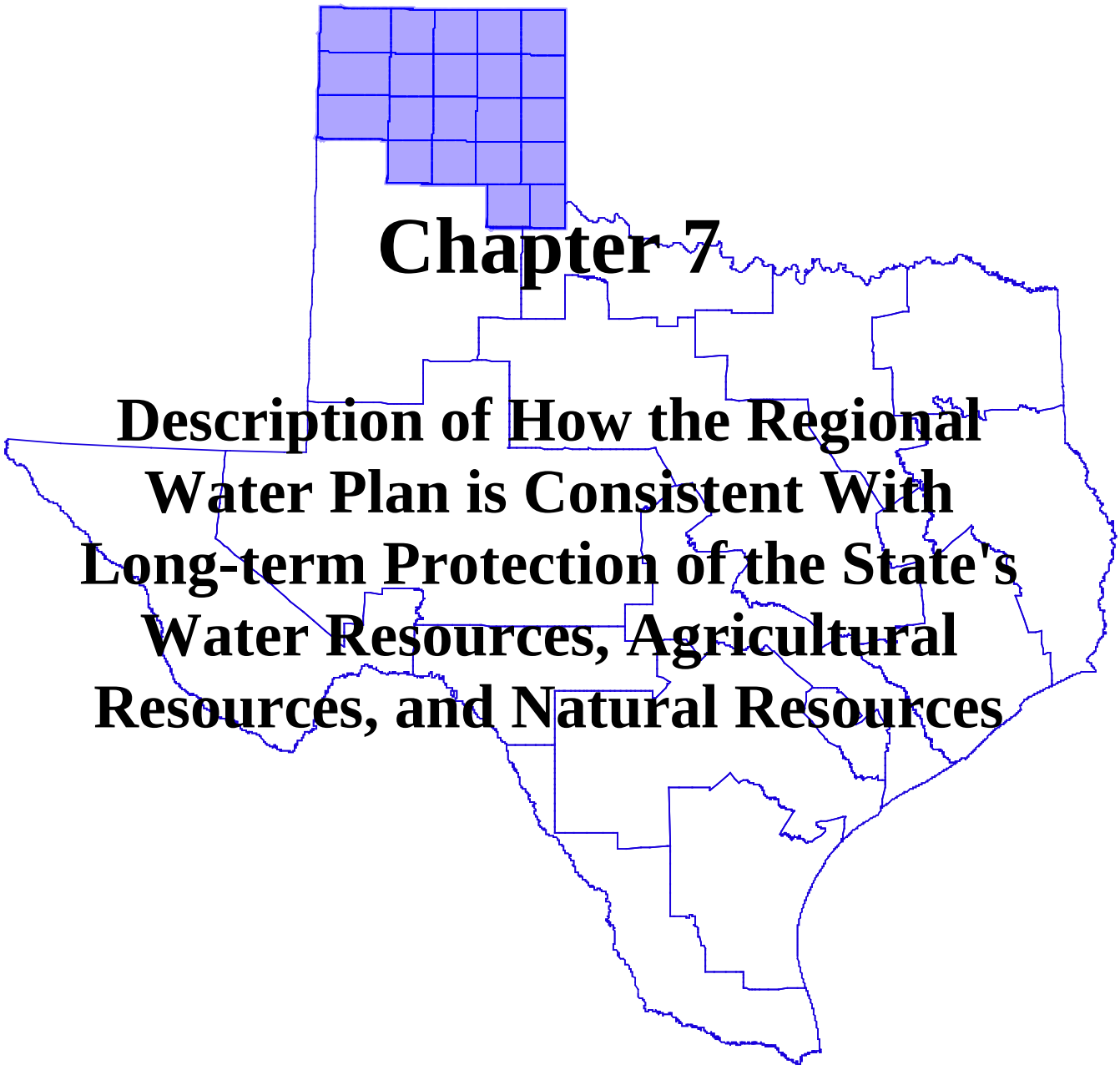

Chapter 7

Description of How the Regional Water Plan is Consistent With Long-term Protection of the State's Water Resources, Agricultural Resources, and Natural Resources

7.1 Introduction

The Panhandle Water Planning Group (PWPG) balanced meeting water shortages with good stewardship of the water, agricultural, and natural resources within the region. The greatest shortages identified in the region are associated with irrigated agriculture. The plan assumes a level of demand reduction over time and the PWPG recommended water conservation to meet the remaining needs. The PWPG also recognized the benefits of recommending conservation for all irrigation users to conserve and preserve limited water sources for future use. During the strategy selection process, long-term protection of the State's resources were considered through the assessment of environmental impacts, impacts to agricultural and rural areas and impacts to natural resources.

In this plan, existing in-basin or region supplies were utilized as feasible before recommendations for new water supply projects or interbasin transfers were considered. Wastewater reuse is an active water source to meet long-term power generation and industrial water needs in the PWPA. The plan assumes that this resource will be fully utilized to meet the growing demands of the power industry in the region.

The PWPG believes that local groundwater conservation districts are best-suited to manage groundwater resources in which the individual GCDs have the responsibility to regulate. The newly formed GMAs provide additional guidance to managing groundwater resources. This plan recommends following policies adopted by the GMAs for the Northern Ogallala and Rita Blanca aquifers for groundwater management. If no desired future conditions have been adopted, this plan recommends using not more than 1.25% of annual saturated thickness within the aquifer as a management option. The PWPG believes these approaches are appropriate for the long-term sustainable management of the aquifers within the PWPA to meet local demands.

7.2 Water Resources within the Panhandle Water Planning Area

Existing surface water sources include supplies in the Red River and Canadian River basins. Supplies from these sources were allocated considering the long-term reliability of the sources. No new surface water strategies are recommended. Water resources available by basin within the PWPA are discussed in further detail below.

7.2.1 Red River Basin

The Red River Basin is bounded on the north by the Canadian River Basin and on the south by the Brazos, Trinity, and Sulphur river basins. The Red River extends from the northeast corner of the State, along the Texas/Arkansas and Texas/Oklahoma state borders, across the Texas Panhandle to its headwaters in eastern New Mexico. The Red River Basin has a drainage area of 48,030 square miles, of which 24,463 square miles occur within Texas.

The main stem of the Red River has a total length of 1,217 river miles. The North Fork of the Red River forms near Pampa, Texas and the Salt Fork of the Red River forms about 26 miles east of Amarillo, Texas. Both forks exit Texas into Oklahoma and join the Red River, individually, about 17 miles north of Vernon, Texas. Palo Duro Creek forms near Canyon, Texas and becomes Prairie Dog Town Fork to the east, which in turn becomes the Red River at the 100th meridian. The watershed in Texas receives an average annual precipitation varying from 15 inches near the New Mexico border to 55 inches near the Arkansas border. (RRA, 1999)

7.2.2 Canadian River Basin

Approximately 13,000 square miles of the Canadian River Basin are located in the PWPA. There are three major reservoirs in the Texas portion of the Basin: Lake Meredith, Palo Duro Reservoir, and Rita Blanca Lake are used for municipal and recreation purposes. Other important reservoirs in the basin include Lake Marvin near the city of Canadian in Hemphill County, and Lake Fryer near Perryton in Ochiltree County.

From the Texas-New Mexico state line eastward, the Canadian River enters an area known as the Canadian River Breaks, a narrow strip of rough and broken land extensively dissected by tributaries of the Canadian River. Elevations in the northwestern portion of the basin extend to 4,400 feet MSL in Dallam County. Elevations in the eastern portion of the basin range from 2,175 feet MSL in the riverbed at the Texas-Oklahoma border to 2,400 feet MSL in Lipscomb County. Land use in the Texas portion of the Canadian River watershed is predominantly irrigated and dryland farming and cattle ranching.

Average annual precipitation of the Texas portion of the basin varies from 15 inches near the New Mexico border to 22 inches near the eastern state boundary with Oklahoma. Streamflow measured near Canadian, Texas, approximately 22 miles upstream of the Texas-Oklahoma state line, averages 89 cubic feet per second (CFS), or 64,700 acre-feet per annum.

7.3 Agricultural Resources within the Panhandle Water Planning Area

According to the 2007 Census of Agriculture, the PWPA has approximately 2,640,293 acres of land in 2,952 farms. The number of farms has increased in the period between 1978 and 2007. During this time, the acres of harvested cropland have increased by approximately 14 percent. In 2007, approximately 65 percent of the harvested cropland was contained in seven counties (Carson, Dallam, Hansford, Hartley, Moore, Ochiltree, and Sherman) on 1,269 farms. Agricultural land use in the PWPA includes irrigated cropland, dryland cropland, and pastureland. Major crops include corn, cotton, hay, peanuts, sorghum, sunflower, soybeans, and wheat.

Water management strategies for irrigated agriculture include a suite of strategies to conserve irrigation water. These strategies will reduce the projected deficit in the heavily irrigated counties and preserve water supplies for future use in the counties with no identified shortages.

7.4 Natural Resources within the Panhandle Water Planning Area

The PWPA contains many natural resources and the water management strategies recommended in this plan are intended to protect those resources while still meeting the projected water needs of the region. The impacts of recommended strategies on specific resources are discussed below.

7.4.1 Threatened and Endangered Species

The abundance and diversity of wildlife in the PWPA is influenced by vegetation and topography, with areas of greater habitat diversity having the potential for more wildlife species.

The presence or potential occurrence of threatened or endangered species is an important consideration in planning and implementing any water resource project or water management strategy. Both the state and federal governments have identified species that need protection. Species listed by the U.S. Fish and Wildlife Service (USFWS) are afforded the most legal protection, but the Texas Parks and Wildlife Department (TPWD) also has regulations governing state-listed species. As detailed in Chapter 1, there are 13 state or federally protected species which have the potential to occur within the PWPA. This does not include species without official protection such as those proposed for listing or species that are considered rare or otherwise of special concern.

7.4.2 Parks and Public Lands

The PWPA contains over 103,000 acres of protected parks and public lands. The PWPA is home to Palo Duro Canyon State Park, approximately 20,000 acres located in Armstrong and Randall Counties. Lake Meredith National Recreation Area, which encompasses the area surrounding Lake Meredith, is part of the National Park Service and offers recreational and ecological benefits to the region. The Alibates Flint Quarries National Monument located adjacent to the Lake Meredith Recreation Area is the only national monument in the State of Texas. Buffalo Lake National Wildlife Refuge is also located in the Region and is a valuable wintering area for migratory waterfowl. In addition to these lands, the Region contains three National Grasslands. These include Black Kettle National Grassland in Hemphill County, McClellan Creek National Grassland in Gray County and Rita Blanca National Grassland in Dallam County. No recommended strategies require water supply projects located within these areas. Implementation of water management strategies should not directly impact these lands.

7.5 Impacts of Water Management Strategies on Other Water Resources

Implementation of water management strategies can adversely affect surface water and groundwater supplies in the region if these sources are overallocated. Issues that are of concern for water supply in the PWPA include aquifer depletions due to pumping exceeding recharge; surface water and groundwater quality; and drought related shortages for both surface water and groundwater. Potential groundwater quality may supersede water quantity as a consideration in evaluating the amount of water available for a use.

Most water used in the PWPA is supplied from aquifers such as the Ogallala, making aquifer depletion a potentially major constraint on water sources in the region. Depletions lower the water levels, making pumping more expensive and reducing the potential available supply. Another potential constraint to both groundwater pumping and maintenance of stream flows relates to restrictions that could be implemented due to the presence of endangered or threatened species. "Recent consideration by the U. S. Fish and Wildlife Service of the designation of critical habitat for the federally threatened Arkansas River shiner had the potential to affect water resource projects and other activities in Hemphill, Hutchinson, Oldham, Potter, and Roberts Counties. However, based on the provisions of a management plan developed by the Canadian River Municipal Water Authority which includes plans for flow augmentation by performing salt cedar control work, and for other reasons, the Service did not designate any critical habitat areas for the species in Texas. Therefore there should be no federal intervention with activities in the PWPG area for protection of this species."

Potential contamination of groundwater may be associated with oil-field practices, including seepage of brines from pits into the groundwater; brine contamination from abandoned wells; and broken or poorly constructed well casings. Agricultural and other practices may have contributed to elevated nitrates in groundwater and surface water.

Surface waters in the PWPA may also experience elevated salinity due to brines from oil-field operations, nutrients from municipal discharges, and other contaminants from industrial discharges. Other potential sources of contaminants include industrial facilities such as the Pantex plant near Amarillo; an abandoned smelter site at Dumas; and concentrated animal feeding operations in various locations throughout the PWPA. However, most of these potential sources of contamination are regulated and monitored by TCEQ or other state agencies. Naturally occurring brine seeps also restrict the suitability of surface waters, such as Lake Meredith, for certain uses.

7.6 Consistency with State Water Planning Guidelines

To be considered consistent with long-term protection of the State's water, agricultural, and natural resources, the PWPA water plan must also be in compliance with the following regulations:

- 31 TAC Chapter 358.3
- 31 TAC Chapter 357.5
- 31 TAC Chapter 357.7
- 31 TAC Chapter 357.8
- 31 TAC Chapter 357.9

The information, data, evaluation, and recommendations included in the 2011 Plan collectively demonstrate compliance with these regulations. Table 7-1 presents a summary of the major components of the plan and references the regulations. The content of the 2011 Plan has been evaluated against this regulatory matrix.

Table 7-1: Summary of Regulatory Compliance

Regulatory Citation (Col 1)	Summary of Requirement (Col 2)	*Response (Yes/No/ NA)* (Col 3)	Location(s) in Regional Plan and/or Commentary (Col 4)	Regulatory Cross References (Col 5)
31 TAC §358.3				
358.3(a)	TWDB shall develop a State Water Plan (SWP) with 50-year planning cycle, and based on the Regional Water Plan (RWP)	NA	Applies to the State Water Plan. The Regional Water Plan is based on a 50-year planning cycle, however.	
358.3(b)	RWP is guided by the following principles			
(b)(1)	Identified policies and actions so that water will be available at reasonable cost, to satisfy reasonable projected use and protect resources	Yes	Chapters 4 and 8	§358.3(b)(4), §357.5 (a); §357.7 (a)(9)
(b)(2)	Open and accountable decision-making based on accurate, objective information	Yes	Regular public meetings of the PWPG;	§357.5 (e)(6)
(b)(3)	Consideration of effects of plan on the public interest, and on entities providing water supply	Yes	Chapters 4 and 7	
(b)(4)	Consideration and approval of cost-effective strategies that meet needs and respond to drought, and are consistent with long-term protection of resources	Yes	Chapters 4, 6, and 7	§358.3(b)(1), §357.5 (e)(4) and §357.5 (e)(6); §357.7(a)(9)
(b)(5)	Consideration of opportunities that encourage the voluntary transfer of water resources	Yes	Chapter 4	
(b) (6)	Consideration of a balance of economic, social, aesthetic, and ecological viability	Yes	Chapters 4 and 7	
(b) (7)	The use of information from the adopted SWP for regions without a RWP	NA		
(b) (8)	The orderly development, management, and conservation of water resources	Yes	Chapters 4, 6, and 7	§357.5(a)
(b) (9)	Surface waters are held in trust by the State, and governed by doctrine of prior appropriation	Yes	Chapters 3	
(b) (10)	Existing water rights, contracts, and option agreements are protected	Yes	Chapter 4	§357.5(e)(3)
(b) (11)	Groundwater is governed by the right of capture unless under local control of a groundwater management district	Yes	Chapter 3	
(b) (12)	Consideration of recommendation of stream segments of unique ecological value	Yes	Chapter 8. PWPG did not recommend designation of any of the Region's Stream segments as an ecologically unique segment.	§357.8

Table 7-1: Summary of Regulatory Compliance

Regulatory Citation (Col 1)	Summary of Requirement (Col 2)	*Response (Yes/No/ NA)* (Col 3)	Location(s) in Regional Plan and/or Commentary (Col 4)	Regulatory Cross References (Col 5)
(b) (13)	Consideration of recommendation of sites of unique value for the construction of reservoirs	Yes	Chapter 8. The PWPG did not recommend any site in the region as a unique reservoir site.	§357.9
(b) (14)	Local, regional, state, and federal agency water planning coordination	Yes	Local, State and Federal levels of coordination	
(b) (15)	Improvement or maintenance of water quality and related uses as designated by the State Water Quality Plan	Yes	Chapters 4 and 5	
(b)(16)	Cooperation between neighboring water planning regions to identify common needs and issues	Yes	Coordination with neighboring planning regions as needed	
(b)(17)	WMS described sufficiently to allow a state agency making financial or regulatory decisions to determine consistency of the WMS with the RWP	NA	To be determined by the State after completion of the RWP	§357.7(a)(9)
(b) (18)	Environmental evaluations are based on site-specific information or state environmental planning criteria	Yes	To the extent that such information and criteria exist; Chapter 4	§357.5(e)(1); §357.5 (e)(6); §357.5(k)(1)(H)
(b) (19)	Consideration of environmental water needs, including instream flows and bay and estuary inflows	Yes	Chapter 4	§357.5(e)(1); §357.5(l); §357.7 (a)(8)(A)(ii)
(b) (20)	Planning is consistent with all laws applicable to water use for state and regional water planning	Yes	Applicable water planning laws have been considered in preparing this plan	§357.5(f)
(b) (21)	Ongoing permitted water development projects are included	Yes	Chapter 4	
31 TAC §357.5				
(a)	The RWP: provides for the orderly development, management, and conservation of water resources; prepares for drought conditions; and protects agricultural, natural, and water resources	Yes	Chapter 4, water conservation strategies and Chapter 6	§358.3(b)(1). §358.3(b)(8)
(b)	The RWP submitted by January 5, 2011	NA	To be submitted	
(c)	The RWP is consistent with 31 TAC §358 and 31 TAC §357, and guided by State and local water plans	Yes	Throughout RWP	
(d)(1) & (2)	The RWP uses State population and water demand projections from the SWP; or revised population or water demand projections that are adopted by the State	Yes	Chapter 2; Population and water demand projections adopted by TWDB	

Table 7-1: Summary of Regulatory Compliance

Regulatory Citation (Col 1)	Summary of Requirement (Col 2)	*Response (Yes/No/ NA)* (Col 3)	Location(s) in Regional Plan and/or Commentary (Col 4)	Regulatory Cross References (Col 5)
(e)(1)	The RWP provides WMS adjusted for appropriate environmental water needs; environmental evaluations are based on site-specific information or state environmental planning criteria	Yes	Chapter 4	§358.3(b)(1); §358.3(b)(18); §357.7 (a)(8)(A)(ii)
(e)(2)	The RWP provides WMS that may be used during a drought of record	Yes	Chapter 4	
(e)(3)	The RWP protects existing water rights, contracts, and option agreements	Yes	Chapter 4	§358.3(b)(10)
(e)(4)	The RWP provides cost-effective and environmentally sensitive WMS based on comparisons of all potentially feasible WMS; The process is documented and presented to the public for comment.	Yes	Chapter 4; Presented at a PWPG meeting on May 13, 2009	§358.3(b)(4)
(e)(5)	The RWP incorporates water conservation planning and drought contingency planning	Yes	Chapters 4 and 6	§357.5(k)(1)(A)&(B); §357.7(a)(7)(B)
(e)(6)	The RWP achieves efficient use of existing supplies and promotes regional water supplies or regional management of existing supplies; Public involvement is included in the decision-making process	Yes	Chapter 4; public process utilized in consideration WMS	§358.3(b)(2)
(e)(7)(A)&(B)	The RWP identifies (A) drought triggers, and (B) drought responses for designated water supplies	Yes	Chapter 6	§357.5(e)(5); §357.5(k)(1)(A)&(B)
(e)(8)	The RWP considers the effect of the plan on navigation	Yes	Navigation impacts considered to the extent necessary	
(f)	Planning is consistent with all laws applicable to water use in the Region	Yes	Applicable water planning laws considered in adopting the plan	§358.3(b)(20)
(g)	The following characteristics of a candidate special water resource are considered:			
(g)(1)	The surface water rights are owned by an entity headquartered in another region.	NA		
(g)(2)	A water supply contract commits water to an entity headquartered in another region.	Yes	CRMWA, Greenbelt M&IWA	
(g)(3)	An option agreement may result in water being supplied to an entity headquartered in another region.	NA		
(h)	Water rights, contracts, and option agreements of special water resources are protected in the RWP	Yes	Lake Meredith and Greenbelt Reservoir	

Table 7-1: Summary of Regulatory Compliance

Regulatory Citation (Col 1)	Summary of Requirement (Col 2)	*Response (Yes/No/ NA)* (Col 3)	Location(s) in Regional Plan and/or Commentary (Col 4)	Regulatory Cross References (Col 5)
(i)	The RWP considers emergency transfers of surface water rights	NA	Emergency transfers of water not considered in the RWP	
(j)(1)-(3)	Simplified planning is used in the RWP in accordance with TWDB rules	NA	Normal water planning process utilized	
(k)(1)&(2)	The RWP shall consider existing plans and information, and existing programs and goals related to local or regional water planning	Yes	Chapters 1, 4, and 6	§357.5(e)(7)
(l)	The RWP considers environmental water needs including instream flows and bays and estuary flows	Yes	Chapter 4	§358.3(b)(19); §357.7 (a)(8)(A)(ii)
31 TAC §357.7				
(a)(1)(A)-(M)	The RWP shall describe the region, including specific requirements of paragraphs A through M of this section of the regulations	Yes	Chapters 1 and 6	§357.7(a)(8)(A)(iii); §357.7(a)(8)(D); §357.5(k)(1)(C); §357.7(a)(7)(A)(iv) § 358.6 (a)-(b)
(a)(2)(A)-(C)	The RWP includes a presentation of current and projected population and water demands, reported in accordance with paragraphs A through C of this section of the regulations	Yes	Chapter 2	
(a)(3)(A)-(G)	The RWP includes the evaluation of current water supplies available (including a presentation of reservoir firm yields) to the Region for use during drought of record conditions, reported by the type of entity and wholesale providers	Yes	Chapter 3	
(a)(4) (A)&(B)	The RWP includes water supply and demand analysis, comparing the type of entity and wholesale providers	Yes	Chapter 4	
(a)(5)(A)-(C)	The RWP provides sufficient water supply to meet the identified needs, in accordance with requirements of paragraphs A through C of this section of the regulations	Yes	Chapter 4	
(a)(6)	The RWP presents data required in paragraphs (2) - (5) of this subsection in subdivisions of the reporting units required, if desired by the PWPG	Yes	Chapters 2, 3, and 4	

Table 7-1: Summary of Regulatory Compliance

Regulatory Citation (Col 1)	Summary of Requirement (Col 2)	*Response (Yes/No/ NA)* (Col 3)	Location(s) in Regional Plan and/or Commentary (Col 4)	Regulatory Cross References (Col 5)
(a)(7)(A)-(H)	The RWP evaluates all WMS determined to be potentially feasible, in accordance with paragraphs A through H of this section of the regulations	Yes	Chapters 1 and 6	§357.5(k)(1)(C); §357.7(a)(1)(M); §357.5(e)(5); §357.5(k)(1)(B) § 358.6 (a)-(b)
(a)(8)(A)-(H)	The RWP evaluates all WMS determined to be potentially feasible, by considering the requirements of paragraphs A through H of this section of the regulations	Yes	Chapter 4	§358.3(b)(19); §357.5(e)(1); §357.5(l); §357.7(a)(1)(L); §357.7(a)(8)(D); §357.7(a)(8)(A)(iii)
(a)(9)	The RWP makes specific recommendations of WMS in sufficient detail to allow state agencies to make financial or regulatory decisions to determine the consistency of the proposed action with an approved RWP	NA	To be determined by the State after completion of the RWP	§358.3(b)(1); §358.3(b)(4); §358.3(b)(17)
(a)(10)	The RWP includes regulatory, administrative, or legislative recommendations to facilitate the orderly development, management, and conservation of water resources; prepares for drought conditions; and protects agricultural, natural, and water resources	Yes	Chapter 8	§358.3(b)(1) §357.5(a)
(a)(11)	The RWP includes a chapter consolidating the water conservation and drought management recommendations	Yes	Chapter 6	
(a)(12)	The RWP includes a chapter describing the major impacts of recommended WMS on key parameters of water quality	Yes	Chapter 5	
(a)(13)	The RWP includes a chapter describing how it is consistent with long-term protection of the state's water, agricultural, and natural resources	Yes	Chapter 7	
(a)(14)	The RWP includes a chapter describing the financing needed to implement the water management strategies recommended	Yes	Chapter 9; due later	
(b)	The RWP excludes WMS for political subdivisions that object to inclusion and provide reasons for objection	NA		
(c)	The RWP includes model water conservation plan(s)	Yes	Chapter 6	
(d)	The RWP includes model drought contingency plan(s)	Yes	Chapter 6	
(e)	The RWP includes provisions for assistance of the TWDB in performing regional water planning activities and/or resolving conflicts within the Region	Yes	PWPG requested the TWDB to conduct the socioeconomic analysis for the region	

Table 7-1: Summary of Regulatory Compliance

Regulatory Citation (Col 1)	Summary of Requirement (Col 2)	*Response (Yes/No/ NA)* (Col 3)	Location(s) in Regional Plan and/or Commentary (Col 4)	Regulatory Cross References (Col 5)
31 TAC §357.8				
(a)	The RWP considers the inclusion of recommendations for the designation of river and stream segments of unique ecological value within the Region	Yes	Chapter 8. The PWPG did not recommend designation of any of the Region's stream segments as ecologically unique	§358.3(b)(12)
(b)	If river or stream segments of unique ecological value are recommended, such recommendations are made in the plan on the basis of the criteria established in this section of the regulations	NA		
(c)	If the RWP recommends designation of river or stream segments of unique ecological value, the impact of the regional water plan on these segments is assessed	NA		
31 TAC §357.9				
(1)	The RWP considers the inclusion of recommendations for the designation of sites of unique value for construction of reservoirs	Yes	The PWPG did not recommend any locations in the Region as a site of unique value for construction of reservoirs	§358.3(b)(13)
(2)	If sites of unique value for construction of reservoirs are recommended, such recommendations are made in the plan on the basis of criteria established in this section of the regulations	NA		