REGION H
Water Planning Group

WATER MANAGEMENT STRATEGY COMMITTEE MEETING MATERIALS

November 1, 2017

San Jacinto River Authority

Region H Water Planning Group
Water Management Strategy Committee
9:00 AM Wednesday
November 1, 2017
San Jacinto River Authority Office
1577 Dam Site Rd, Conroe, Texas 77304

AGENDA

1. Introductions.
2. **Receive public comments on specific issues related to agenda items 3 through 5**. (Public comments limited to 3 minutes per speaker)
3. Discuss Committee activities and schedule.
4. Discuss the process for identifying potentially feasible Water Management Strategies and consider making recommendations to the Region H Water Planning Group.
5. Discuss the process for evaluating potentially feasible Water Management Strategies and consider making recommendations to the Region H Water Planning Group
6. **Receive public comments**. (Public comments limited to 3 minutes per speaker)
7. Adjourn

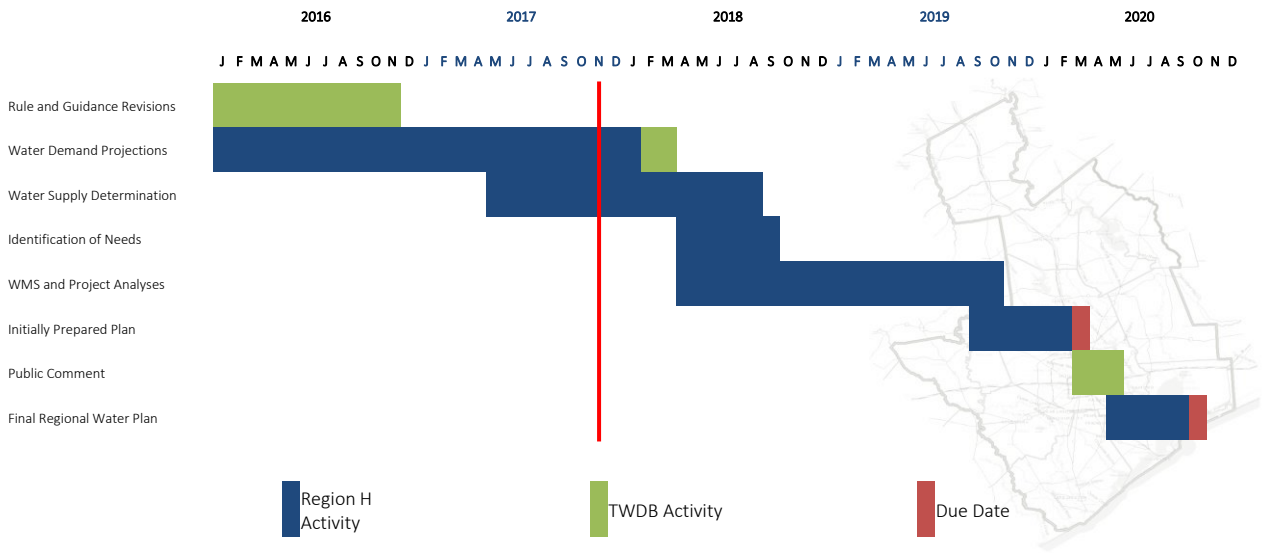
Persons with disabilities who plan to attend this meeting and would like to request auxiliary aids or services are requested to contact Sonia Zamudio at (936) 588-3111 at least three business days prior to the meeting so that appropriate arrangements can be made.

Agenda Item 3

Discuss Committee activities and schedule.

REGION H
Water Planning Group

Agenda Item 3
Committee Activities and Schedule



Agenda Item 3
Committee Activities and Schedule

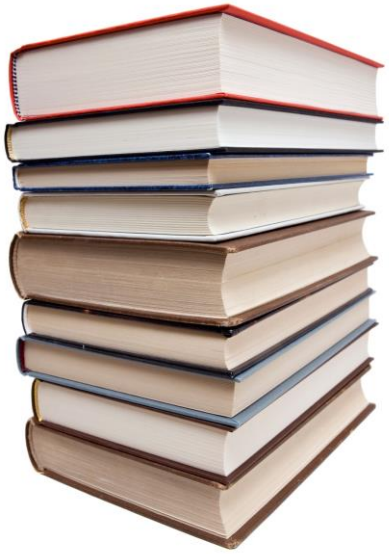
Date	Scheduled Events/Tasks
11/2017	Water Management Strategy Committee Meeting
09/2018	DUE DATE: Technical Memorandum
03/2020	DUE DATE: Initially Prepared Plan
10/2020	DUE DATE: FINAL RWP

Agenda Item 4

Discuss the process for identifying potentially feasible Water Management Strategies and consider making recommendations to the Region H Water Planning Group.

REGION H
Water Planning Group

Agenda Item 4
Identifying Potentially Feasible WMS

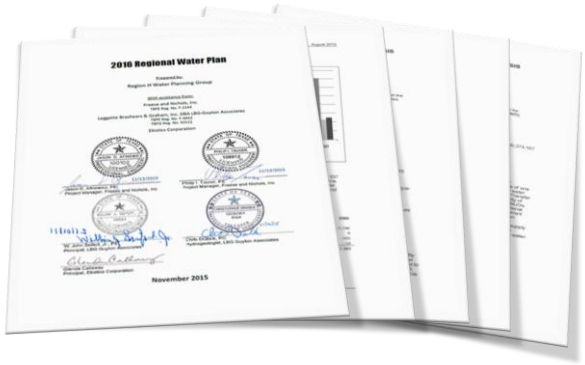


- 31 TAC 357.12(b)
  - Public meeting to determine the process for identifying potentially feasible WMSs;
  - Document process and public input
  - *List all possible potentially feasible WMSs.*

Agenda Item 4
Identifying Potentially Feasible WMS

- TWDB allows RWPGs considerable flexibility in selecting method of identifying and selecting WMS
- Selection criteria determined by RWPG
- Group should receive public comment on proposed process

Agenda Item 4
Identifying Potentially Feasible WMS



- Three-step ID process
  - Strategies from prior RWP (implemented/addl. study)
  - New strategies from scope development
  - Request for inclusion
- Some added later in process
  - Strategies not submitted early
  - New strategies to meet needs

Agenda Item 4
Identifying Potentially Feasible WMS

- TAC and TWC require consideration of WMS types
  - Conservation
  - Drought management
  - Reuse
  - Management of existing supplies
  - Conjunctive use
  - Acquisition of available existing supply
  - Development of new supply
  - Regional facilities / management
  - Large-scale desalination
  - Voluntary transfer
  - Emergency transfers
  - Interbasin transfers
  - System optimization
  - Reallocation of reservoir storage use
  - Yield enhancement
  - Water quality improvements
  - New surface water supply
  - New groundwater supply
  - Brush control
  - Precipitation enhancement
  - Aquifer storage and recovery
  - Water right cancellation
  - Rainwater harvesting

Agenda Item 4
Identifying Potentially Feasible WMS

- Thoughts?

- Recommendations to RWPG?

Region H

DRAFT Potentially Feasible WMS and Key Projects

Conservation
Industrial Conservation
Irrigation Conservation
Municipal Conservation
Contractual Transfer
TRA to COH Transfer
Conveyance
CHCRWA Transmission and Distribution Expansion
COH, NHCRWA, and CHCRWA Shared Transmission
East Texas Transfer
GCWA Treated Water from LNVA[1]
Jersey Village Second Connection[2]
Lake Livingston to SJRA Transfer
Luce Bayou Interbasin Transfer
NFBWA Phase 2 Distribution Segments
NHCRWA Distribution Expansion
NHCRWA Transmission Line
Old Galveston Road Transmission Improvements
WHCRWA Distribution Expansion
WHCRWA/NFBWA Transmission Line
Groundwater Development
Aquifer Storage and Recovery[1]
Brackish Groundwater Development
BWA Brackish Groundwater
Conroe Brackish Groundwater Desalination
Expanded Use of Groundwater
Forestar Houston County Project[1]
Forestar Liberty County Project[1]
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 GRP
Fort Bend County MUD 25 GRP
Fort Bend County WC&ID No. 2 GRP
NFBWA GRP
NHCRWA GRP
Panorama Village and Shenandoah Joint GRP
Porter SUD Joint GRP
River Plantation and East Plantation Joint GRP
SJRA GRP
WHCRWA GRP

Region H

DRAFT Potentially Feasible WMS and Key Projects

Reuse
City of Conroe Reuse
City of Houston Reuse
City of Pearland Reuse
GCWA Reclaimed Water from COH
Grand Lakes Reclaimed Water System
Montgomery County MUDs #8 and #9 Reuse
San Jacinto Basin Regional Return Flows
SJRA Conroe Reuse Project
Wastewater Reclamation for Industry[1]
Wastewater Reclamation for Municipal Irrigation
WHCRWA Reuse[2]
Surface Water Development
Allens Creek Reservoir
BRA System Operation Permit
Dow Reservoir and Pump Station Expansion
Freeport Seawater Desalination
Lake Somerville Augmentation[1]
Little River Off-Channel Reservoir[1]
Lone Star Lake[1]
Treatment
BWA Treatment Plant Expansion
City of Houston Treatment Expansion
CLCND West Chambers System
Northeast Water Purification Plant Expansion
Pearland Surface Water Treatment Plant
Other Infrastructure
Brazos Saltwater Barrier

Notes:

1. *Considered but not recommended in the Region H 2016 RWP.*
2. *Requested through the 2017 Region H WUG survey.*

MEMORANDUM

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TO: Region H Water Planning Group

CC: Temple McKinnon (TWDB), General Distribution

FROM: Jason D. Afinowicz, P.E.

SUBJECT: Potential Water Management Strategies (WMS) Identification and Selection

DATE: May 29, 2012

Memo Purpose

Pursuant to TAC 357.5(e)(4), the Region H Water Planning Group (RHWPG) is required to prepare a summary of its process for identifying and selecting Water Management Strategies (WMS) for development of the 2016 Regional Water Plan (RWP). This process shall be presented to the public for comment at a public meeting. This document proposes a WMS selection methodology for consideration and adoption by the RHWPG.

The primary goal of the WMS selection methodology is to pair WMS with a water shortage of a particular water user group (WUG). Subsequent portions of this memorandum detail this pairing process.

Potential WMS will be defined based on a determination of needs developed from a comparison of projected demands and existing supplies. These strategies are to be analyzed at the Wholesale Water Provider (WWP) or WUGs. A detailed technical memorandum will be prepared for each of the management strategies selected.

Shortage Analysis

The regional water planning process begins with identifying current and projected future water demands. After water demands are identified for all Water User Groups (WUGs), water supplies available to Region H are identified and allocated to WUGs and WWPs based on current usage and contracts. By matching the supplies and the demands, projected surpluses and shortages are determined. Wholesale water providers (WWP) supplies and contracts will be reviewed to determine their respective surplus or shortage during the planning period.

Application of General WMS

The selection of WMS begins with the identification of certain "general WMS" that are readily available. Such alternatives can provide simple, cost-effective solutions to shortage without the development of new, major water projects. These strategies include the use of groundwater where available, the expansion or extension of existing contracts for water supplies between WUGs and WWPs, and the reduction of demand through water conservation.

In evaluating the general WMS, the RHWPG would make three assumptions. First, water user groups would continue to develop groundwater until it is fully utilized. This is based upon the observed pattern of development in the region, where the Gulf Coast aquifer is available in all of the southern counties.

The supply of groundwater will not be allocated in excess of regulation set forth by subsidence or groundwater conservation districts, or other entities that have regulatory power over the consumption of groundwater.

Second, those WUGs currently receiving water from WWPs would be able to increase their contract amounts until the WWP supplies were fully allocated. This assumes the use of existing supplies conveyed through existing infrastructure wherever possible.

Finally, the RHWPG will assume that every municipal WUG with a projected shortage would utilize conservation before seeking out or increasing a WWP contract. This is pursuant to the language of 357.7(a)(7).

Identification of Potential WMS to Add New Water Supplies

Potential WMS will include but are not limited to the strategies considered in the 2011 RWP. These strategies, plus additional strategies formulated since the completion of the 2011 RWP are included as *Attachment 1* to this memorandum.

WMS Selection Process

For the 2016 RWP, a dual-phased WMS selection process is proposed. Inputs into the dual-phase process include the identified WUG shortages (after the application of General WMS) and the potential WMS. The output is the application of WMS(s) to meet a WUG need. *Figure 1* presents a flow chart of the proposed WMS selection process.

Prior to the dual-phases, the proposed strategies will be described in detail. Within the dual-phases, the first phase (the WUG Specific Criteria phase) focuses on the WUG, as it aims to evaluate the WMS for a specific WUG need. During this phase, questions such as the following must be addressed for a given WMS to be considered acceptable to apply to meet a WUG need:

- Is the strategy within reasonable proximity to location of water need?
- Is the strategy right-sized or easily paired with another WMS?
- Is the expected water quality produced by the strategy significantly different from existing water quality at the WUG?
- Is the unit cost (and capital if no WWP is present) supportable by the target WUG?
- Has any other flaw relating to the WMS and WUG been identified?

The second phase (the Matrix Evaluation phase) focuses on the evaluation of the WMS. In this phase, each WMS will be evaluated based on the matrix criteria presented in *Table 1*. Each WMS will be given a score from one to five for each analysis criterion, and the phase will ultimately develop a matrix of rated WMS. The analysis criteria include the following:

- Cost – Evaluates the unit cost of the water produced by the strategy.
- Location – Evaluates the degree of Interbasin transfer or conveyance required to move the water to significant demand centers within Region H.
- Water Quality – Evaluates the strategy's impact on water quality.
- Environmental Land & Habitat – Evaluates the degree of environmental land impacts and the degree of public opposition expected by the strategy.
- Environmental Flows – Evaluates the degree of impact to environmental flows to bays and estuaries.
- Local Preference – Evaluates the local preference and likelihood for public support or opposition created by the strategy.
- Institutional Constraints/Risk of Implementability – Evaluates the potential for factors such as permitting and land acquisition to affect the strategy.
- Development Timeline – Evaluates the amount of time necessary to implement the strategy.

- Sponsorship – Evaluates if a sponsor is identifiable and committed to implementing the strategy.
- Vulnerability – Evaluates the risk to the strategy's ability to deliver water from natural or man-made disasters such as hurricanes, climate change, or terrorism.
- Other WMS/Grouping Potential – Evaluates the likelihood of the strategy to impact other WMS and the potential for the strategy to be grouped with other WMS.

After the dual phase description, the emphasis of the methodology shifts to the identification and selection of Water Management Strategies to meet the particular WUG need of interest. To accomplish this process, the evaluation matrix is filtered for each WUG need, such that all WMS that meet the WUG Specific Criteria are available for selection.

Selection of the WMS will first occur by selecting any strategies that are already in progress. This is intended to make the planning process parallel with ongoing developments within Region H while still allowing for thorough quantitative evaluation of each strategy under consideration. Subsequent selections of WMS will be made, as needed, based on the filtered Matrix Evaluation. After WMS selection, the selected WMS are applied to meet WUG needs.

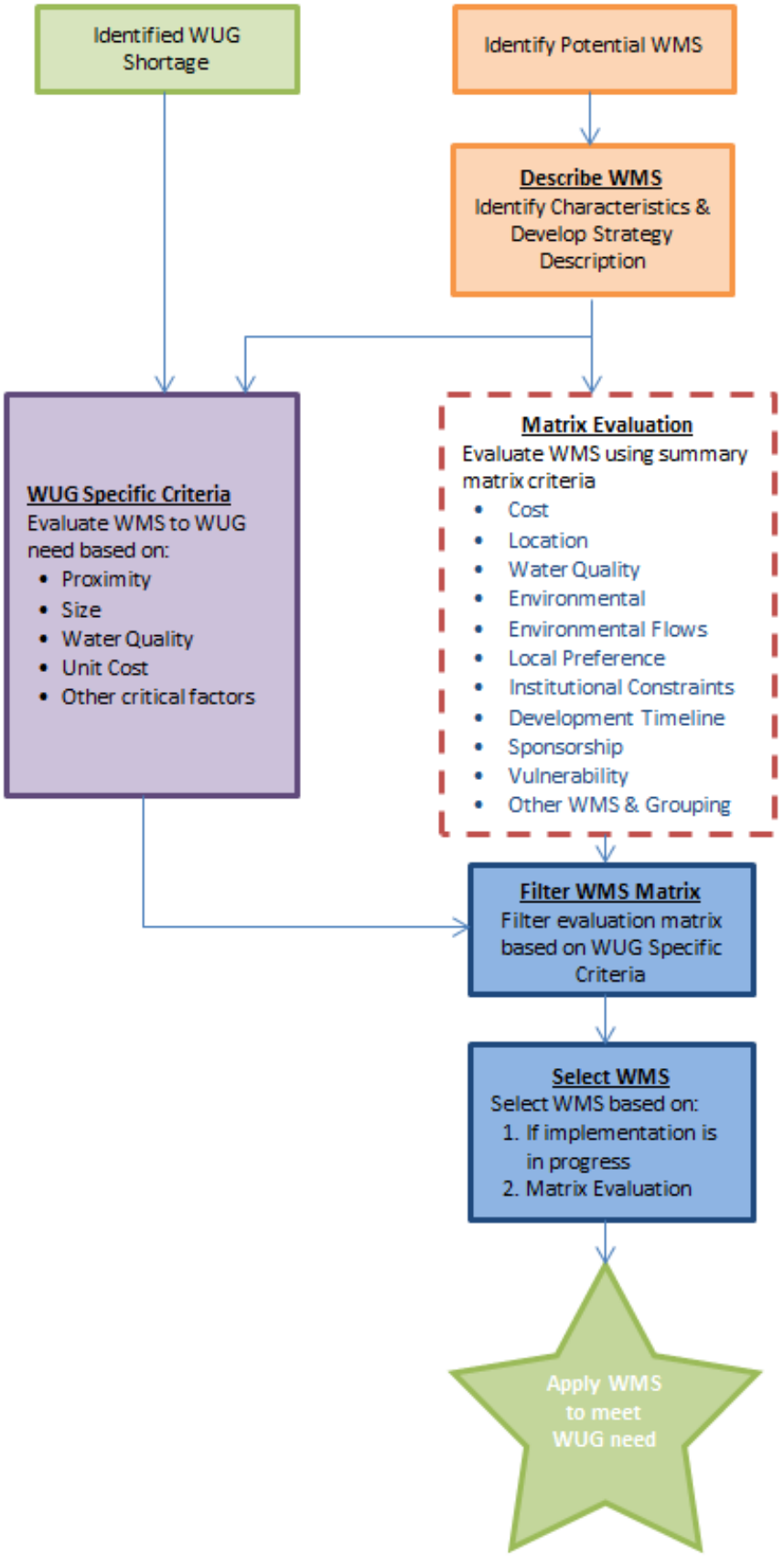


Figure 1. **WMS Selection Process Flowchart**

Table 1. **Evaluation Criteria**

Category	Rating Criteria				
	1	2	3	4	5
Cost	>$1000/ac-ft	$750 to $1000/ac-ft	$500 to $750/ac-ft	$250 to $500/ac-ft	<$250/ac-ft
Location	IBT required, long distance or outside Region H.	IBT & Conveyance required for use to meet significant needs.	IBT required for some need centers. Conveyance required.	Some conveyance required to need centers.	No IBT required. Relatively near centers of high demand.
Water Quality	Quality of supply is reduced significantly.	Quality of supply is reduced.	No known water quality issues.	Quality of supply is improved.	Existing water quality problems are reduced.
Environmental Land & Habitat	Significant environmental issues and opposition.	Some environmental issues and opposition.	Environmental impacts can be mitigated. Limited concerns.	Minimal mitigation of impacts needed. Minimal concerns.	Limited or no known impacts.
Impacts on Environmental Flows	Significantly reduces instream or B&E flows.	Reduces instream or B&E flows.	No impact.	Increases instream or B&E flows.	Significantly increases instream or B&E flows.
Local Preference	No local support. Significant opposition.	Minimal local support. Some opposition.	Some local support. Limited opposition.	Local support. Minimal opposition.	Widespread local support. Multi-use benefits likely.
Institutional Constraints / Risk of Implementability	Permits opposed. Significant property required.	Some permit opposition. Some property acquisition necessary.	Permits expected with minimal problems. Property available.	Permit application in progress. Property acquired or under acquisition.	Permits issued. Facilities or land owned. Water available.
Development Timeline	>35 years	25-35 years	15-25 years	5-15 years	0-5 years
Sponsorship	No sponsor readily identifiable.	Sponsor identifiable, but uncommitted.	Sponsor(s) identified, commitment level uncertain.	Sponsor(s) are identified and committed to strategy.	Sponsors identified and strategy is in development.
Vulnerability	Significant risk from natural and man-made disasters.	Substantial risk from natural and man-made disasters.	Moderate risk from natural and man-made disasters.	Slight risk from natural and man-made disasters.	Minimal risk from natural and man-made disasters.
Impacts on Other Management Strategies	Significant negative impacts.	Some negative impacts and/or little chance of grouping.	No impact.	Some positive impacts, potential synergistic effects.	Significant positive impacts, synergy achieved.

Agenda Item 5

Discuss the process for evaluating potentially feasible Water Management Strategies and consider making recommendations to the Region H Water Planning Group.

REGION H
Water Planning Group

Agenda Item 5
Evaluating Potentially Feasible WMS

- Water User Group Shortage Analysis
- Application of General WMS
- Identification of WMS to Add New Water Supplies
- Evaluation of WMS to Add New Water Supplies
- Selection of WMS to Add New Water Supplies

Agenda Item 5
Evaluating Potentially Feasible WMS

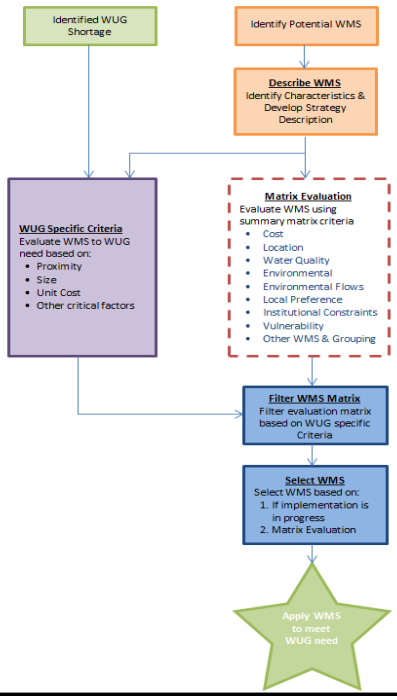
Continue groundwater to maximum available

Municipalities utilize conservation before adding/expanding contracts

WUGs supplied by WWPs increase contracts until fully allocated

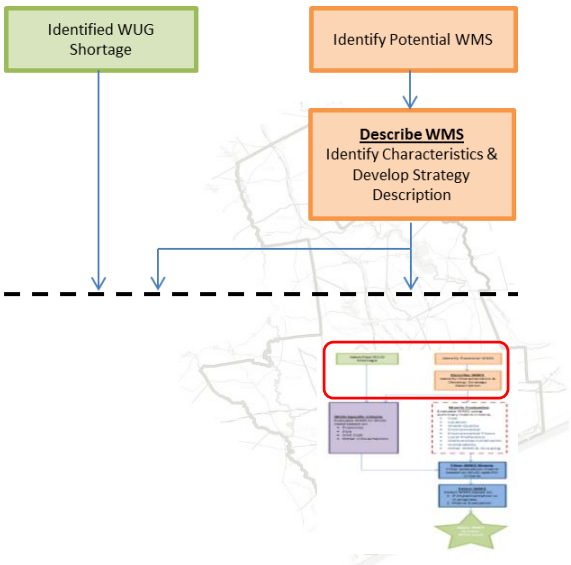
Agenda Item 5
Evaluating Potentially Feasible WMS

- Two-track process
- Follows application of generalized WMS
- More consistent method
- Major steps
  - Identification/definition of needs and WMS
  - WUG-centered evaluation
  - WMS-centered evaluation
  - Filtering, selection, and application



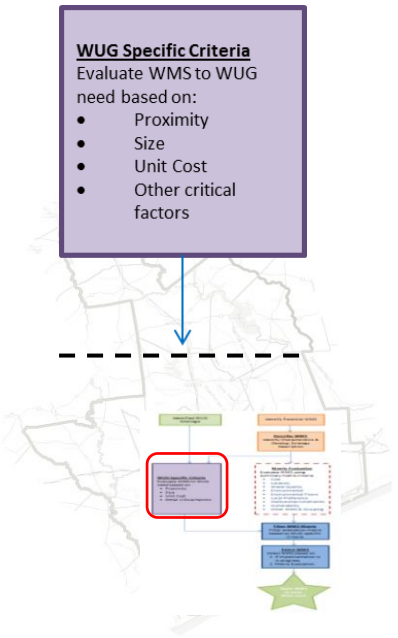
Agenda Item 5
Evaluating Potentially Feasible WMS

- Inputs into evaluation
- Identified shortages
- List of identified potentially-feasible WMS
- Must develop detailed WMS descriptions before evaluating



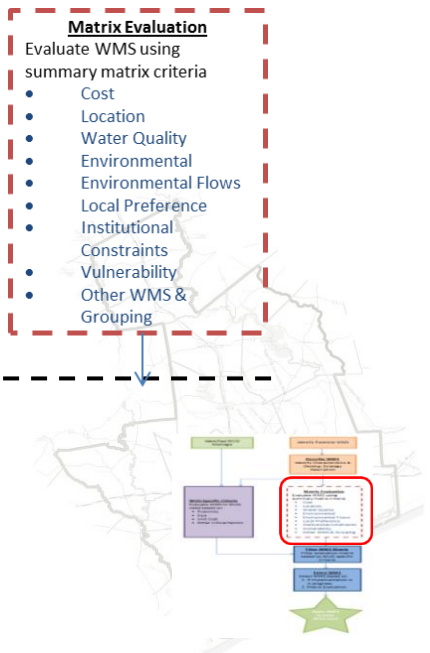
Agenda Item 5
Evaluating Potentially Feasible WMS

- First WMS evaluation phase focused on specific WUG need
- WUG-specific questions
  - Reasonable proximity to need?
  - Right-sized or easily combined?
  - Unit cost supportable?
  - Known flaws?



Agenda Item 5
Evaluating Potentially Feasible WMS

- Second evaluation phase focused on WMS
- Evaluation based on criteria matrix
- Utilizes a scoring system from 1 to 5 for each criterion
  - Allows more range per criterion
  - Avoids unnecessary bias from +/- system



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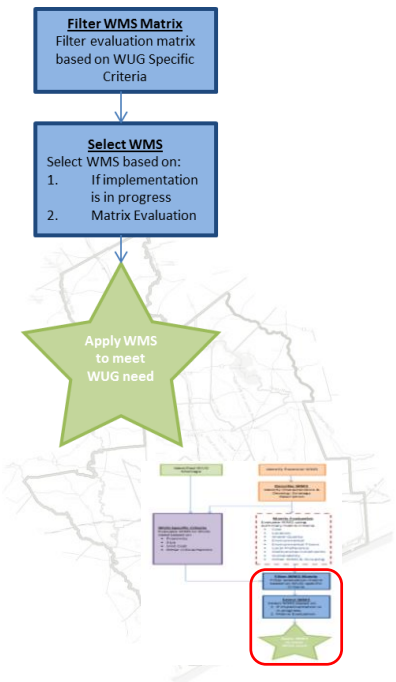
Impacts on Other Management Strategies	Significant negative impacts.	Some negative impacts and/or little chance of grouping.	No impact.	Some positive impacts.	Significant positive impacts.

Agenda Item 5
Evaluating Potentially Feasible WMS

- Matrix filtered for each WUG need – list of WMS available to that WUG
- Strategies in progress selected first
- If need remains, select additional WMS based on matrix
- Apply results to plan and database



Agenda Item 5
Evaluating Potentially Feasible WMS

- Thoughts?

- Recommendations to RWPG?