



SWMO Water Rate Study Fact Sheet

June 2020

In 2012, based on population and employment projections, water demands for the 16-county SWMO Water footprint in southwest Missouri were forecasted from 2010 to 2060. This assessment indicated gaps between available water supply and future water demands. Further analysis in 2016 and 2017 refined the projected gap analysis into an annual average demand projection that could be used to evaluate future water supply alternatives. The gap analysis included 9 members of SWMO Water who indicated an interest in purchasing additional water supply. A 30% contingency was added to the projected shortage for these members to account for future growth, resulting in a total demand gap of 39 million gallons a day (MGD) in 2060. The demand gap for the entire 16-county area was 53 MGD.

In June 2020, a Rate Study was completed which further analyzed the 2060 annual average day demand gap for potential project participants. Data collected during the rate study indicated a demand gap of 39 MGD without a contingency as shown in **Table 1**. The maximum day demand gap was projected to be 68 MGD. These demand gap projections for 2060 were used to develop 3 potential alignments for water transmission from Stockton Lake to the SWMO Water members including related planning-level cost estimates.

Table 1 Estimated 2060 Demand Gap for Rate Study

County	Municipality	2060 AVD Demand Gap (MGD)	2060 MDD Demand Gap (MGD)
Barry	Monett	1.0	4.0
Jasper	Carthage	3.0	4.8
	Missouri American – Joplin	17	28
Christian	Nixa	1.0	2.0
	Ozark	1.5	3.0
Greene	City Utilities – Springfield	12	20
	Republic	2.5	4.0
	Willard	0.8	1.2
Lawrence	Mount Vernon	0.3	0.6
Total of 2019 Tri-State Coalition Expected Participants		39	68

AVD = average day demand

MDD = maximum day demand

MGD = million gallons per day

Stockton Lake Water Storage and Transmission

The rate study provided an understanding of the potential future regional water supply and transmission system, including planning level estimates of cost for SWMO Water and its membership. Planning level cost estimates have an accuracy of +50/-30 percent, meaning the costs could be 50% higher or 30% lower. Detailed cost estimates will be developed with greater accuracy as the project progresses.



To develop the estimates, three categories of costs were considered:

1. SWMO Water cost of reallocated water supply storage from Stockton Lake (water purchase and lake O&M).
2. SWMO Water cost of shared regional transmission infrastructure based on conceptual pipeline alignments (capital costs and pipeline O&M).
3. The cost of additional treatment and interconnection infrastructure based on requirements of individual community system profiles. These costs would be borne by each specific community and are not costs to SWMO Water.

Additional Regional Water Supply in Two Phases

SWMO Water has requested from the U.S. Army Corps of Engineers (USACE), Kansas City District, the reallocation of water supply storage at Stockton Lake to meet estimated future water supply needs in southwest Missouri. USACE is studying the viability of reallocating water supply storage that would yield 39 million gallons per day (MGD) at Stockton Lake to partially meet a total estimated need of 53 million gallons per day (MGD) for the 16-county area. Potential contracts to secure water storage and construct transmission systems will involve two overall phases:

- *Phase I* – SWMO Water will contract with USACE to secure reallocated water supply storage from Stockton Lake (estimated to yield 39 MGD). Participating SWMO Water members will contract with SWMO Water for their portion of the storage (based on their request to fill their community’s supply gap between current and future average daily demand). Contracts for water storage are separate from, and do not require commitments to, the future water transmission system. Phase I secures water storage (supply) for future use.
- *Phase II* – SWMO Water participating members will finance and construct a raw water transmission system to distribute Stockton Lake water. Participating SWMO Water members will contract for their portion of the shared regional system. Additional member-specific infrastructure will be needed for potable treatment or interconnections, based on individual system profiles.

Phase I – Contract for Water Supply

Table 2 summarizes the potential future reallocated water storage yield amount (million gallons per day [MGD]) and costs for the SWMO Water contract with USACE.

Table 2 - Stockton Lake Reallocated Water Storage Data

Description	SWMO Water
2060 Avg. Annual Water Allocation (MGD)	39
Maximum Day Withdrawal (MGD)	68
USACE Reallocation Purchase	\$33,100,000
USACE Annual Reallocation Debt Service ¹	\$1,640,000
USACE Annual O&M Cost ²	\$134,000

¹ Debt service is based on 30 years at 3% interest rate

² Amount varies annually and is provided by USACE



Phase II – Contracts for Water Transmission Infrastructure

Three conceptual transmission corridors have been developed to estimate planning level costs for transmission: Alternative A/Figure 1, Alternative B/Figure 2, and Alternative C/Figure 3. These corridors are conceptual in nature for purposes of rough order of magnitude cost development; the final corridor alignment will be developed to serve members who have purchased reallocated water supply storage from Stockton Lake. Detailed cost estimates will be developed as the project progresses.

Numerous alternatives for allocating the costs among project participants were evaluated to balance capacity percentage and location. SWMO Water members selected a hybrid approach termed the “Lowest Cost-Plus” approach to determine cost allocations. The Lowest Cost-Plus approach takes the lowest annual debt service for each municipality (the lower of either capacity needed or location along the route) and then sums these values to calculate a total. This baseline total allows each member to start from their more advantageous position, either capacity or location. Remaining cost between the baseline total and the total overall project cost is then distributed among the utilities based on capacity percentage. The Lowest Cost-Plus approach was selected for use in the rate study, but this does not prevent SWMO Water from selecting an alternate cost allocation structure in the future.

Alternative A/Figure 1

In Alternative A the conceptual transmission corridor runs from Stockton Lake, through Springfield, Mt. Vernon, and Monett, to the proposed Joplin/Missouri American Water reservoir just east of I-49 in Newton County, delivering raw water to the reservoir. Willard, Republic, Nixa, and Ozark gain access to the regional system through a hub connection to the Springfield City Utilities system. Carthage gains access to the regional system through a hub connection to the Joplin/Missouri American Water system. The hub connections would provide potable water. Springfield, Monett, and Joplin/Missouri American Water would take raw water from the SWMO Water system. Mt. Vernon would require a surface water treatment plant to treat the raw water provided by SWMO Water. Utility specific costs for the potable water service lines and surface water treatment would be paid by each individual community.

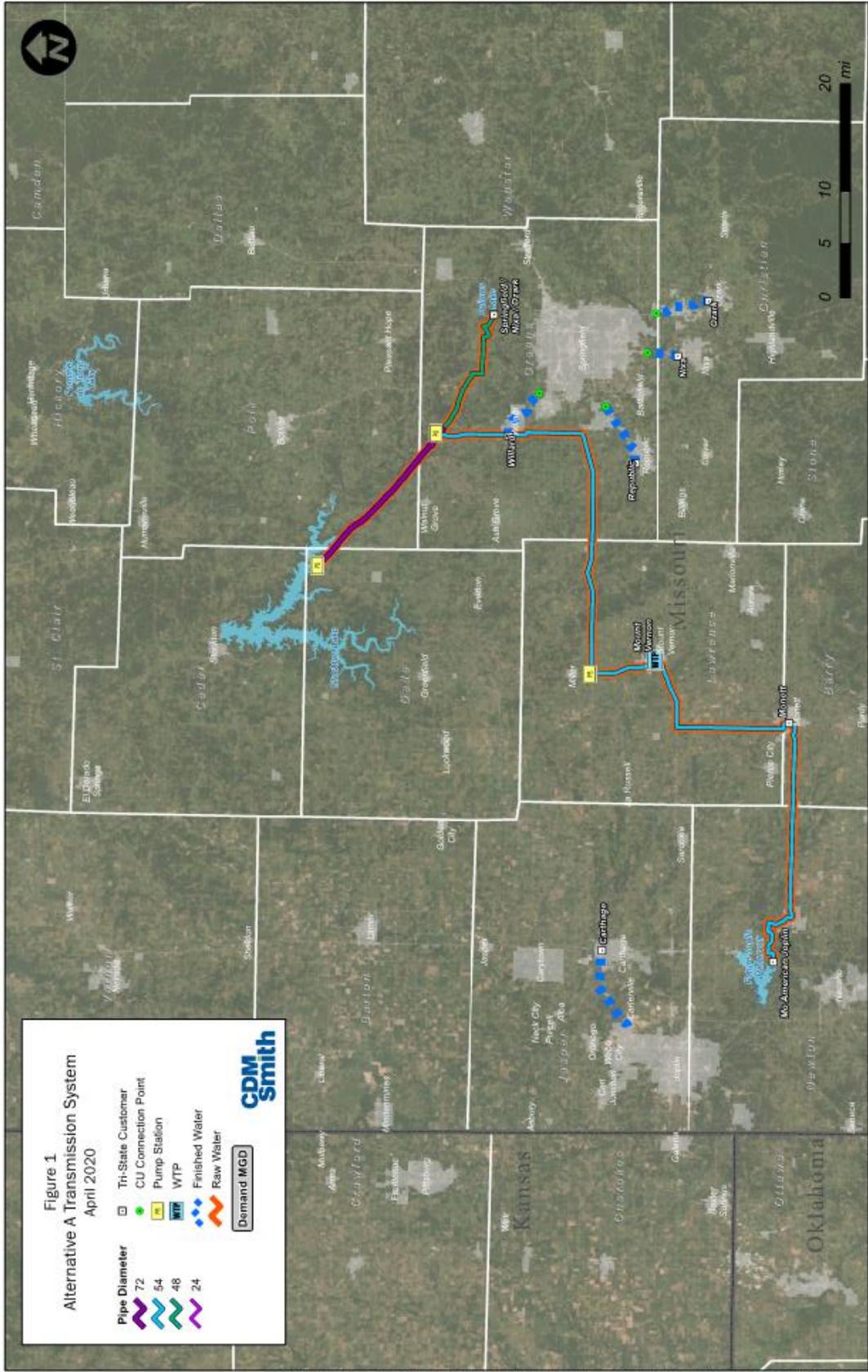


Figure 1- Alternative A Alignment



Planning level cost estimates - Alternative A

Shared transmission

SWMO Water’s estimated total costs for the shared regional transmission infrastructure for Alternative A are summarized in **Table 3**.

Table 3 - SWMO Water Infrastructure Costs – Alternative A

Description	Cost
Estimated Construction Cost	\$1,038,000,000 ¹
Annual Debt Service, \$/year ²	\$44,520,000
Annual Infrastructure O&M, \$/year	\$6,120,000

¹See Appendix B of the Southwest Missouri Water Rate Study (June 2020) for OPCC data

²Debt service is based on a 35-year loan at 2.5% interest rate

Utility-specific additional infrastructure

Estimated costs for additional utility specific infrastructure are summarized for Alternative A in **Table 4**, including either 1) connection to a local potable water “hub,” or 2) costs to construct a new surface water treatment plant (SWTP) to treat raw water. Springfield, Monett, and Joplin/Missouri-American Water would take raw water from the SWMO Water system.

Table 4 - Costs for Additional Infrastructure – Alternative A

Description	Carthage*	Mt. Vernon#	Republic*	Ozark*	Nixa*	Willard*
Cost Opinion of Add'l Infrastructure	\$30,747,000 ¹	\$3,400,000 ²	\$15,862,000 ¹	\$13,256,000 ¹	\$6,604,000 ¹	\$8,700,000 ¹
Annual Debt Service Add'l Infrastructure ³	\$1,920,000	\$240,000	\$960,000	\$840,000	\$360,000	\$480,000
Annual Debt Service Add'l Infrastructure Cost (\$/1,000 gal)	\$1.75	\$1.93	\$1.05	\$1.53	\$0.99	\$2.05

* = ROM costs for transmission line to “hub” community. # = ROM costs for surface water treatment system.

¹Does not include costs from the hub to provide the potable water and may not be inclusive of all costs for distribution system improvements needed for implementation.

²Based on \$10/gal for new SWTP construction using 2060 Average Annual Water Allocation

³Debt service is based on a 20-year loan at 2.5% interest rate

Stockton Lake reallocation costs, Stockton Lake O&M, and SWMO Water infrastructure O&M costs were added to the infrastructure costs for Alternative A, then converted to a cost per thousand gallons of \$3.71. Utility-specific costs would then be added as needed per community.

Alternative B/Figure 2

In Alternative B the conceptual transmission corridor runs from Stockton Lake, through Springfield, Mt. Vernon, Monett, the proposed Joplin/Missouri American Water Reservoir just east of I-49 in Newton County, and to Carthage. Raw water delivered directly from the SWMO Water system will require Willard, Republic, Mt. Vernon, and Carthage to develop additional treatment capacity to treat the raw surface water. Nixa and Ozark would gain access to the regional system through a hub connection to City Utilities system. The hub connection would provide potable water. Utility specific costs for the potable water service lines and surface water treatment would be paid by each individual community.



Planning level cost estimates - Alternative B

Shared transmission

SWMO Water’s estimated total costs for the shared regional transmission infrastructure for Alternative B are summarized in **Table 5**.

Table 5 - SWMO Water Infrastructure Costs – Alternative B

Description	Cost
Estimated Construction Cost	\$1,088,000,000 ¹
Annual Debt Service, \$/year ²	\$46,680,000
Annual Infrastructure O&M, \$/year	\$6,335,000

¹See Appendix B of the Southwest Missouri Water Rate Study (June 2020) for OPCC data

²Debt service is based on a 35-year loan at 2.5% interest rate

Utility-specific additional infrastructure costs

Estimated costs for additional utility specific infrastructure are summarized for Alternative B in **Table 6**, including either 1) connection to a local potable water “hub,” or 2) costs to construct a new surface water treatment plant (SWTP) to treat raw water. Springfield, Monett, and Joplin/Missouri-American Water would take raw water from the SWMO Water system.

Table 6 - Costs for Additional Infrastructure – Alternative B

Description	Carthage [#]	Mt. Vernon [#]	Republic [#]	Ozark [*]	Nixa [*]	Willard [#]
Cost Opinion of Add'l Infrastructure	\$9,000,000 ³	\$3,400,000 ²	\$25,000,000 ²	\$13,256,000 ¹	\$6,604,000 ¹	\$8,000,000 ²
Annual Debt Service Add'l Infrastructure ⁴	\$600,000	\$240,000	\$1,560,000	\$840,000	\$360,000	\$480,000
Annual Debt Service Add'l Infrastructure Cost (\$/1,000 gal)	\$0.55	\$1.93	\$1.71	\$1.53	\$0.99	\$1.64

^{*} = ROM costs for transmission line to “hub” community. [#] = ROM costs for surface water treatment system.

¹Does not include costs from the hub to provide the potable water and may not be inclusive of all costs for distribution system improvements needed for implementation.

²Based on \$10/gal for new SWTP construction using 2060 Average Annual Water Allocation

³Based on \$3/gal for WTP expansion using 2060 Average Annual Water Allocation

⁴Debt service is based on a 20-year loan at 2.5% interest rate

Stockton Lake reallocation costs, Stockton Lake O&M, and SWMO Water infrastructure O&M costs were added to the infrastructure costs for Alternative B, then converted to a cost per thousand gallons of \$3.88. Utility-specific costs would then be added as needed per community.

Alternative C/Figure 3

In Alternative C the conceptual transmission corridor runs from Stockton Lake, through Springfield, west to the junction of Highway 96 and Highway 39 north of Mt. Vernon, at which point it branches into two pipelines: the first running to Carthage, then south to the proposed Joplin/Missouri American Water Reservoir just east of I-49 in Newton County; the second to Mt. Vernon and Monett. Raw water delivered directly from the SWMO Water system will require Willard, Republic, Mt. Vernon and Carthage to develop additional treatment capacity to treat the raw surface water. Nixa and Ozark gain

access to the regional system through a hub connection to the City Utilities system. The hub connection would provide potable water. Utility specific costs for the potable water service lines and surface water treatment would be paid by each individual community.

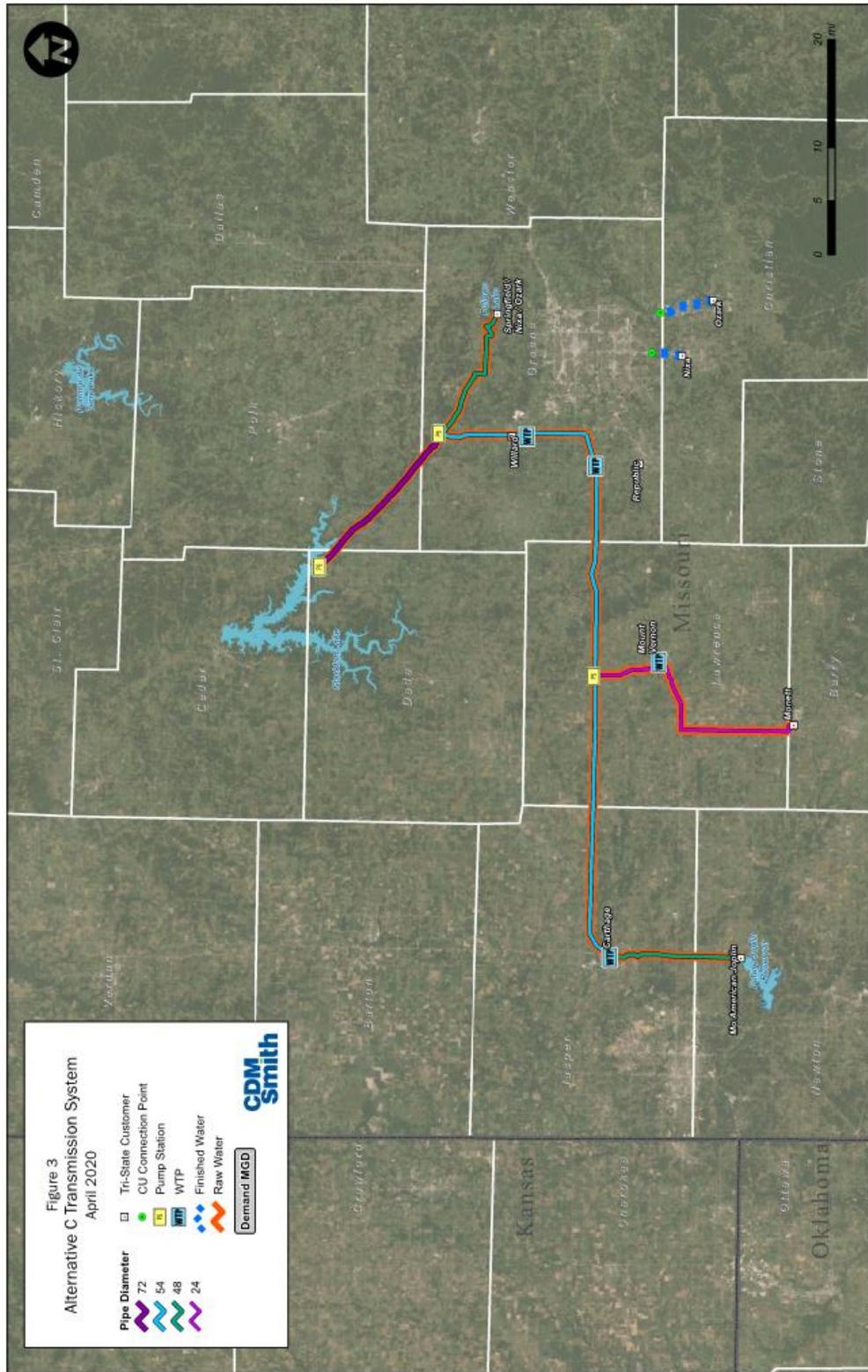


Figure 3- Alternative C Alignment



Planning level cost estimates - Alternative C

Shared transmission

SWMO Water’s estimated total costs for the shared regional transmission infrastructure for Alternative C are summarized in **Table 7**.

Table 7 - SWMO Water Infrastructure Costs – Alternative C

Description	Cost
Estimated Construction Cost	\$1,021,000,000 ¹
Annual Debt Service, \$/year ²	\$43,800,000
Annual Infrastructure O&M, \$/year	\$6,337,000

¹See Appendix B of the Southwest Missouri Water Rate Study (June 2020) for OPCC data

²Debt service is based on a 35-year loan at 2.5% interest rate

Utility specific additional infrastructure

Estimated costs for additional utility-specific infrastructure are summarized for Alternative C in **Table 8**, including either 1) connection to a local potable water “hub,” or 2) costs to construct a new surface water treatment plant (SWTP) to treat raw water. Springfield, Monett, and Joplin/Missouri-American Water would take raw water from the SWMO Water system.

Table 8 - Costs for Additional Infrastructure – Alternative C

Description	Carthage	Mt. Vernon	Republic	Ozark	Nixa	Willard
Cost Opinion of Add'l Infrastructure	\$9,000,000 ³	\$3,400,000 ²	\$25,000,000 ²	\$13,256,000 ¹	\$6,604,000 ¹	\$8,000,000 ²
Annual Debt Service Add'l Infrastructure ⁴	\$600,000	\$240,000	\$1,560,000	\$840,000	\$360,000	\$480,000
Annual Debt Service Add'l Infrastructure Cost (\$/1,000 gal)	\$0.55	\$1.93	\$1.71	\$1.53	\$0.99	\$1.64

* = ROM costs for transmission line to “hub” community. # = ROM costs for surface water treatment system.

¹Does not include costs from the hub to provide the potable water and may not be inclusive of all costs for distribution system improvements needed for implementation.

²Based on \$10/gal for new SWTP construction using 2060 Average Annual Water Allocation

³Based on \$3/gal for WTP expansion using 2060 Average Annual Water Allocation

⁴Debt service is based on a 20-year loan at 2.5% interest rate

Stockton Lake reallocation costs, Stockton Lake O&M, and SWMO Water infrastructure O&M costs were added to the infrastructure costs for Alternative C, then converted to a cost per thousand gallons of \$3.68. Utility-specific costs would then be added as needed per community.



Cost Summary

This section summarizes the estimated project costs for SWMO Water for Stockton Lake water storage and transmission alternatives.

Costs for reallocated water supply storage in Stockton Lake are estimated in **Table 9**.

Table 9 - SWMO Water Reallocated Water Storage Costs – Stockton Lake

Description	Cost
USACE Reallocation Purchase	\$33,100,000
USACE Annual Reallocation Debt Service ¹	\$1,640,000
USACE Annual O&M Cost ²	\$134,000

¹ Debt service is based on 30 years at 3% interest rate

² Amount varies annually and is provided by USACE

Reallocated water storage in Stockton Lake will likely be purchased in two stages. USACE’s preferred alternative for reallocation from Stockton Lake calls for about half of the water storage to come from the multipurpose pool and half from the flood control pool. Upon approval of the reallocation, the multipurpose pool portion may be purchased by SWMO Water. The second portion of the reallocation from the flood control pool will require a dam safety rating change, or a waiver of that required change, before that portion may be purchased and used.

Infrastructure costs for Alternatives A, B, and C are summarized in **Table 10**.

Table 10 - SWMO Water Transmission Infrastructure Costs

Description	Alternative A	Alternative B	Alternative C
Estimated Construction Cost ¹	\$1,038,000,000	\$1,088,000,000	\$1,021,000,000
Annual Debt Service, \$/year ²	\$44,520,000	\$46,680,000	\$43,800,000
Annual Infrastructure O&M, \$/year	\$6,120,000	\$6,335,000	\$6,337,000

¹ See Appendix B of the Southwest Missouri Water Rate Study (June 2020) for OPCC data

² Debt service is based on a 35-year loan at 2.5% interest rate

Aggregate annual costs for both the reallocated water supply storage and transmission infrastructure are summarized in **Table 11**. The schedule of costs is shown through the term of anticipated loan repayment with continuing O&M costs thereafter. These costs represent the overall estimated investment for SWMO Water and its members in Stockton Lake water storage and infrastructure. This investment will provide member communities with an adequate and sustainable drinking water supply for future generations.



Table 11 - SWMO Water Annual Costs Over Time for Stockton Lake Water Storage and Infrastructure

Description	Annual Costs		
	0-30 Years	31-35 Years	After 35 Years
Stockton Lake Reallocation Costs			
Water Storage Debt Service	\$1,640,000 ¹	\$0	\$0
Stockton Lake O&M	\$134,000 ²	\$134,000 ²	\$134,000 ²
Infrastructure Costs³			
Infrastructure Debt Service	\$44,520,000 ⁴	\$44,520,000 ⁴	\$0
Infrastructure O&M	\$6,120,000	\$6,120,000	\$6,120,000
Approximate Total Annual Costs	\$52,414,000	\$50,774,000	\$6,254,000

¹ Debt service assumes a 30-year loan at 3% interest rate

² Cost for Stockton Lake O&M is a pro-rata allocation to all users of the lake. Costs may vary annually and are provided by USACE.

³ The infrastructure costs are the planning-level estimated costs for Alternative A.

⁴ Infrastructure debt service assumes a 35-year loan at 2.5% interest rate

General Notes: No cost escalation has been assumed. Costs are likely to increase over time due to inflation. Costs in this table are for the regional water supply and infrastructure only. Table 11 summary costs do not include the utility-specific infrastructure costs for individual communities.