

7.8 Lake Stillhouse Hollow Reallocation

7.8.1 Description

Reservoirs owned by the United States Army Corps of Engineers (USACE) typically serve multiple functions, including flood control, water supply and recreation. Most USACE reservoirs contain a significant amount of storage dedicated to flood control. This flood control storage is used to temporarily hold flood waters in the top few feet of the reservoir to reduce flooding downstream. It is possible to increase the available water supply from these reservoirs by changing some of the flood control storage to the reservoir storage dedicated to water supply, or conservation storage. This process is commonly called reallocation. The USACE has the authority to reallocate at its own discretion up to 50,000 acre-feet or 15 percent of the total flood storage, whichever is less. Additional reallocation of flood storage to conservation storage requires the approval of the U.S. Congress. The Brazos River Authority (BRA) and the USACE have been continuing an evaluation of the feasibility of reallocating storage in several federal reservoirs. This section evaluates reallocation in Lake Stillhouse Hollow as a potential water management strategy.

Lake Stillhouse Hollow is located in Bell County, Texas approximately five miles southwest of the City of Belton and impounds the Lampasas River in the Brazos River Basin. The location of Lake Stillhouse Hollow is shown in Figure 7.8-1. The reservoir was completed in 1968 by the U.S. Army Corps of Engineers (USACE) for the primary purpose of flood control, but it also provides fish and wildlife habitat, recreation and is a major municipal water source for Bell County and nearby communities. Additionally, a pipeline connects Lake Stillhouse to Lake Georgetown to augment the supply of Georgetown in dry years. The original conservation storage capacity was 235,700 acft at elevation 622 ft-msl, but has since been reduced by sedimentation to 227,825 acft (Table 7.8-1). The total storage in Lake Stillhouse Hollow is approximately 622,525 acft, with 63.4% of the storage reserved for flood control, and 36.6% for water supply (Figure 7.8-1).

Figure 7.8-1 Map of Lake Stillhouse Hollow showing Contour at 629 ft

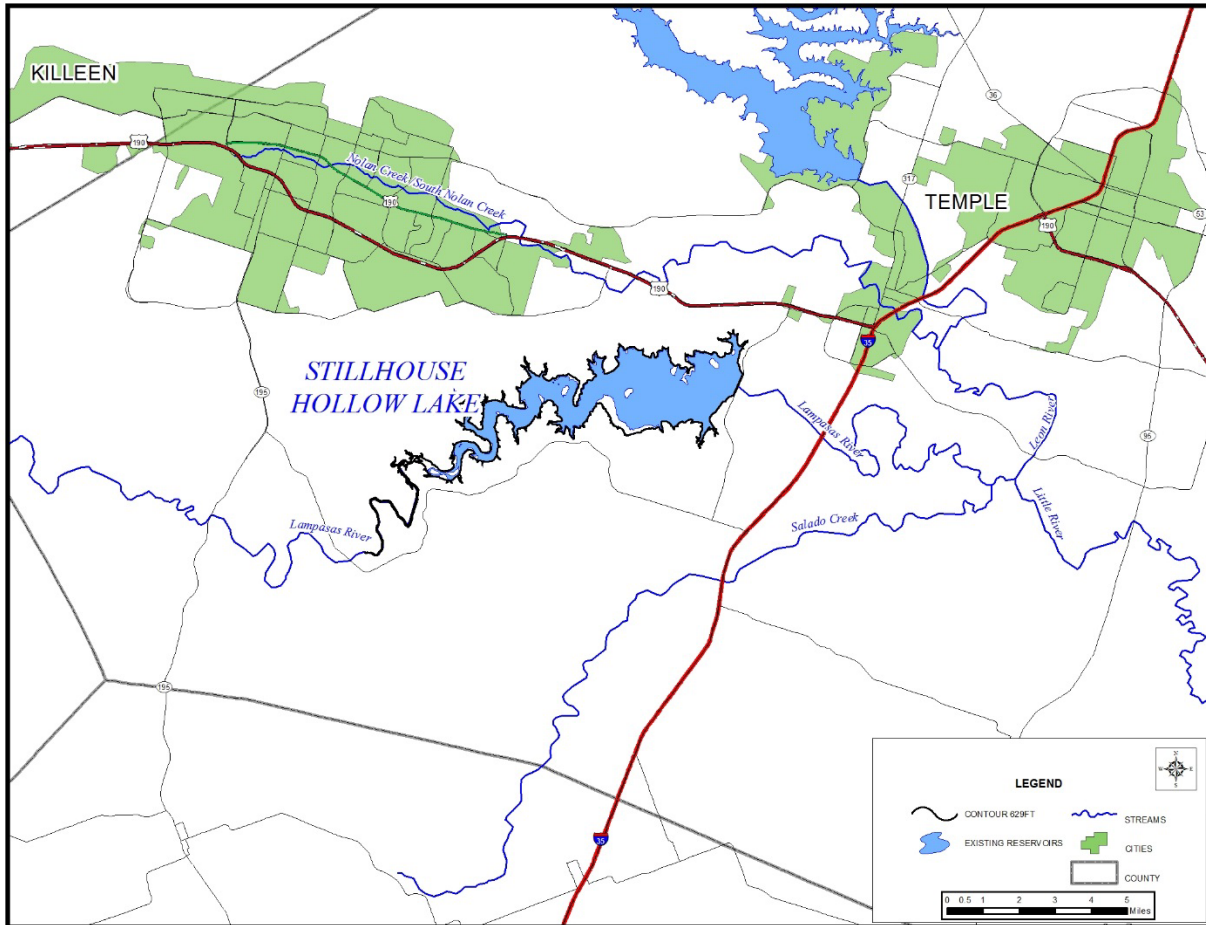




Table 7.8-1 Lake Stillhouse Hollow Characteristics

Owner	U.S. Army Corps of Engineers
Water Supply Contract	
Owner	Brazos River Authority
Storage amount	235,700 acft
Texas Water Right	
Number	CA 12-5161
Owner	Brazos River Authority
Diversion	67,768 acft/yr
Storage	235,700 acft between 569 ft and 622 ft-msl
Priority date	December 16, 1963
Flood Pool1	
Top elevation	666 ft-msl
Storage	394,700 acft
Conservation Pool2	
Top elevation	622 ft-msl
Surface area	6,484 ac
Storage	227,825 acft

¹. Based on original 1968 survey. Represents volume of flood pool only (i.e., volume between 622 ft-msl and 666 ft-msl assuming no sedimentation in flood pool).

². Based on 2005 TWDB volumetric survey. Represents volume from 622 ft-msl and below.

7.8.2 Available Supply

The Brazos Water Availability Model (WAM) Run 3 with Senate Bill 3 environmental flows was used to calculate yields for Lake Stillhouse Hollow under the following two scenarios:

- Existing – Current conservation storage elevation of 622.0 ft-msl
- Scenario 2 – Raise conservation elevation to 629.0 ft-msl, an increase of 7 feet, which corresponds to the maximum discretionary authority of the USACE.

Figure 7.8-1 shows surface area of the reservoir with reallocation. Table 7.8-2 is a summary of the firm yield analyses. The storage in Lake Stillhouse Hollow is expected to decrease to 214,045 acre-feet by 2070. Based on the assumptions reflected in the WAM, the estimated firm yield in 2070 at the existing conservation storage of elevation of 622.0 feet is 61,156 acre-feet per year. In Scenario 2 (elevation 629.0 feet), the yield of Lake Stillhouse Hollow is 63,799 acre-feet per year, resulting in 2,643 acre-feet of additional yield in 2070, or a 4% increase over the existing scenario yield. This strategy could potential be provided supply under the BRA System Operation permit (See Section 7.12), currently pending at the Texas Commission on Environmental Quality. If an entity other than the BRA were to sponsor and pursue this strategy, then an agreement with the BRA would be required to address concerns related to the potential subordination of the System Operation strategy.

Table 7.8-2 Storage Capacities and Firm Yields for Existing Storage and Flood Pool Storage Reallocation in Lake Stillhouse Hollow

Scenario	Top of Conservation Elevation (feet)	2020 conditions			2070 conditions		
		Storage (acft)	Firm Yield (acft/yr)	Yield Increase (acft/yr)	Storage (acft)	Firm Yield (acft/yr)	Yield Increase (acft/yr)
Existing	622.00	224,645	62,033	0	214,045	61,156	0
Scenario 2	629.00	272,100	64,775	2,742	261,500	63,799	2,643

* Scenario 2 corresponds to USACE's maximum discretionary authority to reallocate

7.8.3 Environmental Issues

In Scenario 2, which corresponds to the maximum discretionary authority of the USACE, the reservoir will inundate an additional 750 acres at the new conservation elevation. Mitigation would be required for impacted wetlands along the main river channel. A pool raise would impact juvenile woody species and grasslands. Lake Stillhouse Hollow contains habitat for the Golden Cheeked Warbler¹. A more detailed study of the expected habitat loss needs to be conducted in order to determine mitigation requirements. According to the Phase I Information Paper, there are currently 47 known cultural resources sites at Lake Stillhouse Hollow. Of these, 3 have been determined eligible for inclusion in the National Register of Historic Places (NRHP), 14 have been found ineligible, and 30 have yet to be evaluated. The remaining sites need to be evaluated to determine if they are eligible for inclusion in the NRHP. A complete survey of impacted cultural resources needs to be conducted to determine the full extent of cultural resources within the flood pool of Lake Stillhouse Hollow.

7.8.4 Engineering and Costing

Table 7.8-3 summarizes the estimated cost for this option. There are numerous recreational facilities at Lake Stillhouse Hollow, so the cost of relocations is higher than

¹ Information Paper (Feasibility Scoping Meeting Documentation) for Brazos River Basin Systems Assessment Interim Feasibility Study Phase I, July 2008.



at Lakes Aquilla, Granger or Whitney. The dam improvements costs include minor improvements to Stillhouse Hollow Dam to store the additional capacity as well as slope stability, seepage and geotechnical studies. The USACE owns the land up to 671 ft-msl, which is above the top of the flood pool at 666 ft-msl, so the real estate costs are zero. The estimated cost for water supply storage was based on the updated investment cost of the reallocated flood control storage as a proportion of the additional storage to total useable storage (47,455 acft / 595,500 acft or 8 percent). The updated total investment cost for Lake Granger was estimated to be around \$171,600,000, so the increase in cost for water supply storage was estimated to be \$13,728,000. The estimate for annual operation and maintenance cost is based on a 3-year average (2013-2015) operation and maintenance bill for the BRA based on 34% of the total usable storage (usable storage is the conservation storage plus flood storage). The reallocation will provide the BRA with 42% of the storage, so the increase in their O&M bill is expected to be around \$51,000 per year. The total project costs for the reallocation of storage to an elevation of 629 ft-msl is \$36.6 million. Given a yield of 2,643 acft/yr and a cost of \$3,110,000 per year, the annual cost of water is \$1,177 per acre-foot (\$3.61 per 1,000 gallons).

Table 7.8-3 Cost Estimate Summary for Reallocation of Storage in Lake Stillhouse Hollow (2013 Prices)

Item	Estimated Costs
Capital Costs	
Improvements to Dam	\$1,100,000
Relocations	8,905,000
Total Capital Cost	10,005,000
Engineering, Legal Costs and Contingencies	\$3,502,000
Environmental & Archaeology Studies and Mitigation	\$2,445,000
Real Estate	\$0
Storage Reallocation (8%)	\$13,728,000
Water Rights Permit from TCEQ	\$1,500,000
Administrative Cost for USACE Storage Reallocation Process	\$4,601,000
Interest During Construction (12 months)	\$772,000
Total Project Cost	\$36,553,000
Annual Costs	
Debt Service (5.5 percent, 20 years)	\$3,059,000
Operation and Maintenance	\$51,000
Total Annual Cost	\$3,110,000
Available Project Yield (acft/yr)	2,643

Table 7.8-3 Cost Estimate Summary for Reallocation of Storage in Lake Stillhouse Hollow (2013 Prices)

Item	Estimated Costs
Annual Cost of Water (\$ per acft)	\$1,177
Annual Cost of Water (\$ per 1,000 gallons)	\$3.61

¹ Based on estimates to address potential constraints for pool reallocation stated in Information Paper (FSM Documentation) for Brazos River Basin Systems Assessment Interim Feasibility Study Phase I, July 2008.

7.8.5 Implementation Issues

This water supply option has been compared to the plan development criteria, as shown in Table 7.8-4, and the option meets each criterion.

Table 7.8-4 Comparison of Reallocation of Storage in Lake Stillhouse Hollow Option to Plan Development Criteria

Impact Category	Comment(s)
A. Water Supply	
1. Quantity	1. Sufficient to meet needs
2. Reliability	2. High reliability
3. Cost	3. Reasonable
B. Environmental factors	
1. Environmental Water Needs	1. Low impact
2. Habitat	2. Low to moderate impacts possible
3. Cultural Resources	3. Low to moderate impact
4. Bays and Estuaries	4. Low impact due to distance from coast
5. Threatened and Endangered Species	5. Low impact
6. Wetlands	6. Low to moderate impacts possible
C. Impact on Other State Water Resources	No apparent negative impacts on state water resources; no effect on navigation
D. Threats to Agriculture and Natural Resources	Low to none
E. Equitable Comparison of Strategies Deemed Feasible	Option is considered to meet municipal shortages
F. Requirements for Interbasin Transfers	None
G. Third Party Social and Economic Impacts from Voluntary Redistribution	None

7.8.6 Potential Regulatory Requirements

Implementation of reallocation of storage in Lake Stillhouse Hollow will require several steps including a detailed reallocation study performed by the U.S. Army Corps of Engineers and authorization from the U.S. Congress. An outline of the reallocation process is provided below:

Local sponsor requests the U.S. Army Corps of Engineers perform a reallocation study. Indicate local interest, purpose, financial capability, etc.

Reallocation studies are performed in two phases and follow the General Investigation Process consisting of a Reconnaissance Report and a Feasibility Study. Specific funding would be required for a reallocation study. A reallocation study includes the following:

- 1) Define existing project
- 2) Define current and projected water supply needs
 - i) Alternative solutions considered
 - ii) Analysis of alternatives
 - (1) Reallocation of flood control storage
 - (2) Raise top of flood control pool
 - (3) Reallocate existing conservation pool/power pool
 - (4) Hydropower compensation and other hydropower issues
 - (5) Other
 - (6) No action
 - (7) Screening of alternatives
 - (8) Selection rationale and selection of a plan
 - iii) Selected plan
 - (1) Value of storage reallocation
 - (2) Impacts of reallocation
 - (3) Public involvement
 - (4) Environmental impacts
 - (5) Hydropower compensation and other hydropower issues
 - iv) Recommended plan
- 3) NEPA Compliance
- 4) U.S. Army Corps of Engineers Headquarter Approval of Reallocation Study
- 5) Authorization from U.S. Congress
- 6) U.S. Army Corps of Engineers and Local Sponsor execute water supply contract based on Water Supply Storage Reallocation
- 7) Water Rights Permits from TCEQ, potentially dependent on the granting of the BRA System Operations permit

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