

APPENDIX P
STRATEGY EVALUATION

Table P.1

Summary of Evaluation of Water Management Strategies

Entity	County Used	Basin Used	Strategy	Quantity (Ac-Ft/Yr)	Reliability of Supply	Annual Cost with Debt Service (\$/Ac-Ft)	Impacts of Strategy on:					Implementation Issues	Comments
							Environmental Factors	Agricultural Resources/Rural Areas	Other Natural Resources	Possible Third Party	Key Water Quality Parameters		
Name(s)	Name	Name	Name	#	High, medium, low	\$	High, medium, low	High, medium, low	High, medium, low	High, medium, low	High, medium, low		
DWU	Multiple	Trinity	Palestine (via TRWD/DWU Integrated Pipeline)	114,337	High	\$773	Low	Low	Low	Medium Low	Low ¹	DWU has contract.	Significant change to historical water use. Highly renewable resource should minimize impacts.
Multiple	Multiple	Multiple	Toledo Bend	400,000	High		Medium low	Low	Low	Medium Low	Low	Requires IBT and agreements with multiple users	Significant change to historical water use. Highly renewable resource should minimize impacts.
Multiple	Multiple	Multiple	Toledo Bend	700,000	High	\$3,072	Medium low	Low	Low	Medium Low	Low	Requires IBT and agreements with multiple users	Significant change to historical water use. Highly renewable resource should minimize impacts.
Multiple	Multiple	Multiple	Toledo Bend	500,000	High	\$3,318	Medium low	Low	Low	Medium Low	Low	Requires IBT and agreements with multiple users	Significant change to historical water use. Highly renewable resource should minimize impacts. Does not include DWU.
NTMWD	Multiple	Multiple	Oklahoma	50,000	High	\$477	Low	Low	Low	Medium Low	Medium Low	Oklahoma has moratorium for export of water out of state. May require an IBT.	
DWU	Multiple	Trinity	Oklahoma	50,000	High	\$702	Low	Low	Low	Medium Low	Low ¹	Oklahoma has moratorium for export of water out of state. May require an IBT.	
TRWD	Multiple	Trinity and Brazos	Oklahoma	50,000	High	\$911	Low	Low	Low	Medium Low	Medium Low	Oklahoma has moratorium for export of water out of state. May require an IBT.	
Irving	Dallas	Trinity	Oklahoma	25,000	High	\$810	Low	Low	Low	Medium Low	Medium Low	Oklahoma has moratorium for export of water out of state. May require an IBT.	

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							Environmental Factors	Agricultural Resources/Rural Areas	Other Natural Resources	PossibleThird Party	Key Water Quality Parameters		
TRWD	Multiple	Trinity and Brazos	TRWD/DWU Integrated Pipeline (TRWD Share)	179,000	High	\$569	Low	Low	Low	Low	Low		Does not add yield to TRWD system, but does convey water to Tarrant County, where it is needed.
TRWD	Navarro and Henderson	Trinity and Brazos	TRWD Wetlands	105,000	High	\$205	Low	Low	Low	Low	Medium	TRWD has water right permit.	Richland-Chambers Pump Station and pilot wetland have been built.
DWU	Multiple	Trinity	Lake o' the Pines	89,600	High	\$705	Low	Low	Low	Medium Low	Low ¹	Requires IBT and contract with NETMWD.	Significant change to historical water use. Highly renewable resource should minimize impacts.
NTMWD	Multiple	Multiple	Lake o' the Pines	87,900	High	\$576	Low	Low	Low	Medium Low	Medium Low	Requires IBT and contract with NETMWD.	Significant change to historical water use. Highly renewable resource should minimize impacts.
TRWD	Multiple	Trinity and Brazos	Lake o' the Pines	87,900	High	\$953	Low	Low	Low	Medium Low	Medium Low	Requires IBT and contract with NETMWD.	Significant change to historical water use. Highly renewable resource should minimize impacts.
DWU	Multiple	Trinity	Wright Patman - Texarkana	100,000	High	\$823	Low	Low	Low	Medium Low	Medium Low	Requires agreement with Texarkana and IBT.	Significant change to historical water use. Highly renewable resource should minimize impacts.
NTMWD	Multiple	Multiple	Wright Patman - Texarkana	100,000	High	\$812	Low	Low	Low	Medium Low	Medium Low	Requires agreement with Texarkana and IBT.	Significant change to historical water use. Highly renewable resource should minimize impacts.
TRWD	Multiple	Trinity and Brazos	Wright Patman - Texarkana	100,000	High	\$1,167	Low	Low	Low	Medium Low	Medium Low	Requires agreement with Texarkana and IBT.	Significant change to historical water use. Highly renewable resource should minimize impacts.
DWU	Multiple	Trinity	Wright Patman - Raise Pool	112,100	High	\$762	Medium	Low	Medium Low	Medium Low	Medium Low	Requires IBT, contract with USACE and new or amended water right permit.	Requires NEPA evaluation
NTMWD	Multiple	Multiple	Wright Patman - Raise Pool	180,000	High	\$543	Medium	Low	Medium Low	Medium Low	Medium Low	Requires IBT, contract with USACE and new or amended water right permit.	Requires NEPA evaluation

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							Environmental Factors	Agricultural Resources/Rural Areas	Other Natural Resources	PossibleThird Party	Key Water Quality Parameters		
TRWD	Multiple	Trinity and Brazos	Wright Patman - Raise Pool	180,000	High	\$954	Medium	Low	Medium Low	Medium Low	Medium Low	Requires IBT, contract with USACE and new or amended water right permit.	Requires NEPA evaluation
Multiple	Multiple	Multiple	Wright Patman - System	390,000	High	\$1,703	Medium	Low	Medium	Medium	Medium Low	Requires IBT, contract with USACE and new or amended water right permit.	Requires NEPA evaluation. Will increase water level fluctuations in Jim Chapman Lake.
DWU	Multiple	Trinity	Livingston	200,000	High	\$982	Low	Low	Low	Medium Low	Low ¹	Requires contract with TRA.	Other competing users of this water
NTMWD	Multiple	Multiple	Livingston	200,000	High	\$1,103	Low	Low	Low	Medium Low	Low ¹	Requires contract with TRA.	Other competing users of this water
TRWD	Multiple	Trinity and Brazos	Livingston	200,000	High	\$1,120	Low	Low	Low	Medium Low	Low ¹	Requires contract with TRA.	Other competing users of this water
DWU	Multiple	Trinity	Lake Texoma not Yet Authorized - Blend with Elm Fork	20,000	High	\$306	Low	Low	Medium Low	Low	Medium	Requires IBT, Congressional authorization, state water right and contract with USACE.	
Multiple	Multiple	Multiple	Lake Texoma not Yet Authorized - Blend with Other Sources	113,000	High	\$445	Medium low	Low	Medium Low	Medium Low	Medium	Requires IBT, Congressional authorization, state water right and contract with USACE.	Impacts to water quality will vary with other sources used for blending.
Multiple	Multiple	Multiple	Lake Texoma not Yet Authorized - Desalinate	105,000	High	\$1,558	Medium	Low	Medium	Medium Low	Medium	Requires IBT, Congressional authorization, state water right, contract with USACE and brine discharge permit (deep well injection).	Treated water. Impacts to water quality parameters will depend on disposal of brine
NTMWD	Multiple	Multiple	Lake Texoma Authorized - Blend	113,000	High	\$303	Medium low	Low	Medium Low	Medium Low	Medium	Water right acquired. Requires contract with USACE.	Impacts to water quality will vary with other sources used for blending.
NTMWD	Multiple	Multiple	Lake Texoma Authorized - Desal	105,000	High	\$994	Medium	Low	Medium	Medium Low	Medium	Requires contract with USACE and brine discharge permit.	Treated water. Impacts to water quality parameters will depend on disposal of brine

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							Environmental Factors	Agricultural Resources/Rural Areas	Other Natural Resources	Possible Third Party	Key Water Quality Parameters		
Multiple	Multiple	Multiple	Gulf of Mexico	200,000	Medium	\$2,535	Medium	Low	Medium Low	Low	Low	Technology is still developing for this application at this scale. May require state water right permit and IBT.	Treated water. Possible localized impacts at intake and discharge of reject brine.
DWU	Multiple	Trinity	Dallas Southside Reuse	67,253	High	\$413	Low	Low	Medium Low	Low	Medium	Requires wastewater discharge permit.	
DWU	Multiple	Trinity	Dallas Lewisville Reuse	67,253	High	\$374	Low	Low	Medium Low	Low	Medium	Requires wastewater discharge permit.	
DWU	Multiple	Trinity	Dallas Direct Reuse	20,456	High	\$397	Low	Low	Medium Low	Low	Low	Supply is limited to specific uses.	
DWU	Multiple	Trinity	Tawakoni Pipeline		High	\$558	Low	Low	Low	Medium Low	Low ¹	DWU has contract.	Significant change to historical water use. Highly renewable resource should minimize impacts.
DWU and NTMWD	Multiple	Multiple	Main Stem Pump Station	41,029	High	\$305	Low	Low	Low	Low	Low		
NTMWD	Multiple	Multiple	Lower Bois d'Arc Creek Reservoir	123,000	High	\$433	Medium high	High	Medium	Medium	Low ¹	Requires new water rights permit and IBT.	Stream has been channelized such that significant hydrologic changes from natural conditions.
Multiple	Multiple	Multiple	Marvin Nichols	495,300	High	\$3,359	High	High	Medium high	High	Medium	Requires new water rights permit and IBT. Known public opposition.	This strategy assumes participation of DWU, Irving, NTMWD, TRWD and UTRWD.
Multiple	Multiple	Multiple	Marvin Nichols	489,840	High	\$1,982	High	High	Medium high	High	Medium	Requires new water rights permit and IBT. Known public opposition.	This strategy includes TRWD, NTMWD, and UTRWD
UTRWD	Multiple	Trinity	Ralph Hall and reuse	52,437	High	\$472	Medium high	Medium	Medium	Medium	Medium	Requires new water rights permit, reuse permit and IBT.	Stream has been altered such that significant hydrologic changes from natural conditions.
DWU	Multiple	Neches	Neches River Run-of-River Diversion	112,100	High	\$1,437	Medium high	Medium	Medium high	Medium	Medium	Requires new water rights permit and IBT.	
DWU	Multiple	Trinity	George Parkhouse North	112,000	High	\$456	Medium high	Medium high	Medium	Medium	Low ¹	Requires new water rights permit and IBT.	90% of acreage is crop or pasture land. No priority bottomland hardwoods.
NTMWD and/or UTRWD	Multiple	Multiple	George Parkhouse North	118,960	High	\$427	Medium high	Medium high	Medium	Medium	Low	Requires new water rights permit and IBT.	90% of acreage is crop or pasture land. No priority bottomland hardwoods.

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NTMWD and/or UTRWD	Multiple	Multiple	George Parkhouse South	108,480	High	\$558	Medium high	Medium High	Medium	Medium	Low	Requires new water rights permit and IBT.	78% of acreage is crop or pasture land. No priority bottomland hardwoods.
DWU	Multiple	Trinity	Columbia	35,800	High	\$553	Medium high	Medium	Medium	Medium	Medium	Requires contract with ANRA and IBT.	ANRA has water rights permit.
TRWD	Multiple	Trinity and Brazos	Tehuacana	56,800	High	\$1,118	Medium high	Medium high	Medium	Medium	Low	Requires new water rights permit.	Planned to operate as system with Richland Chambers Reservoir.
DWU	Multiple	Trinity	Roberts County Groundwater	200,000	High	\$1,318	Medium low	Medium	Medium	Medium Low	Medium	Require groundwater permit and additional water rights.	Assumes 400,000 acres of water rights.
NTMWD	Multiple	Multiple	Roberts County Groundwater	200,000	High	\$1,472	Medium low	Medium	Medium	Medium Low	Medium	Require groundwater permit and additional water rights.	Assumes 400,000 acres of water rights.
TRWD	Multiple	Trinity and Brazos	Roberts County Groundwater	200,000	High	\$1,189	Medium low	Medium	Medium	Medium Low	Medium	Requires groundwater permit and additional water rights.	Assumes 400,000 acres of water rights.
DWU	Multiple	Trinity	Carrizo-Wilcox Groundwater	100,000	High	\$1,222	Medium	Medium	Medium high	Medium	Low	Requires coordination with local groundwater districts.	Requires 100,000 ac-ft/yr of water rights. Competing uses for water.
NTMWD	Multiple	Multiple	Carrizo-Wilcox Groundwater	100,000	High	\$1,416	Medium	Medium	Medium high	Medium	Low	Requires coordination with local groundwater districts.	Requires 100,000 ac-ft/yr of water rights. Competing uses for water.
TRWD	Multiple	Trinity and Brazos	Carrizo-Wilcox Groundwater	50,000	High	\$1,253	Medium low	Medium	Medium	Medium	Low	Requires coordination with local groundwater districts.	Requires 50,000 ac-ft/yr of water rights. Competing uses for water.
NTMWD/ Fannin County	Fannin	Red	Fannin County Water Supply System	6,643	High	\$1,259	Low	Low	Low	Low	Low ²		Treated water system using water from Lower Bois d'Arc Creek Reservoir. To be developed by NTMWD and Fannin County entities. No new supply for NTMWD.
Waxahachie, Rockett SUD, Ennis, TRA, Midlothian	Ellis	Trinity	Ellis County Water Supply Project	53,222	High	\$782	Low	Low	Low	Low	Low ²		Raw water from TRWD via TRA. Treatment plants probably build by Ennis, Midlothian, and Waxahachie/Rockett SUD. Transmission lines built by TRA or suppliers.

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Multiple	Multiple	Multiple	New water treatment plant	varies	High	varies	Low	Low	Low	Low	Low ²		Assumes supplies no new raw water supply.
Multiple	Multiple	Multiple	Water treatment plant expansion	varies	High	varies	Low	Low	Low	Low	Low ²		Assumes supplies no new raw water supply.
Multiple	Multiple	Multiple	Overdraft Trinity aquifer in 2010 (new wells)	varies	Medium	varies	Low	Low	Medium low	Medium	Medium Low		Temporary measure until other strategies are implemented.
Multiple	Multiple	Multiple	Overdraft Trinity aquifer in 2010 (existing wells)	varies	Medium	varies	Low	Low	Medium low	Medium	Medium Low		Temporary measure until other strategies are implemented.
Multiple	Multiple	Multiple	Overdraft Woodbine aquifer in 2010 (new wells)	varies	Medium	varies	Low	Medium low	Medium low	Medium	Medium Low		Temporary measure until other strategies are implemented.
Multiple	Multiple	Multiple	Overdraft Woodbine aquifer in 2010 (existing wells)	varies	Medium	varies	Low	Medium low	Medium low	Medium	Medium Low		Temporary measure until other strategies are implemented.
Multiple	Multiple	Multiple	Expanded use of Trinity Aquifer	varies	High	varies	Low	Medium low	Low	Medium low	Low		
Multiple	Multiple	Multiple	Expanded use of Woodbine Aquifer	varies	High	varies	Low	Medium low	Low	Medium low	Low		
Multiple	Multiple	Multiple	Expanded use of Carrizo-Wilcox Aquifer	varies	High	varies	Low	Medium low	Low	Medium low	Low		
Multiple	Multiple	Multiple	Supplemental wells	0	High	N/A	Low	Low	Low	Medium low	Low		Assumes no new supplies.
Multiple	Multiple	Multiple	Basic Conservation Package	varies	Medium	varies	Low	Low	Low	Low	Low ²	Hard to enforce	Assumes that people will change their water use habits. Reduces return flows.
Multiple	Multiple	Multiple	Expanded Conservation Package	varies	Medium	varies	Low	Low	Low	Low	Low ²	Hard to enforce	Assumes that people will change their water use habits. Reduces return flows.
Corsicana	Navarro	Trinity	Richland-Chambers Pump Station & WTP	4,480	High	\$569	Low	Low	Low	Low	Low ²		Corsicana already has water right.
Weatherford	Parker	Trinity	Expand Lake Benbrook PS	0	High	NA	Low	Low	Low	Low	Low ²		
Walnut Creek SUD	Parker/Wise	Trinity	Parallel pipeline to Lake Bridgeport	6,700	High	\$206	Low	Low	Low	Low	Low ²		

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Walnut Creek SUD	Wise	Trinity	Second pipeline to Boyd/Rhome	3,900	High	\$505	Low	Low	Low	Low	Low ²		Treated water delivered
Multiple	Multiple	Multiple	Additional supply from water provider	varies	High	varies	Low	Low	Low	Low	Low ²		See wholesale provider strategies for costs and impacts for water.
Fort Worth	Tarrant	Trinity	Parallel pipeline to Eagle Mountain	0	High	NA	Low	Low	Low	Low	Low ²		See TRWD strategies for raw water supplies.
Fort Worth	Tarrant	Trinity	Pipeline to new Southwest WTP	0	High	NA	Low	Low	Low	Low	Low ²		See TRWD strategies for raw water supplies.
TRA/ TRWD	Tarrant	Trinity	Tarrant County Water Supply Project Plant	20,949	High	\$622	Low	Low	Low	Low	Low ²		Delivers treated water. Cost includes \$0.68/ kgal for raw water purchase.
TRA/ Dallas County Irrigation	Dallas	Trinity	Las Colinas Reuse	7,000	High	\$284	Low	Low	Low	Low	Low	TRA is currently seeking reuse permits.	Assumed cost of water for reuse is \$0.25 per 1,000 gallons.
TRA/ Dallas Co. SEP	Dallas	Trinity	Dallas County Reuse	6,760	High	\$389	Low	Low	Low	Low	Medium	TRA is currently seeking reuse permits.	Reuse for steam electric power at Mountain Creek Lake.
Ennis	Ellis	Trinity	Flood Storage Reallocation at Lake Bardwell	1,760	High		Medium low	Low	Medium Low	Low	Low ²	Requires new water right and contract with the Corps	Costs were updated from 1988 Study.
TRA	Ellis	Trinity	Ellis County Steam Electric Reuse	2,200	High	\$505	Low	Low	Low	Low	Low	TRA is currently seeking reuse permits.	Distance is assumed. Assumed cost of water for reuse is \$0.25 per 1,000 gallons.
TRA	Freestone	Trinity	Freestone County Steam Electric Reuse	6,760	High	\$312	Low	Low	Low	Low	Low	TRA is currently seeking reuse permits.	Distance is assumed. Assumed cost of water for reuse is \$0.25 per 1,000 gallons.
TRA	Kaufman	Trinity	Kaufman County Steam Electric Reuse	1,000	High	\$901	Low	Low	Low	Low	Low	TRA is currently seeking reuse permits.	Distance is assumed. Assumed cost of water for reuse is \$0.25 per 1,000 gallons.
TRA	Tarrant/Denton	Trinity	Tarrant and Denton County Irrigation	7,500	High	\$266	Low	Low	Low	Low	Low	TRA is currently seeking reuse permits.	Distance is assumed. Assumed cost of water for reuse is \$0.25 per 1,000 gallons.
TRA	Tarrant	Trinity	Tarrant County Municipal	7,500	High	Combined with project above	Low	Low	Low	Low	Low	TRA is currently seeking reuse permits.	Assumed cost of reuse water is \$0.25 per 1,000 gallons.
TRA	Multiple	Trinity	Joe Pool Lake Reuse from New WWTP	4,368	High	n/a	Low	Low	Low	Low	Medium	TRA is currently seeking reuse permits.	Assumed cost of reuse water is \$0.25 per 1,000 gallons. No Capital Costs

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NTMWD/GTUA	Multiple	Multiple	Additional Lake Texoma (Renew Interim NTMWD Raw Water Supply)	21,900	High	\$63	Low	Low	Low	Low	Medium		Renewal of GTUA signed contract with NTMWD to provide up to 25,000 ac-ft/yr of raw water.
NTMWD/GTUA	Collin/Grayson	Trinity/ Red	Collin-Grayson Municipal Alliance Pipeline Project		High		Low	Low	Low	Low	Low ²	Expansions to existing treated water transmission system from McKinney to the participants.	
GTUA	Grayson	Multiple	Grayson County Water Supply Project		High	\$839	Low	Low	Low	Low	Medium	Requires expanded treatment and transmission system. Would require the new water right in Lake Texoma (discussed above).	
Athens MWA	Henderson	Multiple	Indirect Reuse	2,677	High	\$923	Low	Low	Low	Low	Medium	Reuse permit has been obtained.	
Athens MWA	Henderson	Multiple	Indirect Reuse from Fish Hatchery	2,872	High	n/a	Low	Low	Low	Low	Medium	Reuse permit has been obtained.	No infrastructure required. No capital costs.
Athens MWA	Henderson	Multiple	Forest Grove (all to Lake)	4,500	High	\$209	Medium low	Low	Low	Positive	Low	Requires change in permitted use and agreement with TXU	Will improve property values around lake.
Athens MWA	Henderson	Multiple	Forest Grove (split to Lake and City)	4,500	High	\$191	Medium low	Low	Low	Positive	Low	Requires change in permitted use and agreement with TXU	Will improve property values around lake.
Athens MWA	Henderson	Multiple	Connect to Lake Palestine	4,000	High	\$693	Low	Low	Low	Low	Low ²	Requires contract with UNRMWA	
Athens MWA	Henderson	Multiple	Purchase water from DWU	4,000	High	\$1,014	Low	Low	Low	Medium low	Low ²	Requires contract with DWU	
Gainesville/ Cooke County Entities	Cooke	Multiple	Cooke County Water Supply Project		High	\$1,034	Low	Low	Low	Low	Low ²	Requires water treatment plant expansions. Requires new water right permit and IBT.	Total annual available supply from Moss Lake would become 5,371 acre-feet per year. This supply would be available to the City and its customers.
Fairfield	Freestone	Trinity	Connection to TRWD		High		Low	Low	Low	Low	Low ²		

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Jack County-Other	Jack	Trinity	Jack County-Other Transmission System	300	High		Low	Low	Low	Low	Low ²		
Blue Ridge	Collin	Trinity	Blue Ridge Connection to NTMWD	3,200	High	\$497	Low	Low	Low	Low	Low ²		

¹ Assumes that source water is transferred directly to a water treatment plant and there is no impact on water quality.

² Strategy does not involve discharge of water from one source into another source; therefore, there is no impact on water quality.

**Table P.2
Summary of Evaluation of Environmental Factors**

Entity	County	Basin	Strategy	Environmental Factors										Comments
				Acres Impacted	Wetland Acres	Environmental Water Needs	Habitat	Threatened/ Endangered Species	Cultural Resources	Bays & Estuaries	Environmental Water Quality	Other	Overall Environmental Impacts	
Name(s)	Name	Name	Name	#	#	High, medium, low	High, medium, low	# in county	High, medium, low	High, medium, low	High, medium, low	High, medium, low	High, medium, low	
DWU	Multiple	Trinity	Palestine (via TRWD/DWU Integrated Pipeline)	200	NA	Medium	Low	7	Low	Medium low	Low	Low	Low	
Multiple	Multiple	Multiple	Toledo Bend (400,000)	1,870	NA	Medium	Medium low	12	Low	Medium low	Low	Low	Medium low	
Multiple	Multiple	Multiple	Toledo Bend (700,000)	1,870	NA	Medium	Medium low	13	Low	Medium	Low	Low	Medium low	
Multiple	Multiple	Multiple	Toledo Bend (500,000)	2,099	NA	Medium	Medium low	14	Low	Medium low	Low	Low	Medium low	
NTMWD	Multiple	Multiple	Oklahoma	189	NA	Medium low	Low	Unknown	Low	Low	Low	Low	Low	
DWU	Multiple	Trinity	Oklahoma	413	NA	Medium low	Low	Unknown	Low	Low	Low	Low	Low	
TRWD	Multiple	Trinity and Brazos	Oklahoma	551	NA	Medium low	Low	Unknown	Low	Low	Low	Low	Low	
Irving	Dallas	Trinity	Oklahoma	190	NA	Medium low	Low	Unknown	Low	Low	Low	Low	Low	
TRWD	Multiple	Trinity and Brazos	TRWD/DWU Integrated Pipeline (TRWD Share)	331	NA	Medium low	Low	9	Low	Medium low	Medium low	Low	Low	Possible lower return flows.
DWU	Multiple	Trinity	Lake o' the Pines	422	NA	Medium	Low	11	Low	Low	Low	Low	Low	
NTMWD	Multiple	Multiple	Lake o' the Pines	319	NA	Medium	Low	11	Low	Low	Low	Low	Low	
TRWD	Multiple	Trinity and Brazos	Lake o' the Pines	599	NA	Medium	Low	11	Low	Low	Low	Low	Low	
DWU	Multiple	Trinity	Wright Patman - Texarkana	720	NA	Medium low	Low	13	Low	Low	Low	Low	Low	
NTMWD	Multiple	Multiple	Wright Patman - Texarkana	612	NA	Medium low	Low	13	Low	Low	Low	Low	Low	
TRWD	Multiple	Trinity and Brazos	Wright Patman - Texarkana	950	NA	Medium low	Low	13	Low	Low	Low	Low	Low	

**Table P.2
Summary of Evaluation of Environmental Factors**

Entity	County	Basin	Strategy	Environmental Factors										Comments
				Acres Impacted	Wetland Acres	Environmental Water Needs	Habitat	Threatened/Endangered Species	Cultural Resources	Bays & Estuaries	Environmental Water Quality	Other	Overall Environmental Impacts	
DWU	Multiple	Trinity	Wright Patman - Raise Pool	4,260	unknown	Medium low	Medium high	13	Medium	Low	Low	Low	Medium	Requires NEPA and 404 permit
NTMWD	Multiple	Multiple	Wright Patman - Raise Pool	3,430	unknown	Medium low	Medium high	13	Medium	Low	Low	Low	Medium	Requires NEPA and 404 permit
TRWD	Multiple	Trinity and Brazos	Wright Patman - Raise Pool	3,768	unknown	Medium low	Medium high	13	Medium	Low	Low	Low	Medium	Requires NEPA and 404 permit
Multiple	Multiple	Multiple	Wright Patman - System	4,479	unknown	Medium	Medium high	13	Medium	Low	Low	Medium	Medium	Will increase lake fluctuation at Jim Chapman. Requires NEPA and 404 permit
DWU	Multiple	Trinity	Sam Rayburn/Steinhagen	1,997	NA	Medium low	Low	13	Low	Medium low	Low	Low	Low	
NTMWD	Multiple	Multiple	Sam Rayburn/Steinhagen	2,104	NA	Medium low	Low	13	Low	Medium low	Low	Low	Low	
TRWD	Multiple	Trinity and Brazos	Sam Rayburn/Steinhagen	2,287	NA	Medium low	Low	13	Low	Medium low	Low	Low	Low	
DWU	Multiple	Trinity	Livingston	1,749	NA	Medium low	Low	10	Low	Medium low	Low	Low	Low	
NTMWD	Multiple	Multiple	Livingston	1,943	NA	Medium low	Low	10	Low	Medium low	Low	Low	Low	
TRWD	Multiple	Trinity and Brazos	Livingston	964	NA	Medium low	Low	10	Low	Medium low	Low	Low	Low	
DWU	Multiple	Trinity	Lake Texoma not Yet Authorized - Blend with Elm Fork	172	NA	Low	Low	13	Low	Low	Medium	Low	Low	Possible water quality concerns for receiving waters. Requires NEPA.
Multiple	Multiple	Multiple	Lake Texoma not Yet Authorized - Blend with Other Sources	306	NA	Medium low	Low	13	Low	Low	Low to Medium*	Low	Medium low	* Impacts will vary depending on how water is blended. Requires NEPA.
Multiple	Multiple	Multiple	Lake Texoma not Yet Authorized - Desalinate	306	NA	Medium low	Low	13	Low	Low	Medium	Medium high	Medium	Impacts to environmental water quality will vary depending on disposal of reject. Requires NEPA.

**Table P.2
Summary of Evaluation of Environmental Factors**

Entity	County	Basin	Strategy	Environmental Factors										Comments
				Acres Impacted	Wetland Acres	Environmental Water Needs	Habitat	Threatened/ Endangered Species	Cultural Resources	Bays & Estuaries	Environmental Water Quality	Other	Overall Environmental Impacts	
NTMWD	Multiple	Multiple	Lake Texoma Authorized - Blend	252	NA	Medium low	Low	13	Low	Low	Low to Medium*	Low	Medium low	Requires new water to blend. *Impacts will vary depending on how water is blended.
NTMWD	Multiple	Multiple	Lake Texoma Authorized - Desal	252	NA	Medium low	Low	13	Low	Low	Medium	Medium high	Medium	Impacts to environmental water quality will vary depending on disposal of reject.
Multiple	Multiple	Multiple	Gulf of Mexico	2,813	NA	Low	Medium low	NA	Low	Medium	Medium	Medium	Medium	Potential impacts to receiving waters of reject brine. Potential impacts to aquatic life at intake.
DWU	Multiple	Trinity	Dallas Southside Reuse	781	NA	Medium low	Positive	6	Low	Medium low	Medium low	Low	Low	Possible lower return flows. Option for 1,200 acres of constructed wetlands.
DWU	Multiple	Trinity	Dallas Lewisville Reuse	192	NA	Medium low	Low	6	Low	Medium low	Medium low	Low	Low	Possible lower return flows.
DWU	Multiple	Trinity	Dallas Direct Reuse	116	NA	Low	Low	Not applicable	Low	Medium low	Low	Low	Low	Possible lower return flows.
DWU	Multiple	Trinity	Tawakoni Pipeline		NA	Medium	Low		Low	Medium low	Low	Low	Low	
DWU and NTMWD	Multiple	Multiple	Main Stem Pump Station			Medium low	Low		Low	Low	Low	Low	Low	
NTMWD	Multiple	Multiple	Lower Bois d'Arc Creek Reservoir	16,526	5,874	Medium	Medium high	15	Medium high	Low	Medium	Medium	Medium high	Proposed reservoir is upstream of the Caddo National Grasslands. Will require a NEPA and 404 permit.
Multiple	Multiple	Multiple	Marvin Nichols	68,854	14,422	Medium high	High	19	High	Low	Medium	Medium	High	Priority 1 bottomland hardwoods. Will require a NEPA and 404 permit. 33,000 acres of forested land will be impacted.

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Multiple	Multiple	Multiple	Marvin Nichols	68,854	14,422	Medium high	High	20	High	Low	Medium	Medium	High	Priority 1 bottomland hardwoods. Will require a NEPA and 404 permit. 33,000 acres of forested land will be impacted.
UTRWD	Multiple	Trinity	Ralph Hall	7,714	0	Medium	Medium high	16	Medium	Low	Medium	Medium low	Medium high	Will require a NEPA and 404 permit.
DWU	Multiple	Neches	Fastrill Lake	25,197	N/A	Medium-High	High	21	High	Low	Medium	Medium	High	Priority 1 bottomland hardwoods. Will require a NEPA and 404 permit.
DWU	Multiple	Neches	Neches River Run-of-the-River Diversion	12,328	N/A	Medium-High	Medium	21	Medium high	Low	Medium	Medium	Medium high	
DWU	Multiple	Trinity	George Parkbouse North	14,644	1590 ³	Medium	Medium high	16	Medium high	Low	Medium	Medium low	Medium high	No designated priority bottomland hardwoods located within or adjacent to site. 90% of land impacted is cropland or pasture. Will require a NEPA and 404 permit.
NTMWD and/or UTRWD	Multiple	Multiple	George Parkbouse North	14,636	1590 ³	Medium	Medium high	16	Medium high	Low	Medium	Medium low	Medium high	No designated priority bottomland hardwoods located within or adjacent to site. 78% of land is pasture or cropland.
NTMWD and/or UTRWD	Multiple	Multiple	George Parkbouse South	33,500	NA	Medium	Medium high	13	Medium high	Low	Medium	Medium low	Medium high	No designated priority bottomland hardwoods located within or adjacent to site. 78% of land is pasture or cropland.
DWU	Multiple	Trinity	Columbia	11,551	5,746	Medium	Medium high	15	Medium high	Low	Medium	Medium low	Medium high	Category 2 habitat for bottomland hardwoods. Will require a NEPA and 404 permit.
TRWD	Multiple	Trinity and Brazos	Tehuacana	14,938	7,000	Medium	Medium high	13	Medium high	Medium low	Medium	Medium low	Medium high	No priority bottomland hardwoods Will require a 404 permit, and possible NEPA.
DWU	Multiple	Trinity	Roberts County Groundwater	1,319	NA	Medium low	Low	not applicable	Low	Low	Low	Medium high	Medium low	Potential impacts to stream flows and Arkansas river shiner. Limited resource.

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NTMWD	Multiple	Multiple	Roberts County Groundwater	1,566	NA	Medium low	Low	not applicable	Low	Low	Low	Medium high	Medium low	Potential impacts to stream flows and Arkansas river shiner. Limited resource.
TRWD	Multiple	Trinity and Brazos	Roberts County Groundwater	1,190	NA	Medium low	Low	not applicable	Low	Low	Low	Medium high	Medium low	Potential impacts to stream flows and Arkansas river shiner. Limited resource.
DWU	Multiple	Trinity	Carrizo-Wilcox Groundwater	703	NA	Medium low	Low	not applicable	Low	Low	Low	Medium high	Medium	Potential impacts to stream flows.
NTMWD	Multiple	Multiple	Carrizo-Wilcox Groundwater	803	NA	Medium low	Low	not applicable	Low	Low	Low	Medium high	Medium	Potential impacts to stream flows.
TRWD	Multiple	Trinity and Brazos	Carrizo-Wilcox Groundwater	937	NA	Medium low	Low	not applicable	Low	Low	Low	Medium	Medium low	Potential impacts to stream flows.
NTMWD/ Fannin County	Fannin	Red	Fannin County Water Supply System	174	NA	Low	Low	10	Low	Low	Low	Low	Low	
Waxahachie, Rockett SUD, Ennis, TRA, Midlothian	Ellis	Trinity	Ellis County Water Supply Project	170	NA	Low	Low	6	Low	Low	Low	Low	Low	
Multiple	Multiple	Multiple	New water treatment plant	Varies	NA	Low	Low	not applicable	Low	Low	Low	Low	Low	
Multiple	Multiple	Multiple	Water treatment plant expansion	0	NA	Low	Low	not applicable	Low	Low	Low	Low	Low	
Multiple	Multiple	Multiple	Overdraft Trinity aquifer in 2010 (new wells)	Varies	NA	Low	Low	not applicable	Low	Low	Low	Low	Low	
Multiple	Multiple	Multiple	Overdraft Trinity aquifer in 2010 (existing wells)	0	NA	Low	Low	not applicable	Low	Low	Low	Low	Low	
Multiple	Multiple	Multiple	Overdraft Woodbine aquifer in 2010 (new wells)	Varies	NA	Low	Low	not applicable	Low	Low	Low	Low	Low	

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Multiple	Multiple	Multiple	Overdraft Woodbine aquifer in 2010 (existing wells)	0	NA	Low	Low	not applicable	Low	Low	Low	Low	Low	
Multiple	Multiple	Multiple	Expanded use of Trinity Aquifer	Varies	NA	Low	Low	not applicable	Low	Low	Low	Low	Low	
Multiple	Multiple	Multiple	Expanded use of Woodbine Aquifer	Varies	NA	Low	Low	not applicable	Low	Low	Low	Low	Low	
Multiple	Multiple	Multiple	Expanded use of Carrizo-Wilcox Aquifer	Varies	NA	Low	Low	not applicable	Low	Low	Low	Low	Low	
Multiple	Multiple	Multiple	Supplemental wells	Varies	NA	Low	Low	not applicable	Low	Low	Low	Low	Low	
Multiple	Multiple	Multiple	Basic Conservation Package	0	NA	Low	Low	not applicable	Low	Low	Low	Low	Low	Reduces demand on resources. Also reduces return flows.
Multiple	Multiple	Multiple	Expanded Conservation Package	0	NA	Low	Low	not applicable	Low	Low	Low	Low	Low	Reduces demand on resources. Also reduces return flows.
Corsicana	Navarro	Trinity	Richland-Chambers Pump Station	0	NA	Low	Low	7	Low	Low	Low	Low	Low	
Weatherford	Parker	Trinity	Increase pumping capacity of TRWD pipeline	0	NA	Low	Low	5	Low	Low	Low	Low	Low	
Walnut Creek SUD	Parker/Wise	Trinity	Parallel pipeline to Lake Bridgeport	24	NA	Low	Low	9	Low	Low	Low	Low	Low	
Walnut Creek SUD	Wise	Trinity	Second pipeline to Boyd/Rhome	39	NA	Low	Low	4	Low	Low	Low	Low	Low	
Multiple	Multiple	Multiple	Additional supply from water provider	NA	NA	Low	Low	varies	Low	Low	Low	Low	Low	
Fort Worth	Tarrant	Trinity	Parallel pipeline to Eagle Mountain	0	NA	Low	Low	4	Low	Low	Low	Low	Low	
Fort Worth	Tarrant	Trinity	Pipeline to new Southwest WTP	TBD	NA	Low	Low	4	Low	Low	Low	Low	Low	
TRA	Tarrant	Trinity	Tarrant County Water Supply Project Plant	NA	NA	Low	Low	4	Low	Low	Low	Low	Low	

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TRA/ Dallas County Irrigation	Dallas	Trinity	Las Colinas Reuse	0	NA	Low	Low	5	Low	Medium low	Low	Low	Low	
TRA/ Dallas Co. SEP	Dallas	Trinity	Dallas County Reuse	25	NA	Low	Low	5	Low	Medium low	Medium low	Low	Low	
Ennis	Ellis	Trinity	Flood Storage Reallocation at Lake Bardwell	TBD	NA	Medium low	Medium	6	Medium low	Medium low	Low	Low	Medium low	May require NEPA and 404 permit.
TRA	Ellis	Trinity	Ellis County Steam Electric Reuse	24	NA	Low	Low	6	Low	Medium low	Low	Low	Low	
TRA	Freestone	Trinity	Freestone County Steam Electric Reuse	36	NA	Low	Low	7	Low	Medium low	Low	Low	Low	
TRA	Kaufman	Trinity	Kaufman County Steam Electric Reuse	36	NA	Low	Low	6	Low	Medium low	Low	Low	Low	
TRA	Tarrant/ Denton	Trinity	Tarrant and Denton County Irrigation	16	NA	Low	Low	10	Low	Medium low	Low	Low	Low	
TRA	Tarrant	Trinity	Tarrant County Municipal	0	NA	Low	Low	4	Low	Medium low	Low	Low	Low	
TRA	Multiple	Trinity	Joe Pool Lake Reuse from New WWTP	0	NA	Low	Low	5	Low	Medium low	Low	Low	Low	
TRA	Dallas/ Ellis	Trinity	Dallas and Ellis County Irrigation	12	NA	Low	Low	11	Low	Low	Low	Low	Low	
GTUA	Multiple	Multiple	Change Permitted Lake Texoma Use to Municipal or Industrial	0	NA	Low	Low	not applicable	Low	Low	Low	Low	Low	
NTMWD/ GTUA	Multiple	Multiple	Additional Lake Texoma (Renew Interim NTMWD Raw Water Supply)	0	NA	Low	Low	13	Low	Low	Medium low	Low	Low	
NTMWD/ GTUA	Collin/ Grayson	Trinity/ Red	Collin-Grayson Municipal Alliance Pipeline Project	TBD	NA	Low	Low	18	Low	Low	Low	Low	Low	
GTUA	Grayson	Multiple	Grayson County Water Supply Project	230	NA	Low	Low	12	Low	Low	Low to Medium*	Low to Medium*	Low	* Impacts will vary depending on how water is blended or treated.

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Athens MWA	Henderson	Multiple	Indirect Reuse	10	NA	Low	Low	7	Low	Medium low	Medium low	Low	Low	
Athens MWA	Henderson	Multiple	Forest Grove (all to Lake)	30	NA	Medium low	Medium low	12	Medium low	Medium low	Low	Low	Medium low	
Athens MWA	Henderson	Multiple	Forest Grove (split to Lake and City)	33	NA	Medium low	Medium low	12	Medium low	Medium low	Low	Low	Medium low	
Athens MWA	Henderson	Multiple	Connect to Lake Palestine	55	NA	Low	Low	7	Low	Low	Low	Low	Low	
Athens MWA	Henderson	Multiple	Purchase water from DWU	1	NA	Low	Low	7	Low	Low	Low	Low	Low	
Gainesville/ Cooke County Entities	Cooke	Multiple	Cooke County Water Supply Project	81	NA	Low	Low	7	Low	Low	Low	Low	Low	
Fairfield	Freestone	Trinity	Connection to TRWD	12	NA	Low	Low	7	Low	Low	Low	Low	Low	
Wortham	Freestone	Trinity	Purchase treated water from Winkler WSC	36	NA	Low	Low	7	Low	Low	Low	Low	Low	
Bryson	Jack	Brazos	Connect Bryson to Jacksboro	29	NA	Low	Low	5	Low	Low	Low	Low	Low	
Jack County- Other	Jack	Trinity	Jack County-Other Transmission System	24	NA	Low	Low	5	Low	Low	Low	Low	Low	
Blue Ridge	Collin	Trinity	Blue Ridge Connection to NTMWD	24	NA	Low	Low	6	Low	Low	Low	Low	Low	

Notes:

1. The number of endangered and threatened species is the total number of species listed for the counties where the project is located. It does not represent the number of species that may be located within the project site.
For potential impacts to threatened and endangered species for strategies involving existing reservoirs, the number is limited to those that are riparian, wetland or estuary dependent.
 2. Acreage of potential wetlands for reservoir sites is based on acreage of hydric soils. Lake Columbia is the only new reservoir site that has had an on-ground wetlands delineation survey.
 3. Data for reservoir site was obtained from the North East Texas Regional Water Plan, Appendix B, Reservoir Site Assessment Study, January 2001.
 4. NA - Not available. Impacted wetland acreage for transmission projects are expected to be minimal. Pipeline will be routed minimize potential impacts.
 5. Impacts to environmental water needs were assessed assuming that there would be minimal new water imports. It is highly unlikely that will occur. Imported water to the basin of concern will increase return flows in the streams.
- TBD = to be determined