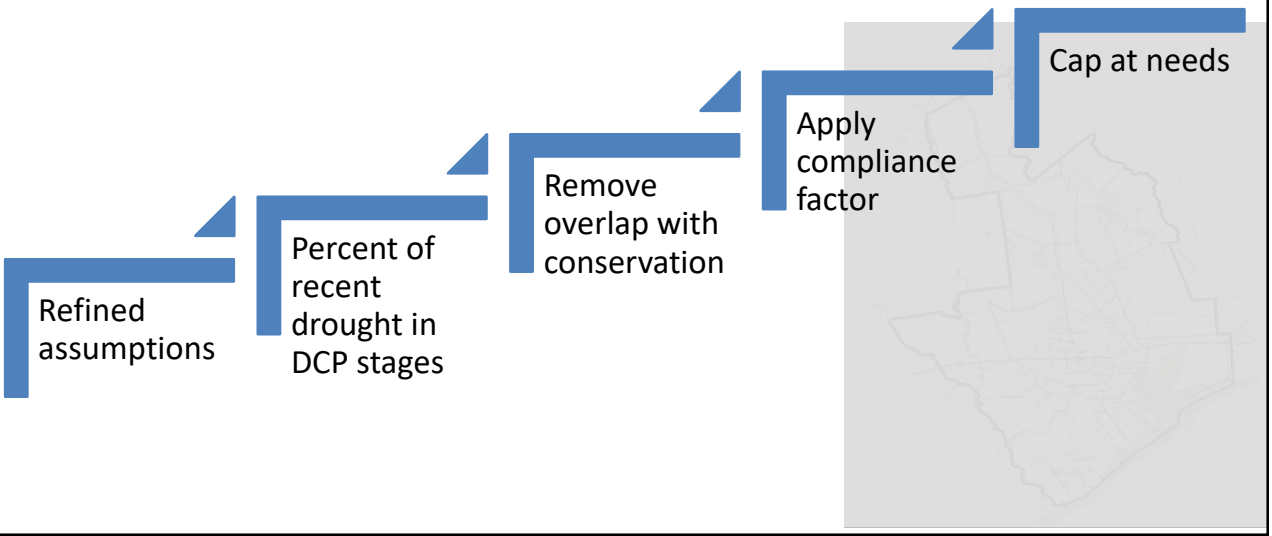
Agenda Item 7
Drought Management



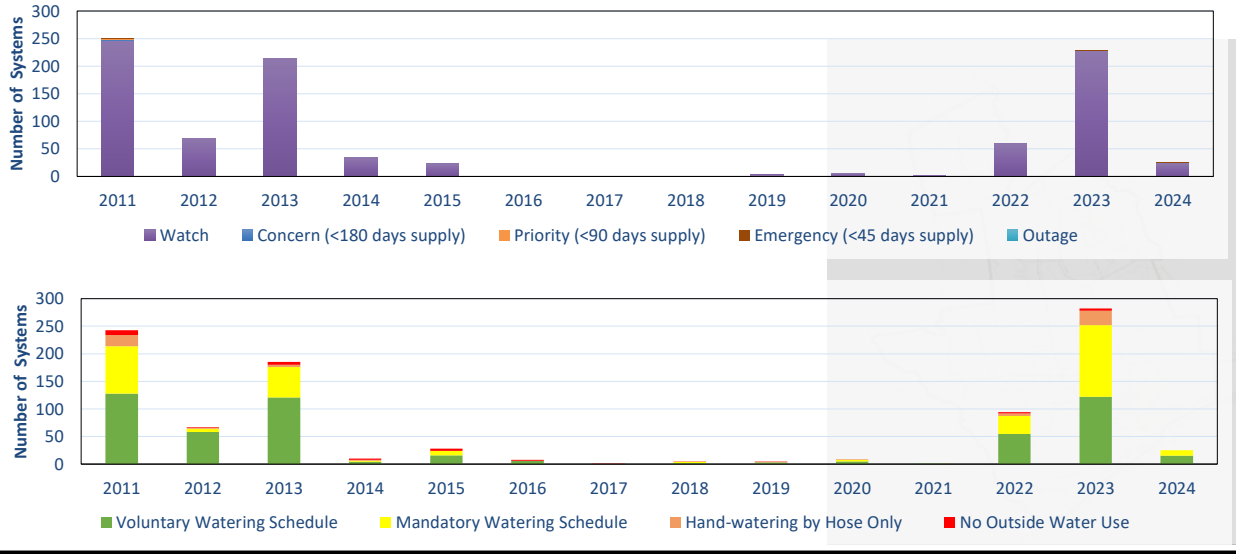
Agenda Item 7
Drought Management WMS

- Large savings if:
  - See in crystal ball
  - Starts day 1
  - 100% compliance
  - Prolonged stage
  - Works perfectly
  - Other caveats don't matter

Agenda Item 7
Drought Management

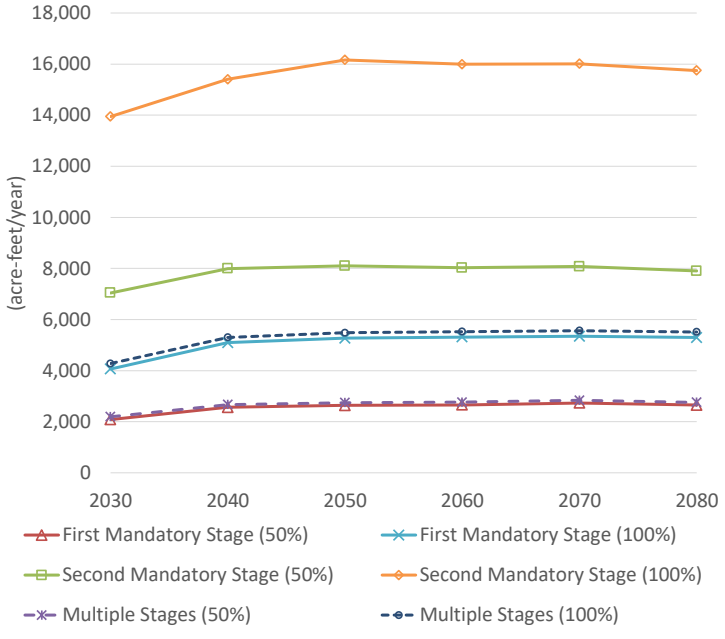


Agenda Item 7
Drought Management



Agenda Item 7
Drought Management

- Multiple scenarios
  - Efficacy
  - Stage
- Overall limited WMS savings
  - Aggressive conservation
  - Growth-driven needs
  - Short-term focus



Agenda Item 7
Drought Management

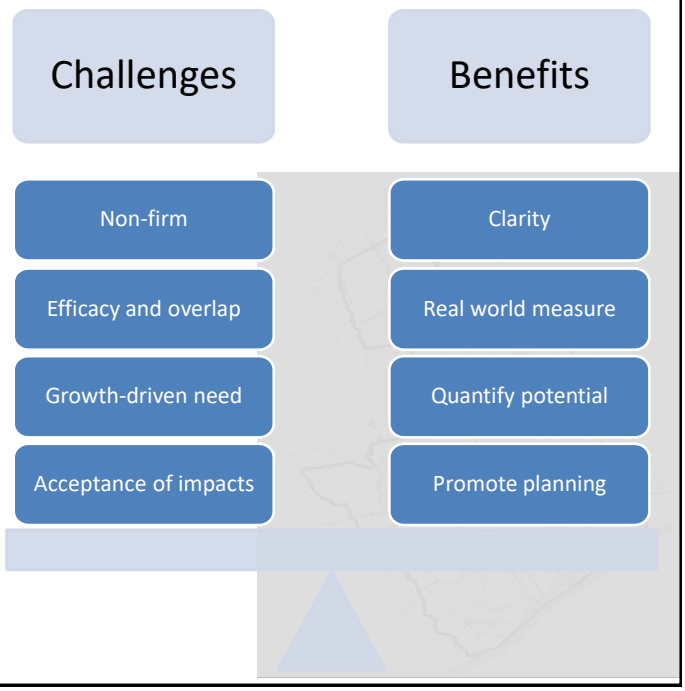
- Costs not analogous to other WMS
- TWDB Drought Costing Tool
  - Residential "willing to pay" cost
  - $113k to $142k/yr for this scenario
- The broader picture
  - Accepting some socioeconomic impacts now to defer others
  - Commercial and industrial impacts
  - Cost of recovery

Agenda Item 7
Drought Management

- Partially captured in projections
- Temporary, unlike other WMS
- Needs driven largely by growth, not weather
- Highly dependent on
  - Specific drought
  - Compliance rates
- Acceptance of impacts rather than supply

Agenda Item 7
Drought Management

- Which way to go?
- Messaging?



Agenda Item 8

Discuss options for utilization of remaining unallocated Task 5 funds and consider making recommendations to the RHWPG.

REGION H
Water Planning Group

Agenda Item 8
Task 5 Funding

- Funds allocated for effort related to Water Management Strategies
- $144,450 remaining
  - Allocated to Region H
  - Not yet authorized
- In prior cycles, supported post-IPP adjustments

Task 5B Funding	$1,040,950
4D Items Part 2	($896,500)
Remaining	$144,450

Agenda Item 8
Task 5 Funding

- Potential Item:

Review input from stakeholders and identify requests to adjust recommended WMS and projects included in the IPP. This may include addition of new projects that have not been identified to date and will require further analysis and study in order to make them eligible for inclusion in the Final RWP. Effort will include revisions to DB27 to incorporate new projects as necessary.