



LEGISLATIVE BUDGET BOARD

Brazos River Authority

Management and Performance Review

Brazos River Authority
Management and Performance Review

CONTENTS

Management Review of the Brazos River Authority	1
Background.....	1
Accomplishments	1
Findings and Recommendations	1
Chapter 1: Governance and Planning	3
Accomplishments	4
Findings	5
Recommendations	5
Detailed Accomplishments	5
Detailed Findings.....	6
Chapter 2: Water Resource Management	11
Water Supply Needs Within Brazos River Authority Territory.....	12
Drawdown Procedure Between Lakes Granbury, Possum Kingdom, and Whitney.....	12
Water Conservation Plan Requirement.....	13
Accomplishments	13
Findings	14
Recommendations	14
Detailed Accomplishments	14
Detailed Findings.....	18
Chapter 3: Stakeholder Engagement	21
Accomplishment	21
Findings	21
Recommendations	21
Detailed Accomplishment.....	21
Detailed Findings.....	22
Appendix A: Best Management Practices For Wholesale Water Providers, February 2013	25

MANAGEMENT REVIEW OF THE BRAZOS RIVER AUTHORITY

House Bill 2362, Eighty-third Legislature, Regular Session, 2013, authorized the Legislative Budget Board (LBB) to review and analyze the effectiveness and efficiency of the policies, management, fiscal affairs, and operations of a river authority. This legislation requires the LBB to review both the Brazos River Authority (BRA) and the Lower Colorado River Authority (LCRA) before reviewing other river authorities. The LBB selected BRA for initial review and examined the authority's governance, planning and stakeholder engagement activities. The review also examined components of BRA's overall approach to water resource management, including water supply strategies and BRA's application of best management practices for water conservation.

To gain an understanding of BRA's operations, LBB staff examined data from the Texas Commission on Environmental Quality (TCEQ), the Texas Water Development Board (TWDB), and BRA. In addition, LBB obtained feedback on the authority's operations through multiple interviews of BRA staff and from certain BRA customers and stakeholders.

BACKGROUND

The Forty-first Legislature, Second Called Session, 1929, established the first Conservation and Reclamation District in the Brazos River Basin as a result of severe flooding during the early part of the century. The district officially changed its name to the Brazos River Authority in 1955. Similar to other river authorities, BRA is classified by statute as a river authority, a governmental agency, a municipality, and a body politic and corporate. BRA's stated mission is to develop, manage, and protect the water resources of the Brazos River Basin, and it is governed by a 21-member board of directors. The territory of the basin spans 42,800 square miles, from the New Mexico border to the Gulf Coast, and it is similar in size to the state of Virginia. In 2010, the population within the basin was 2.5 million; the counties of Fort Bend, Williamson, and Bell comprise the majority of this population.

BRA is primarily a wholesale water provider; it is the owner of three major reservoirs in the basin (Lake Granbury, Lake Limestone, and Possum Kingdom Lake), and it also has contracted with the federal U.S. Army Corps of Engineers to partially manage and receive water from eight smaller

reservoirs. Existing BRA water right permits represent about one-third of the total amount of water permitted for diversion in the Brazos basin. BRA derives the majority of its revenue (approximately \$50 million annually) from selling raw water to energy, municipal, and other users in the basin.

Prolonged drought conditions in the basin have affected BRA reservoir storage levels negatively, primarily in the areas of Possum Kingdom Lake and Lake Granbury. Inflows into Possum Kingdom Lake, the largest and most up-stream reservoir operated by BRA, are at an all-time low; these low levels surpass the severity of the drought of record, a period of historically low water supplies, generally considered in Texas to be from 1950 to 1957. At the same time, increases in population and economic activity in the central and lower regions of the basin have led to increased demand for a reliable water supply.

ACCOMPLISHMENTS

To address local concerns during exceptional drought conditions, BRA has offered or attended more than 200 stakeholder and customer education and outreach meetings since 2010. BRA successfully has met all water supply contractual obligations during this period, despite the significant constraints of reduced supply and increased demand. BRA also is pursuing, through several strategies, expansion of its water supplies that can be made available to customers in the basin.

FINDINGS AND RECOMMENDATIONS

The LBB review team identified significant findings and recommendations based upon the analysis of data and onsite visits of the authority's operations. Recommendations are based on comparisons to state or industry standards, or accepted best practices. BRA should review these recommendations to determine levels of priority, appropriate duration, and methods of implementation. In some cases, BRA already has taken action to address these findings and recommendations.

GOVERNANCE AND PLANNING

BRA has established, maintains, and monitors eight plans related to the financial and operational aspects of the organization. Limited coordination of these planning

documents diminishes the effectiveness and efficiency of the board and BRA administration's oversight. In addition, the internal audit function has not been an effective tool to help the board ensure that BRA has sufficient management controls in place to meet its mission.

Recommendations to enhance planning and oversight functions of the agency include:

- BRA should merge the strategic plan and long-range financial plan to ensure coordination and provide clarity on long-term direction.
- BRA should ensure that the role, function, and reporting structure of the internal auditor are consistent with statutory requirements and audit standards, and that planned work is completed.

WATER RESOURCE MANAGEMENT

BRA has not substantially implemented state-designated *Best Management Practices for Wholesale Water Providers*, and has not reported any effects from improvements in water conservation in its annual water conservation plan report. As a result, BRA cannot ensure that waters in the basin are being used efficiently. Certain BRA customers have not adhered to goals established by the authority in its water conservation plan.

Recommendations to assist in increasing the efficient use of BRA waters include:

- Increase alignment of the water conservation plan with the state's *Best Management Practices for Wholesale Water Providers*.
- Include conservation goals in water sales contracts and evaluate implementation of an additional water rate surcharge for entities not in compliance with BRA conservation goals.

STAKEHOLDER ENGAGEMENT

BRA has a decentralized system for responding to questions, complaints, and general input from the public. Although this system provides for regional and personalized interaction with the public, the lack of a central repository to log and access information related to public information requests and complaints can lead to inefficiencies and does not ensure accountability. Notices of upcoming board meetings are not communicated in BRA's quarterly newsletter or through other online media. Board meetings are not streamed on the BRA website; meetings are archived on the website only in

audio format, and materials presented during board meetings are not made available online.

Recommendations to assist in enhancing stakeholder communication include:

- BRA should designate a department to maintain a centralized database for public information requests and complaints and for resolution efforts by BRA and the board. Regional customer service representatives should include the Government and Customer Relations department in communications with basin managers relating to public inquiries and complaints.
- BRA should increase public awareness for quarterly board meetings by including this information in BRA newsletters, streaming board meetings on the BRA website, and making presentation materials available on the website. BRA should continue to increase its website's effectiveness.

Detailed explanations of BRA's accomplishments, findings, and numbered recommendations follow. BRA could implement these recommendations using existing resources.

CHAPTER 1: GOVERNANCE AND PLANNING

The mission of the Brazos River Authority (BRA) is to develop, manage, and protect the water resources of the Brazos River basin. BRA operations and activities are overseen by various state entities, including the Texas Legislature, the Texas Commission on Environmental Quality (TCEQ), the Texas Parks and Wildlife Department (TPWD), and the Texas Water Development Board (TWDB). Additionally, BRA is accountable to the cities, businesses, and individuals to whom it provides water.

Pursuant to the Texas Special District Local Laws Code, Chapter 8502, the BRA Board of Directors (board) consists of 21 members appointed by the Governor with the advice and consent of the Senate. BRA board meetings are open to the public, and customers and stakeholders are able to attend these meetings and discuss issues and concerns with the board. The main functions of the BRA board are to establish strategic goals for BRA, authorize and approve the authority's annual operating plan (AOP), and select and evaluate the performance of the general manager (GM). The board meets quarterly to consider policies, objectives, programs, and actions developed and recommended by BRA staff.

Board members serve staggered six-year terms. The terms of seven members of the board expire on February 1 of each odd-numbered year. Eleven members constitute a quorum, and the Governor designates a member as the presiding officer of the board. Board members volunteer their time as a public service to the state. They do not receive any salary but are eligible for a stipend of \$150 per day while on official BRA business and are reimbursed for travel expenses.

BRA's annual operating plan cites that the presiding officer appoints and organizes the board into committees, each of which meets as needed to develop and recommend actions for consideration by the full board. Board committees include: administration and audit; executive compensation and evaluation; ethics and conflicts of interest; security; and retirement. Regularly scheduled meetings of the board are held the last Monday of the months of January, April, July and October. Special meetings are held as necessary.

Legislative Budget Board (LBB) staff conducted a series of interviews with 11 members of the BRA board to discuss the board's role and primary responsibilities. Board members reported:

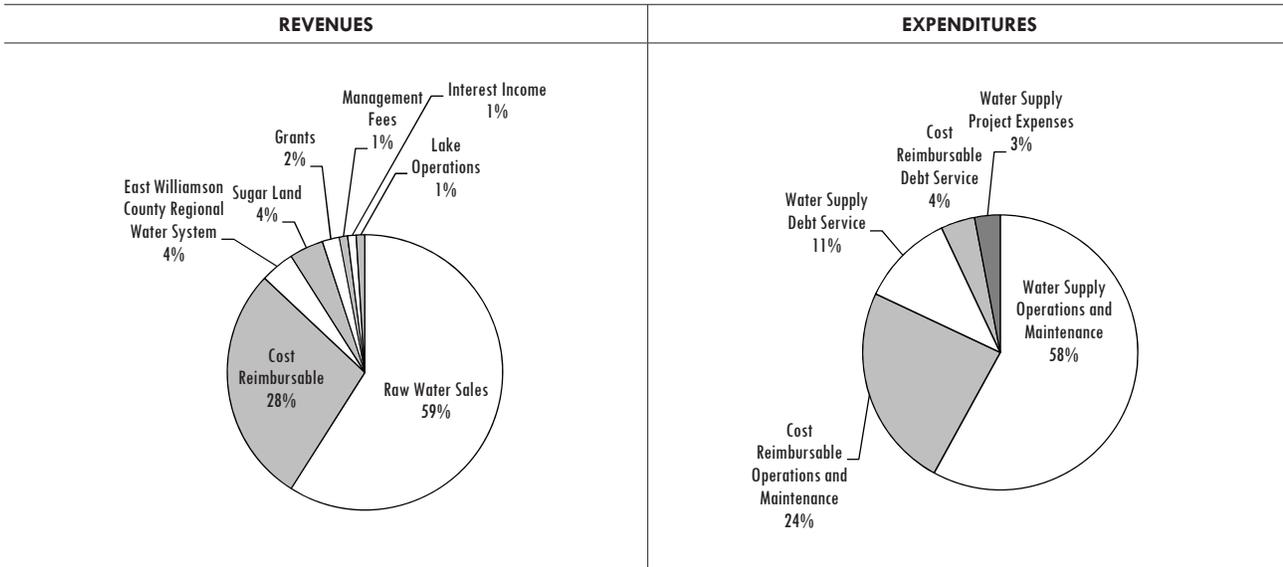
- Their role is to oversee the management of the organization and to ensure conformity with legal mandates and objectives.
- The board generally relies on the expertise of staff to develop draft policies for the authority. The board questions staff and approves staff-drafted goals through adoption of the AOP and other policies.
- The backgrounds of board members typically are not related to the field of wholesale water procurement and supply.
- BRA staff and the current GM consistently meet the board's expectations for performance.

According to BRA, the GM is hired by the board to provide strategic leadership to the organization, to represent BRA regarding a range of industry and policy issues, and to coordinate issues and regional efforts with customers. The GM facilitates the implementation of the policies, objectives, and goals established by the board. At the time of LBB staff on site work, BRA employed an internal auditor to provide auditing and review services to improve its operations and to help ensure compliance with applicable statutes, policies and procedures.

BRA's approved fiscal year 2015 budget includes \$51.2 million in operating revenue and \$50.4 million in operating expenditures, resulting in a projected operating surplus of \$0.8 million. The fiscal year 2015 budget is based on a system water rate of \$69.50 per acre foot, an increase of 5.9 percent from the fiscal year 2014 rate of \$65.65. The fiscal year 2015 budget also considers that BRA will use \$17.5 million from its water supply system reserve fund for capital projects. Information regarding BRA revenue and expenditures for fiscal year 2015 is shown in **Figure 1–1**. The 2015 budget does not propose any debt. BRA expects to maintain annual reserves of at least \$15.0 million or more from fiscal years 2015 to 2031. These reserves are maintained to provide contingency funding, stabilize rates, support repair and replacement costs, pre-fund employee benefits, and provide working capital.

BRA's main source of revenue is the sale of raw water from BRA-owned reservoirs and contractual agreements with U.S. Army Corps of Engineers (USACE) reservoirs. BRA is

FIGURE 1-1
BRAZOS RIVER AUTHORITY BUDGETED REVENUES AND EXPENDITURES, FISCAL YEAR 2015



SOURCE: Brazos River Authority.

authorized by the state to sell its water to municipal, industrial, and agricultural customers throughout the basin. Raw water is sold in acre feet; one acre foot is equal to 325,851 gallons of water, which is enough water to cover one acre to a depth of one foot. BRA is authorized to sell 677,369 acre feet of water, and the authority reports that 669,294 acre feet, or 98.8 percent, of this amount has been contracted for sale.

BRA expends funds to: (1) operate three reservoirs (Lakes Possum Kingdom, Granbury, and Limestone); (2) pay USACE for water stored in its reservoirs (Lakes Proctor, Whitney, Aquilla, Belton, Stillhouse Hollow, Georgetown, Granger, and Somerville); and (3) operate other BRA facilities such as wastewater treatment plants. Excess revenue generated is deposited into a rate stabilization fund for reinvestment in projects to establish more sources of water.

The board approves the budget by approving the authority's AOP. The GM may also propose AOP amendments to the board to address an unforeseen or emergency issue. BRA uses a net revenue requirement to annually adjust the rate in System Water Rate contracts. The revenue requirement means that BRA maintains a debt service coverage ratio of 1.3 times the amount of available cash compared to outstanding debt obligations. This requirement ensures that BRA has sufficient cash to meet annual principal and interest payments on debt obligations.

As shown in **Figure 1-1**, the majority of revenues are derived from the sale of BRA's authorized water supplies to customers throughout the basin. Cost reimbursable contracts, in which revenues address contractual obligations BRA has with specific customers for water treatment services, is the authority's second-highest revenue generator and its second-largest expenditure. Additional revenues are realized from sources such as lake operations; the East Williamson County Regional Water System, which serves as a regional facility to meet water demands for the city of Taylor and eastern Williamson County; and ongoing operations and maintenance activities for the Sugar Land North Wastewater Treatment Plant.

ACCOMPLISHMENTS

- ◆ BRA has adopted financial policies and established reserve funds to provide for the authority's long-term financial stability and prudent short-term financial management.
- ◆ BRA has developed tools to facilitate project planning and internal review of operational-level deliverables and work products.
- ◆ BRA effectively uses technology to help keep travel costs low and make communication more efficient.

FINDINGS

- ◆ Limited coordination of the multiple financial and operational planning documents diminishes the effectiveness and efficiency of the board and BRA administration’s oversight.
- ◆ The internal audit function has not been an effective tool to help the board ensure that BRA has sufficient management controls in place to meet its mission.

RECOMMENDATIONS

- ◆ **Recommendation 1: BRA should merge its strategic plan and long-range financial plan to ensure coordination and provide clarity regarding long-term direction.**
- ◆ **Recommendation 2: BRA should ensure that the role, function, and reporting structure of the internal auditor are consistent with statutory requirements and audit standards and that planned work is completed.**

DETAILED ACCOMPLISHMENTS

FINANCIAL MANAGEMENT POLICIES

BRA has adopted financial policies and established reserve funds to provide for the authority’s long-term financial stability and prudent short-term financial management. These policies assist BRA in maintaining a high bond rating, reducing future bond issuances, and insulating itself from

unforeseen circumstances that may affect its finances in the future. BRA’s financial policies require a multiyear plan for capital infrastructure maintenance and expansion with estimated costs, schedules, and funding sources for applicable projects. BRA policies also establish reserve accounts for different purposes.

BRA has five reserve accounts: (1) contingency reserve; (2) rate stabilization; (3) repair and replacement; (4) self-insurance; and (5) working capital. BRA plans to use reserves for capital projects; projected total reserves as of the end of fiscal year 2014 are \$35.5 million. The reserve accounts, their balances, and their purposes are shown in **Figure 1–2**.

The rate stabilization fund assists the authority to better manage changes in revenue requirements and minimize significant rate changes. As a self-supporting entity reliant on system water rates to fund operating and non-operating requirements, the reserves help the authority to mitigate the effects of unforeseen events on revenue requirements. BRA has chosen to use the rate stabilization fund to pay cash for project costs, instead of borrowing; to pay outstanding debt; and to mitigate the level of bond issuances that may be required to pursue water infrastructure projects.

TOOLS FOR PLANNING AND REVIEW

BRA has developed tools to facilitate project planning and internal review of operational-level deliverables and work products. BRA has implemented two main measures to ensure accountability among staff and to facilitate business

**FIGURE 1–2
BRAZOS RIVER AUTHORITY RESERVE ACCOUNTS AT END OF FISCAL YEAR 2013**

ACCOUNT	FUNCTION	BALANCE (IN MILLIONS)
Contingency reserve	Covers unanticipated operation and maintenance expenses. Has a target of not less than 10 percent of the annual budget for water supply system operations and maintenance.	\$5.0
Rate stabilization	Addresses fluctuations in revenue requirements based on significant increases in capital needs. The fund can also be a source to address needs for major projects that are anticipated to be financed ultimately through the issuance of bonds or some other form of indebtedness.	\$40.0
Repair and replacement	Required by BRA’s bond covenants and will be used only for the purpose of making repairs.	\$4.3
Self-insurance	Pre-funds insurance deductibles and losses for general liability, property, casualty, and workers’ compensation claims and health insurance.	\$0.5
Working capital	Covers operations and maintenance needs from timing difference between BRA’s billing cycle and receipt of payments. Needs are reasonably predictable and should be no more than 90 days of annual Water Supply System operation and maintenance expense.	\$6.1

SOURCE: Brazos River Authority.

decisions. BRA uses staff summary sheets (SSS) to ensure that managers review and approve projects before they are started and contracts before they are signed. The SSSs are the primary vehicle through which BRA implements items included in its AOP. SSSs may include participation by multiple BRA staff but list a single responsible person for the document. SSSs may also be used by staff to provide information and formalized recommendations to management regarding potential actions to be considered, such as reacting to low water supplies during drought.

BRA also uses project identification worksheets (PIW), which are used to develop, prioritize, and cost future capital projects. BRA staff uses PIWs to determine which projects provide the greatest level of benefits to customers, given BRA budget constraints. PIWs show financial information about a proposed project that will be funded through the capital budget as opposed to the operations and management portion of the budget. Staff proposes projects, which management evaluates. If approved, the projects become part of the Capital Project Inventory. PIWs are reviewed annually and are updated for actual expenditures each quarter. PIWs also provide the estimated schedule for project completion, list supporting documentation and additional project details, identify the project coordinator and, when applicable, identify the project engineer.

USE OF TECHNOLOGY

BRA effectively uses technology to help keep travel costs low and to make communication more efficient. BRA has equipped all of its 12 offices with teleconference equipment, so regional offices can meet remotely with staff in the main office located in Waco. BRA uses collaborative software technology to digitize and manage all written communications. This software can be used to delegate correspondence to a manager and to document the history of a communication chain. To distribute board meeting packets, BRA staff uses specialized software that produces digital meeting materials and provides an electronic communications tool to correspond with board members. Board members can access this information from computers or from BRA-issued tablets. Board members can see notifications about changes to the agenda, updated vendor lists for purposes of assessing conflicts of interest, and any other updates from the GM. BRA records the audio of all board and committee meetings and posts those recordings on its website. BRA also uses its Facebook social media site to communicate with stakeholders.

DETAILED FINDINGS

STRATEGIC PLANNING (REC. 1)

Limited coordination of the multiple financial and operational planning documents diminishes the effectiveness and efficiency of the board and BRA administration's oversight.

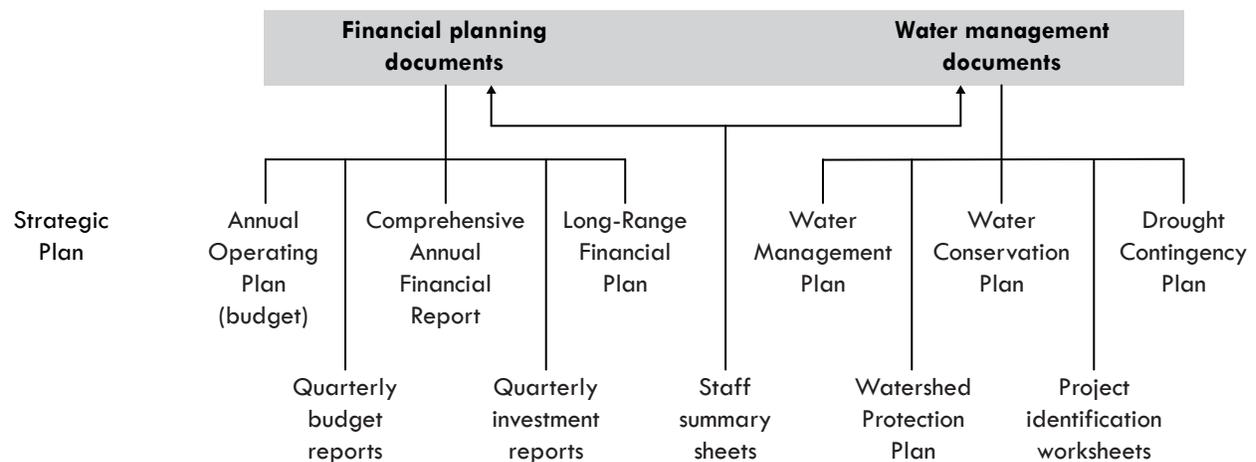
BRA has established, maintains, and monitors eight plans with varying levels of detail regarding the organization's financial and operational aspects. Some information and data is included in more than one plan; some of the plans are annual, while others are long-term. The annual plans include the AOP, which is the annual budget and planning document, and the Comprehensive Annual Financial Report (CAFR). The long-term plans include the strategic plan, the long-range financial plan (LRFP), water management plan (WMP), watershed protection plan (WPP), drought contingency plan (DCP), and a water conservation plan (WCP). BRA developed the WMP as directed by TCEQ in relation to BRA's application for a water rights permit, known as the system operation permit (SOP). Other plans, such as the water conservation and drought contingency plans, are required by statute for certain types of water providers, including BRA.

BRA administration also has implemented additional tools to narrow the focus of the plans' larger context. These tools include quarterly budget reports, quarterly investment reports, SSSs, and PIWs. Additionally, BRA administration published an executive summary for the board that is intended to be a tool to aid in the analysis and discussion of the fiscal year 2015 AOP.

Figure 1–3 shows the multiple planning documents maintained by BRA. Financial information can be obtained from five documents, while water management information can be obtained through five other documents. However, the strategic plan is maintained outside of these other reports and is not integrated directly.

The LRFP and the strategic plan are not coordinated. The LRFP's purposes are to provide a 50-year planning forecast to show the potential effects of board and BRA staff decisions, and to provide customers a forecast of potential rate increases. The initial LRFP was prepared in 2009. The plan's development includes the compilation of relevant data and assumptions from other documents, such as the AOP, State and Regional Water plans, and the long-range projects plan (LRPP). A second LRFP was prepared in 2011 that reflects BRA's support of the 2012 State Water Plan. A summary of

FIGURE 1–3
BRAZOS RIVER AUTHORITY PLANNING DOCUMENTS, FISCAL YEAR 2014



SOURCE: Legislative Budget Board.

the LRF is incorporated into each fiscal year's budget presentation. According to BRA staff, the next formal update of the LRF is planned for fiscal years 2016 or 2017, to incorporate the 2016–17 State Water Plan. The LRF and the AOP are both utilized in presentations to credit rating agencies. The LRF looks to the Regional and State Water plans for input on projects, and BRA participates in TWDB's Regional Water Planning Groups G, H and O.

BRA staff indicated its strategic plan identifies the general direction and best practices needed to develop, manage, and protect the basin's water resources, as recommended by the board. The first strategic plan BRA adopted was in 2007. Although the plan has not been published again since 2007, an overview is provided in the LRF for fiscal year 2011.

It is unclear how strategic recommendations are passed from the board to BRA staff, outside of adoption of the AOP, because the strategic plan has not been updated by the board since 2007. Neither the strategic plan nor LRF have criteria in place for frequency of updating. Streamlined planning tools ensure consistent oversight, and planning for projects is critical. BRA's overall operation and funding may be difficult for stakeholders to understand because they have to review multiple documents. Board oversight is hindered by the volume of information, and, as a result, the 21 board members do not consistently monitor the BRA with the same tools.

The Balanced Scorecard Institute (BSI), a consulting service, defines strategic planning as an organizational management

activity that sets priorities, focuses resources, strengthens operations, ensures that employees and other stakeholders are working toward common goals, establishes agreement around intended outcomes and results, and assesses and adjusts the organization's direction in response to a changing environment. The service notes that strategic planning produces fundamental decisions that guide an organization, who it serves, what it does, and its purpose. Effective strategic planning also articulates how the organization will know if it is successful. A strategic plan document communicates the organization's goals, the actions needed to achieve those goals, and all of the other critical elements developed during the planning exercise.

Although different frameworks and methodologies apply to strategic planning and management, no absolute rules regarding the right framework can be applied. However, most frameworks follow a similar pattern and have common attributes. BSI suggests the basic phases include:

- analysis or assessment, where an understanding of internal and external environments is developed;
- strategy formulation, where high-level strategy is developed and a basic organization-level strategic plan is documented;
- strategy execution, where the high-level plan is detailed into operational planning and action items; and
- evaluation or sustainment/management, where performance, culture, communications, data

reporting, and other strategic management issues are refined and evaluated.

Additional framework designs can be obtained through the nonprofit Association for Strategic Planning.

BRA should merge its strategic and long-range financial plans to ensure coordination and to provide clarity regarding the organization's long-term direction. One document could be updated, approved by the board, and produced every five years to coincide with the State Water Plan development process. Consolidating these two reports into one singular forecasting document would assist the board to increase participation in setting BRA's direction, and would provide more accessible and interpretable information to the public. BRA should regularly assess stakeholders' needs throughout the basin, to assist with water supply, to determine the need for additional support in other natural resource-related areas, and to integrate the assessment and resulting findings into BRA's planning process.

BRA could implement this recommendation using existing resources.

INTERNAL AUDITOR FUNCTION (REC. 2)

The internal audit function has not been an effective tool to help the board ensure that BRA has sufficient management controls in place to meet its mission.

The Texas Administrative Code, Rule 292.13, requires river authorities to either have an independent management audit every five years or to establish an internal audit office, which reports to the board. Reporting to the board ensures that the function is able to conduct independent, objective analyses and effectively assist authority administrators and governing boards by making recommendations about the adequacy and effectiveness of a state agency's systems of internal control policies, procedures, and performance.

Since 2010, BRA has employed three separate internal auditors, the average length of employment being 1.2 years with gaps in employment where BRA had no internal auditor from two to four months. A new internal auditor was hired in May 2014 but vacated the position in July 2014.

BRA's organizational chart and interviews with board members, the GM, and the internal auditor confirm that the auditor reports to the GM, not the board. Standards for the professional practice of internal audit require the chief audit executive to communicate and interact directly with the board. Although the auditor has access to and can

communicate with board members on the Audit Committee, as of July 2014, the auditor hired in May did not have any interaction with the board beyond the initial interview for the position. The internal auditor also reported that there was no evidence that previous auditors communicated directly with the board. In addition to not complying with statutory requirements related to the auditor's reporting relationship with the board, having an internal auditor who reports to management could impair the auditor's independence and could limit this position's effectiveness in assisting the board to ensure the adequacy of BRA management controls.

Other factors also have limited the effectiveness of the internal audit function. BRA auditors have not always completed a risk assessment to use as a basis for selecting audits to be included in the annual work plan, and the auditors have not always completed projects in the work plan. A risk assessment of the auditable activities ensures that the auditor's limited resources are used in areas that would most benefit from review. Although priorities may shift throughout the year, high-risk areas may not be addressed when planned work is not completed, not communicated to the board, and not changed or approved by the board.

The BRA has an internal operating policy to guide the work of external auditors on BRA's annual financial statements. However, BRA has not established a policy related to internal audit. Such a policy could help clarify the reporting relationship between the internal auditor and the board and could establish expectations for conducting risk assessments and completing work. The policy also could clarify the internal auditor's access to information related to potential fraud. River authority employees can report suspected waste, fraud, or abuse to a manager or by using a hotline established for that purpose. BRA policy is that any reports received would be transmitted to the human resources department.

BRA should ensure that the role, function, and reporting structure of the internal auditor are consistent with statutory requirements and audit standards, and that planned work is completed. Any changes to audit plans should be communicated to the board. These expectations should apply whether the internal auditor is a BRA employee or contracted auditor.

BRA could implement this recommendation using existing resources.

At its October 27, 2014, meeting, the BRA board directed staff to implement a process of conducting independent

management audits every five years, in accordance with the Texas Administrative Code, Title 30, Part 1, Chapter 292.13(6)(A). BRA reports that the board will approve the selection of a firm to perform the independent management audit.

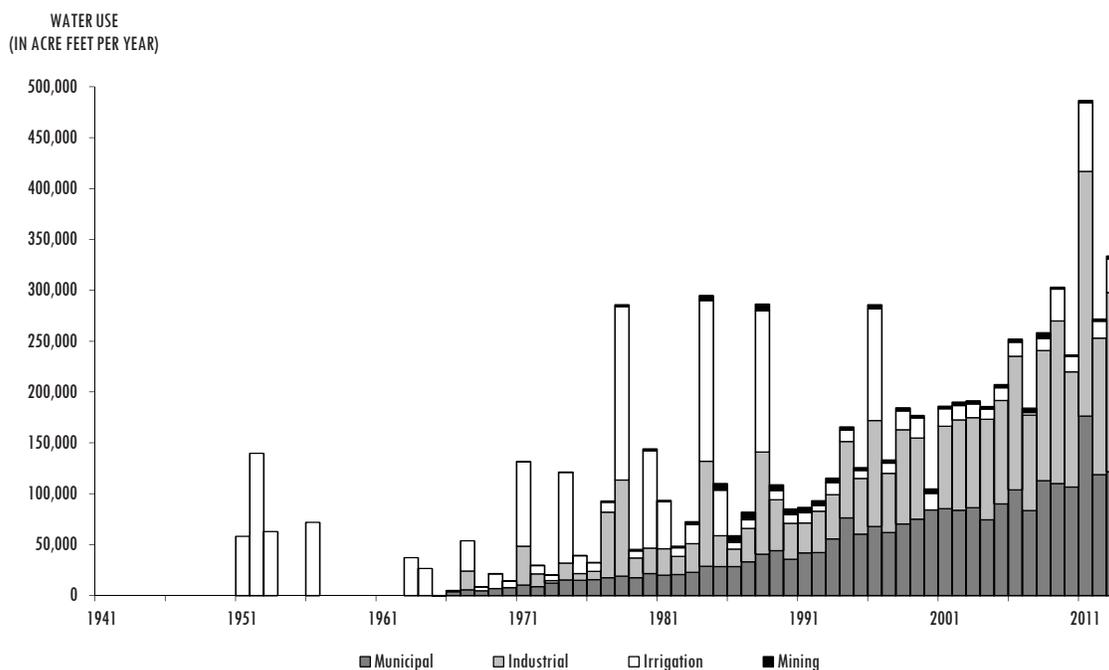
CHAPTER 2: WATER RESOURCE MANAGEMENT

Existing Brazos River Authority water right permits represent about one-third of the total amount of water permitted for diversion in the Brazos basin. BRA owns three reservoirs: Possum Kingdom, Granbury, and Limestone. Possum Kingdom Lake was financed through a cooperative agreement with the federal government. Lake Granbury was financed through a water sales contract with what is now the energy company Luminant, and Lake Limestone was financed through water sales contracts with the energy providers TXU Energy and what is now known as NRG Energy, Inc. Of these three reservoirs, Possum Kingdom Lake is the largest, with a capacity of 540,340 acre feet. Completed in 1941, Possum Kingdom Lake is the oldest and largest reservoir operated by BRA in the basin. Lake Limestone's capacity is 208,017 acre feet, and Lake Granbury's capacity is 129,011 acre feet. BRA also holds water storage rights in eight other reservoirs owned by the federal government and operated and maintained by the U.S. Army Corp of Engineers (USACE). These reservoirs were built for flood control and water supply purposes. BRA contracts with USACE for the

water supply portion of these reservoirs, known as the conservation pool. Possum Kingdom Lake is the northernmost reservoir within the basin, capturing inflows from upstream portions of the basin to provide a reliable supply of water in the local area around Possum Kingdom Lake and to areas downstream.

The purpose of a water supply reservoir is to capture water during wet periods so that it can be available for use (drinking, generating electricity, producing goods, and irrigation) during dry periods. **Figure 2-1** shows the total use of water BRA sold to customers throughout the basin. The amount of water used for irrigation has fluctuated, whereas water used for municipal operations has increased steadily since the first contract for it in 1966. Reservoir levels decrease during dry times, indicating that the water supply reservoir is serving its intended purpose and reacting to drought conditions. Dock permits issued by BRA warn permit holders that the reservoir could be depleted significantly during periods of drought and water use.

FIGURE 2-1
BRAZOS RIVER AUTHORITY CONTRACTED TOTAL WATER USE BY SECTOR, 1941 TO 2013



SOURCE: Brazos River Authority.

WATER SUPPLY NEEDS WITHIN BRAZOS RIVER AUTHORITY TERRITORY

The State Water Plan establishes targets for water supplies and projects economic effects of failing to meet Texas’ water needs. These effects are significant to regional and state economies. Potential losses in BRA regions that may result from not achieving water supply targets as identified in the State Water Plan include substantial population decreases, school enrollment decreases, and decreases of full- and part-time job availability. Most of BRA’s supply and demand for water is contained in TWDB’s Water Planning Regions G and H. The combined projected losses to regional income from not meeting water supply needs of these regions is \$9.6 billion for 2020 and those losses increase to \$26.8 billion by 2060.

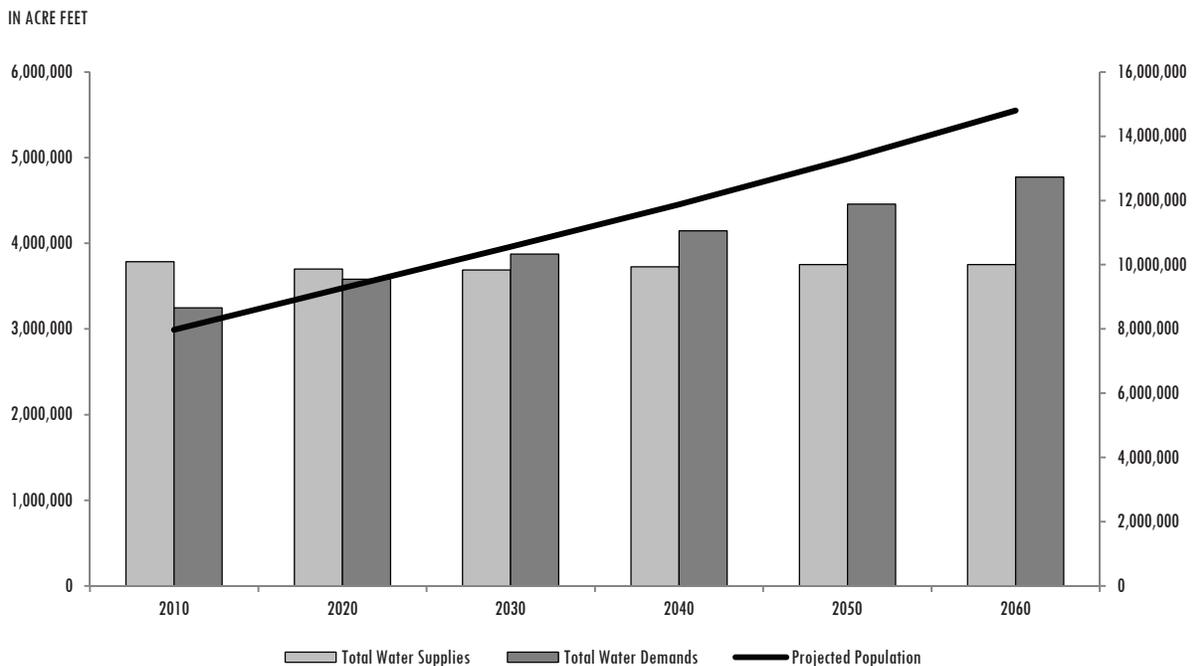
Figure 2–2 shows, for Regions G and H combined, the projected decrease in water supplies, increase in demand, and increases in population from 2010 to 2060, assuming water needs can be met. According to regional supply and demand information for Regions G and H in the 2012 State Water Plan, total water supplies are projected to decrease by 0.9

percent and total water demands are projected to increase by 47 percent by 2060. Municipalities represent the greatest demand for water during this period at 1.3 million acre feet for 2010, projecting an increase of 64.3 percent to 2.1 million acre feet for 2060. For BRA to consider a major, long-term sale of water to customers in the basin, the need for that water should, according to BRA, be recognized in the State Water Plan.

DRAWDOWN PROCEDURE BETWEEN LAKES GRANBURY, POSSUM KINGDOM, AND WHITNEY

During late 2007, BRA discontinued hydropower generation at Possum Kingdom Lake. According to a 2014 State Auditor’s Office audit of BRA, the authority had sufficient documentation supporting its decision to shut down and decommission its hydroelectric facility at Possum Kingdom Lake. According to BRA, in the absence of hydropower releases from Possum Kingdom Lake, BRA established an

FIGURE 2–2
TEXAS STATE WATER PLAN’S PROJECTED CHANGE IN WATER SUPPLY AND DEMAND FOR PLANNING REGIONS G AND H, 2010 TO 2060



SOURCE: Legislative Budget Board.

interim water management protocol during early 2008 based on operating Lakes Possum Kingdom and Granbury on a 1:1 elevation drawdown ratio. This procedure is referred to as equal drawdown, meaning that for every one foot of drawdown implemented at Lake Granbury, a corresponding foot of drawdown would be implemented at Possum Kingdom Lake. This method received scrutiny from various stakeholders, particularly those near Lake Granbury who have been accustomed to the historical flows provided by Possum Kingdom Lake hydropower generation. In consideration of the effects of reservoir operations on lake levels, BRA contracted with environmental assessor Halff Associates, Inc., to complete a water management study during 2011 to identify a method of operating Lakes Possum Kingdom, Granbury, and Whitney that considers the effects of reservoir operations on lake levels, without significantly affecting water supply capability.

The analysis found that the equal drawdown procedure of a 1:1 ratio did not produce a balanced outcome between the reservoirs. The ratio of 1.75:1, however, which is based upon the goal of balancing the percent of features that would be out of service at each lake (including docks, ramps, and marinas), could produce a more equitable balance of effects at both reservoirs. In accordance with this zonal drawdown procedure, releases would be made from Possum Kingdom Lake so that for every one foot of drawdown implemented at Lake Granbury, a corresponding 1.75 feet of drawdown would be implemented at Possum Kingdom Lake. The zonal drawdown procedure does not take into consideration the fact that there are more recreational features at Lake Granbury than there are at Possum Kingdom Lake. Instead, the procedure is based on percentages of features at each lake. At any time, a higher weighted percentage of facilities may be out of service at either lake, but over time, the percentages will be close to equal. The ratio of 1.75:1 is in effect when Possum Kingdom Lake measures higher than 992 feet above mean sea level; however, when Possum Kingdom Lake measures below this elevation, the ratio reverts to 1:1. According to the Halff management study, during 90 percent of the time, based on the historical period used in the modeling, less than 10 percent of the weighted features at each lake will be out of service with the zonal drawdown. The zonal drawdown procedure was implemented during April 2011, following adoption by the BRA board, and has been in effect since that time.

WATER CONSERVATION PLAN REQUIREMENT

Water conservation plans (WCP) are considered in the development of regional water plans that are subsequently integrated into the State Water Plan. Applicants for state financing, such as the federally established Drinking Water State Revolving Fund, must submit their most recent WCPs to TWDB. WCPs also must be submitted as part of applications for new water rights and, in some cases, for amendments to existing water rights. WCPs must contain a series of elements defined in the Texas Water Code, Chapter 11, and the Texas Administrative Code, Title 30, Chapter 288. The BRA's WCP is administratively complete, according to TCEQ, meaning it contains all required elements. BRA contracts with water purchasers include the following language: "it is the intent of the parties to this Agreement to provide to the maximum extent practicable for the conservation of water, and Purchaser agrees that it is a condition of this Agreement that it shall maintain and operate its facilities in a manner that will prevent unnecessary waste of water." BRA's WCP cites the water contract as the means of enforcement and states failure to comply with the plan's terms will be considered a breach of the agreement.

Senate Bill 181, Eighty-second Legislature, Regular Session, 2011, requires TWDB and TCEQ, in consultation with the Water Conservation Advisory Council, to develop a uniform, consistent methodology and guidance for calculating water use and conservation to be used by a municipality or water utility in developing WCPs and preparing reports. Additionally, the General Appropriations Act (2014–15 Biennium), Rider 24 of the TWDB bill pattern, directs the agency to provide an online tool to quantify water conservation savings and to develop a consolidated reporting database that would provide external access to water loss data.

ACCOMPLISHMENTS

- ◆ BRA successfully has met all water supply contractual obligations during exceptional drought conditions.
- ◆ BRA voluntarily has attempted to reconcile the effects of reduced inflows for stakeholders at Lakes Possum Kingdom, Granbury, and Whitney, while also maintaining the ability to effectively provide water throughout the basin.
- ◆ BRA is pursuing, through several strategies, expansion of water supplies that can be made available to water customers in the basin.

- ◆ Although it is not required, BRA participates in the state and regional water planning process.

FINDINGS

- ◆ BRA has not substantially implemented state-designated *Best Management Practices for Wholesale Water Providers*. The authority also has not reported any effects from improvements in water conservation in its annual water conservation plan report.
- ◆ BRA does not require customers to comply with water conservation goals through water sales contracts.

RECOMMENDATIONS

- ◆ **Recommendation 3: Increase alignment of the water conservation plan with the state's *Best Management Practices for Wholesale Water Providers*.**
- ◆ **Recommendation 4: Include conservation goals in water sales contracts and evaluate implementation of an additional water rate surcharge for entities not in compliance with BRA conservation goals.**

DETAILED ACCOMPLISHMENTS

MEETING CONTRACTUAL DEMANDS

BRA has met all water supply contractual obligations successfully during exceptional drought conditions. Drought conditions began to develop within the basin during October 2010, and what followed was the most intense single-year drought during the last 100 years. Seven of the BRA's 11 reservoirs reached all-time low levels. In general, conditions have been worse moving from east to west and from the coast to farther inland. The effects of drought conditions were regional, and the Brazos Basin showed a greater decrease in storage levels compared to the Trinity Basin to the east but a lesser effect than the Colorado Basin to the west.

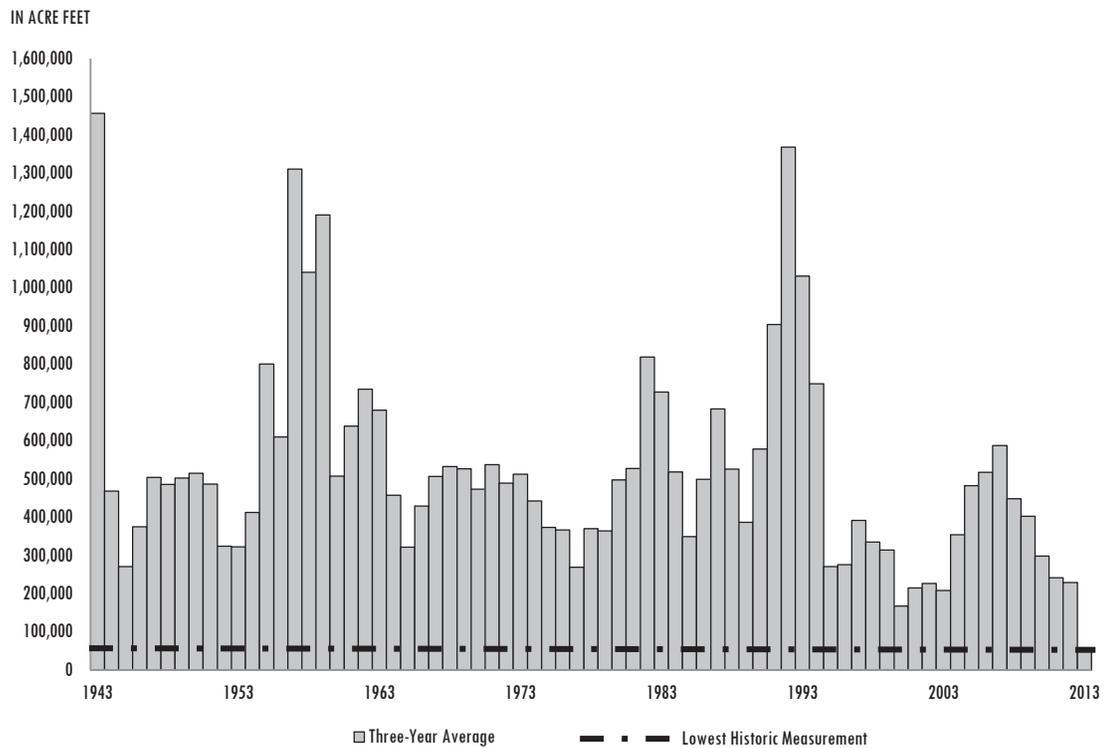
Drought conditions in some areas of the Brazos Basin have improved but are still present. In other areas, particularly in upper portions of the basin, conditions have continued to worsen. As a result, Possum Kingdom Lake recently experienced its lowest point of storage in more than 40 years. Additionally, some reservoirs in the state lose more water to evaporation than is diverted or released from them for water supply. **Figure 2–3** shows the comparative effects of recent drought conditions by measuring river flow at the South Bend gauge, which flows directly into Possum Kingdom Lake. Although the cycle of flows fluctuates, flows for the

three-year period from 2011 to 2013 were by far the lowest recorded in BRA history. The lack of inflow into Possum Kingdom Lake directly affects the lake level and the amount of water that is available for use in the local area around the lake and downstream.

During 2011, BRA's water customers used about 70 percent of the supply that was available to BRA within its existing water rights. By examining patterns in water usage throughout the basin, including all water rights holders in addition to BRA, a pronounced increase in water consumption was seen during the intense period of drought experienced in 2011. Cumulative water consumption in the basin increased 11.3 percent from 2009 to 2013. Surface water usage statewide also increased 12.3 percent from 2009 to 2013, which may be attributed both to population growth and to sustained drought conditions in the region. At a quarterly meeting in October 2013, the BRA board determined to make no additional water available for fiscal year 2014. This decision was the result of concerns that portions of the basin would be subject to BRA Stage 3 drought restrictions and to ensure sufficient water availability for the existing customer base.

Certain BRA customers consistently have contracted for more water than they actually use within a year, although water use throughout the customer base has been increasing. LBB staff contacted several contract holders, ranging from those who consumed greater than 90 percent of their allotted water, those consuming 0 percent of their allotted water, and the top tier of contract holders by volume procured. Typically, the contract holders that responded expressed approval with BRA's overall performance. Certain contract holders rely on BRA for what the contractors call "insurance water" to cover any supply deficits they may incur during extreme drought. The Gulf Coast Water Authority, for example, rarely withdrew any purchased water from BRA. This practice has changed since drought conditions arose in 2009, however, and the authority's reliance on BRA water subsequently has increased. The majority of contract holders that responded said they were satisfied with the flexibility provided in their contracts and BRA's overall operation and communication structure. Luminant, for example, stated that BRA meets high supply demands in the basin while managing a complicated maze of water right priorities, water contracts, and drought conditions. Representatives from the energy company NRG stated that BRA has equitably managed the water supply it controls in the basin.

FIGURE 2-3
BRAZOS RIVER THREE-YEAR AVERAGE FLOW MEASURED AT THE SOUTH BEND GAUGE, 1943 TO 2013



SOURCE: Brazos River Authority.

BALANCING THE EFFECTS OF DROUGHT AMONG BASIN STAKEHOLDERS

BRA voluntarily has attempted to balance the effects of reduced inflows for stakeholders at Lakes Possum Kingdom, Granbury, and Whitney, while also maintaining the ability to effectively provide water throughout the basin. BRA has undertaken significant changes to mitigate the effects of record-setting drought along its reservoir system. These changes include improving public use facilities, such as modifying boat ramps to allow greater access to the reservoir, protecting nearby parks from erosion, and removing large navigational hazards in the reservoir. BRA also has continued public education and outreach efforts during this time. Additionally, during 2014, the BRA board passed a resolution to authorize fee waivers for water use permits. The resolution authorizes a potential waiver for the holder of a water use or commercial facility permit fee when the holder shows that decreased lake levels prevented the use of water pumping equipment for three consecutive months.

During exceptional drought conditions, a lack of water may prevent the ability for suppliers and users to meet all desired needs, including recreational use. The order of priority for water use is stated in the Texas Water Code, Chapter 11. The statutorily established priority of uses is: domestic and municipal; agricultural and industrial; mining and recovery of minerals; hydroelectric power; navigation; recreation and pleasure; and other beneficial uses. If sustaining lake levels are made a greater priority than providing water for beneficial other use, the result would be less water available for uses established in statute as a higher priority.

Stakeholders near Lake Granbury and Possum Kingdom Lake have expressed concern regarding BRA’s management of water and its relationship to maintaining sufficient lake levels for these areas. Associations that oppose BRA’s current water management protocols have indicated their associations were established, in part, to protect their lakes, to preserve local economic growth, and to oppose BRA water sales. Some area residents state that BRA’s top priority should be to “ensure that all lakes stay as close to full as possible and not

sell [water] from a lake if it is more than one or two feet below full.” Entities at Lake Granbury have called for BRA, among other things, to adjust the drawdown ratio to 3.5:1. Other groups, such as some located near Possum Kingdom Lake, have opposed the drawdown procedure altogether.

Certain residents and local governments, however, have passed resolutions in support of the drawdown protocol, considering it a fair, proven working solution, and opposing any revision to the zonal drawdown ratio. County commissioners in Palo Pinto, Stephens, and Young counties also oppose changes to the current zonal drawdown ratio. According to some local residents and BRA staff, local real estate agents indicate to potential land buyers near Lake Granbury that the reservoir is a “constant-level lake.”

The BRA board authorized the re-evaluation of the Half study in July 2014. The board resolution authorizing this study required the establishment of a stakeholder committee, consisting of equal numbers of representatives from both Possum Kingdom Lake and Lake Granbury, which must reach consensus supporting the re-evaluation of the study and agree that no alternative that could adversely affect BRA’s ability to meet the water supply needs of its customers be considered.

PURSUIT OF ADDITIONAL WATER SUPPLIES

BRA is pursuing, through several strategies, expansion of water supplies that can be made available to customers in the basin. BRA plans for long-term goals and objectives using a 50-year planning horizon to coincide with the State Water Plans adopted by TWDB. The needs identified in the State Water Plan assist BRA in its long-term supply acquisition and construction planning for the basin. To prepare for providing sufficient water supplies to meet projected demands, BRA is pursuing three main supply strategies:

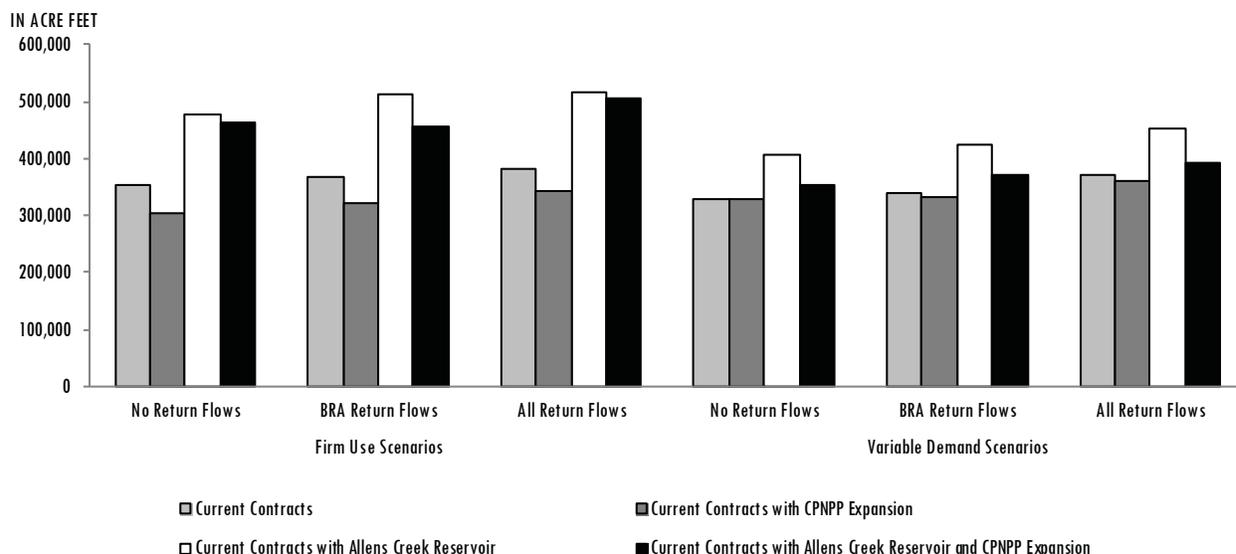
- Allens Creek Reservoir: BRA is a partner to an interlocal agreement with the City of Houston (70 percent ownership by Houston and 30 percent BRA) to develop Allens Creek Reservoir. The reservoir will be approximately 9,600 acres in size and produce an estimated 99,650 acre feet of firm yield water, which will be available for long-term contracts and can be reliably diverted year after year, through a repeat of historical drought of record conditions. In fiscal year 2008, the project was estimated to cost approximately \$200 million. For fiscal year 2014, BRA hosted multiple meetings with the City of Houston to discuss moving forward with the project. Objectives

for 2015 include updating the agreement with the City of Houston and TWDB. According to BRA, the City of Houston has expressed a willingness to move forward when it has commitments to purchase 20 percent of its share of the reservoir if TWDB State Participation loan funding is available.

- Conjunctive use in Williamson County: Developing groundwater in Williamson County from the Trinity and Carrizo aquifers to be used conjunctively with surface water supplies at Lake Granger. Conjunctive use, for BRA management purposes, consists of utilizing surface water during normal and wet periods and groundwater during droughts. BRA also is conducting studies into using groundwater to augment its surface water supplies throughout the central portion of the basin.
- System Operation Permit: BRA is seeking to obtain approval of the System Operation Permit (SOP) from TCEQ. BRA’s pending SOP accounts for approximately 14 percent of additional water supplies made available in the Region G Planning Group by 2060. According to the 2012 State Water Plan, the SOP will make available 84,899 acre feet per year of firm yield by 2060. According to BRA, the volume of water requested is derived from:
 - the coordinated operation of the dozen reservoir projects in the BRA system;
 - unpermitted water behind the dams in certain BRA reservoirs;
 - unappropriated flows in the river; and
 - unused effluent, to the extent that it is not being used by other senior water users and is available.

The volume of water BRA can control through the SOP will depend on where BRA customers are located along the basin and their needs. The volume of water BRA appropriated through the SOP is defined by the most downstream location in the basin. However, the actual amount of water available for use depends on the location of diversions. As more of the appropriation is diverted upstream in the basin, the amount that is available at downstream locations is reduced. As shown in **Figure 2–4**, the SOP yield also will depend on factors including the development of other supply infrastructure and potential increased needs for water supply at various diversion points along the basin. Upon issuance of the SOP, BRA has indicated it intends to supply water in a

FIGURE 2-4
BRAZOS RIVER AUTHORITY WATER AVAILABILITY SCENARIOS IN ACCORDANCE WITH THE SYSTEM OPERATION PERMIT, 2014



NOTES: BRA: Brazos River Authority. CPNPP: Comanche Peak Nuclear Power Plant.
 SOURCE: Texas Commission on Environmental Quality.

manner consistent with the State Water Plan. This water supply would be committed primarily to the Luminant expansion of the Comanche Peak Nuclear Power Plant (CPNPP). If CPNPP expansion does not occur, more water can be made available from the SOP to meet projected shortages in the Region H area in the lower basin.

The SOP is the least expensive method to access additional water in the basin, as shown in **Figure 2-5**, which compares the unit cost of SOP to other strategies identified by TWDB. The current budgeted cost of SOP, including the corresponding Water Management Plan, is approximately \$23.6 million. SOP would have relatively equal cost effectiveness as municipal conservation strategies in the first year, and the greatest long-term cost effectiveness compared to any strategy in subsequent years. This analysis is based on a supply of 84,899 acre feet per year being provided from the SOP, as recommended in the 2012 State Water Plan. Should the SOP yield a greater quantity of water, such as values shown in **Figure 2-5**, the cost effectiveness of SOP would be substantially greater.

Although application for the SOP was submitted to the state in 2004, TCEQ did not direct BRA to develop a water management plan (WMP) detailing how authorized water would be used, until 2011. The WMP governs BRA's operations and details how decisions are made for diversion,

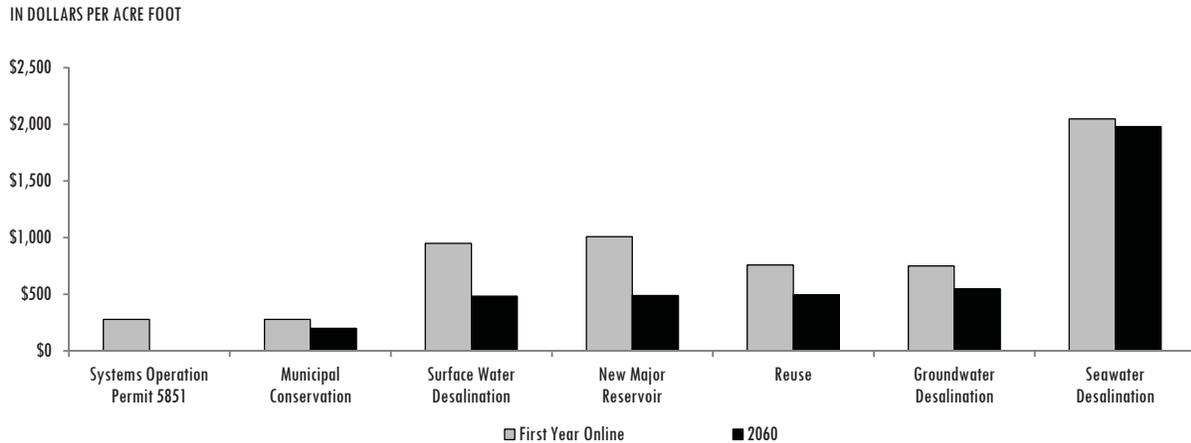
storage, and use of water in accordance with the SOP. BRA filed its WMP with TCEQ in November 2012. Since that time, BRA, TCEQ, and the State Office of Administrative Hearings (SOAH) have administered numerous hearings regarding the WMP. As of August 2014, TCEQ completed its technical review of the revised WMP. The application has been remanded to SOAH for a hearing regarding the merits of the application in early 2015 and final consideration by TCEQ commissioners to be held in fall 2015.

PARTICIPANT IN REGIONAL WATER PLANNING

Although it is not required, BRA participates in the state and regional water planning process and in Regions G, H, and O planning groups. Senate Bill 1, Seventy-fifth Legislature, 1997, established a regional water supply planning process for the state. Not all river authorities participate in the regional water planning process. In 2001, BRA joined the Brazos G Regional Water Planning Group as an administrative agent. In this role, BRA disburses grant funding to other planning group participants and contracts with engineering firms for professional services.

The State Water Plan projects economic effects of failing to meet Texas' water needs. The regional planning groups are beginning the fourth cycle of regional water planning that will culminate with an updated State Water Plan in 2017.

**FIGURE 2-5
COST EFFECTIVENESS OF BRAZOS RIVER AUTHORITY'S SYSTEM OPERATION PERMIT AND OTHER WATER STRATEGIES, FISCAL YEAR 2012**



SOURCES: Texas Water Development Board; Brazos River Authority.

BRA plans its long-term goals and objectives using a 50-year planning horizon to coincide with the State Water Plan adopted by TWDB. The needs identified in the State Water Plan assist BRA in its long-term supply acquisition and construction planning for the basin.

DETAILED FINDINGS

BEST MANAGEMENT PRACTICES (REC. 3)

BRA has not substantially implemented state-designated *Best Management Practices (BMP) for Wholesale Water Providers*. The authority also has not reported any effects from improvements in water conservation in its annual WCP report. The Granbury Chamber of Commerce, along with other stakeholders in the basin, communicated that BRA could spend more time educating the public about water conservation needs and issues. The chamber noted significant improvement in public relations efforts by BRA in recent years.

Figure 2-6 shows a comparison of entities who submitted an annual water conservation report to TWDB in fiscal year 2013. The majority of entities that have implemented conservation measures are able to derive a quantifiable volume of water saved. Although BRA has submitted an administratively complete plan, the authority is not able to show any quantifiable benefit from current conservation measures.

BMPs are voluntary efficiency measures intended to save a quantifiable amount of water, either directly or indirectly, and can be implemented within a specified timeframe. As part of an ongoing effort, TWDB and TCEQ work with the statutorily established Water Conservation Advisory Council and interested stakeholders to review and update these BMPs. According to TWDB staff, these BMPs could be appropriate for wholesale water providers that predominately provide raw, untreated water to customers, such as BRA. Certain practices, however, may be more applicable for potable water suppliers than for raw water suppliers. BRA also owns a water treatment plant from which potable water is delivered to municipal customers, the East Williamson County regional Water Treatment System. As detailed in Appendix A, BRA has implemented only a portion of state-designated BMPs for wholesale water providers. BRA did not list progress in water conservation in the annual report it submits to the state. BRA could ensure that its customers use water more efficiently, which could help reduce supply strain in the basin.

BRA should increase alignment of the WCP with the state’s BMPs for Wholesale Water Providers document. Strategies in TWDB’s guide include providing technical assistance to customers, requiring progress updates from customers on implementation of their plans, or requiring customer’s conservation plans to be approved by BRA before engaging in a contractual agreement.

**FIGURE 2–6
SELECT TEXAS RIVER AUTHORITY AND WATER DISTRICT ANNUAL WATER CONSERVATION PLAN REPORTS, FISCAL YEAR 2013**

WHOLESALE SUPPLIER ACTIVITIES AND PRACTICES	BRAZOS RIVER AUTHORITY	LOWER COLORADO RIVER AUTHORITY	LOWER NECHES VALLEY AUTHORITY	NORTH TEXAS MUNICIPAL WATER DISTRICT	SABINE RIVER AUTHORITY	TARRANT REGIONAL WATER DISTRICT
Agricultural Conservation Programs			X			
Conservation Analysis and Planning		X	X	X		X
Conservation Rate Structures						
Conservation Technology			X	X		
Education and Public Awareness	X		X	X	X	X
Industrial Conservation Programs			X	X		
Leak Detection/Water Loss Program	X		X	X		X
Rebate, Retrofit, and Incentive Programs		X		X		
Regulatory and Enforcement		X	X			
System Operations	X	X	X	X		X
Water-Efficient Landscape Programs	X	X		X		X
Water Use Audits						X
Total Volume of Water Saved (in Acre Feet)	0	1,724	683,878	1,198	0	121,647

SOURCE: Legislative Budget Board.

BRA could implement this recommendation using existing resources. Certain strategies listed in the BMP guide may result in a cost to BRA to implement, which would be at BRA’s discretion. However, these costs could be mitigated through revenues potentially derived through other recommendations.

CUSTOMER ADHERENCE TO CONSERVATION GOALS (REC. 4)

BRA customers have not adhered to goals established by the authority through its WCP. BRA does not require customers to comply with water conservation goals through its water sales contracts.

GALLONS PER CAPITA PER DAY

Gallons per capita per day (GPCD) are a standard metric used to assess water use by drinking water suppliers.

According to BRA’s WCP Annual Report for the end of calendar year 2013, the authority’s target for water consumption is 147 GPCD by 2019, and 140 GPCD by 2024. However, BRA does not thoroughly detail how these goals will be achieved, nor does the authority acknowledge any estimated savings that have resulted from water conservation activities during calendar year 2013. **Figure 2–7** shows additional comparisons between BRA customers and statewide information regarding GPCD. BRA customers have a lower proportion of entities that have a GPCD of less than 140 and a subsequently higher percentage of those with a GPCD greater than 140, the state average.

WATER LOSS

According to data provided by TWDB, statewide water loss for fiscal year 2013 averaged 13.3 percent. TWDB transmits retail water loss data to corresponding wholesale providers

**FIGURE 2–7
STATEWIDE DRINKING WATER USE, FISCAL YEAR 2011**

GALLONS PER CAPITA PER DAY	STATEWIDE MUNICIPAL ENTITIES		STATEWIDE AVERAGES		BRAZOS RIVER AUTHORITY CUSTOMERS	
>200	66	7.1%	300	22.2%	9	24.3%
140–199	134	14.5%	425	31.4%	16	43.2%
<140	726	78.4%	628	46.4%	12	32.4%

SOURCES: Legislative Budget Board; Texas Water Development Board.

upon request. **Figure 2–8** shows average water loss for BRA entities required to submit water loss audits to the state, compared to statewide statistics. For some population areas, BRA customers have a lower percentage of water lost in transmission. Other areas, however, including municipalities with a population of less than 10,000 and those with a population from 50,000 to 99,000, show higher-than-average levels of water loss.

**FIGURE 2–8
STATEWIDE WATER LOSS COMPARED TO BRAZOS RIVER
AUTHORITY CUSTOMERS, FISCAL YEAR 2013**

POPULATION	STATEWIDE AVERAGE	BRAZOS RIVER AUTHORITY CUSTOMERS
Less than 10,000	17.6%	19.9%
10,000 to 49,999	13.1%	12.5%
50,000 to 99,999	13.8%	15.1%
Greater than 100,000	13.1%	8.8%

SOURCES: Legislative Budget Board; Texas Water Development Board.

Three of the four population blocks are greater than BRA’s established acceptable threshold for water loss of 12 percent. Twenty out of 37 identified customers with submitted water loss audits, or 54.1 percent, experienced losses in excess of BRA’s goal of 12 percent. The maximum percent of water loss identified in this self-reported information was 60.9 percent. BRA does not actively track or enforce adherence to the amount of water lost in the customer’s distribution system.

BRA does not have sufficient enforcement mechanisms in place for customers who do not adhere to goals or requirements established in its WCP. BRA does not require customers to comply with water conservation goals through its water sales contracts, aside from a general provision stating that it is intended that contracted water not be wasted unnecessarily. According to TCEQ, wholesale suppliers and their customers have discretion to include a surcharge for retail suppliers that do not meet specific water usage goals established by a wholesale contract. While statute stipulates that WCPs are not enforceable documents, nothing prohibits BRA from integrating goals and provisions of its WCP into water sales contracts. BRA should integrate specific conservation measures, as detailed in its WCP, into future contracts and contract renewals. BRA also should evaluate implementation of an additional water rate surcharge for entities not in compliance with BRA conservation goals. The

surcharge could be structured as a full or partial rebate, for example, that could be directed to municipal customers. The surcharge could be refunded to an entity that adjusts its practices within a pre-determined timeframe. If BRA does not wish to directly collect the surcharge, the authority could embed a provision in future water contracts, including renewals, to establish a set-aside amount by the retail provider. This provision would allow BRA to dedicate any incremental difference in water usage exceeding BRA goals to address conservation deficiencies in its water management structure.

Excess revenue remitted to BRA from the surcharge could be used to pay down any existing bond debt, which also may mitigate increases to the System Rate, or to pursue a conservation or drought management program described in TWDB’s BMP Guide or other areas related to BRA’s mission.

BRA could implement this recommendation using existing resources. This recommendation, if it leads to the implementation of an increased enforcement structure, would result in an indeterminate revenue gain for the authority, if entities do not adjust their water management strategies to meet BRA conservation goals as reflected in BRA’s WCP and in future water sales contracts and contract renewals.

CHAPTER 3: STAKEHOLDER ENGAGEMENT

The Brazos River Authority holds meetings with stakeholders and customers throughout the basin on subjects ranging from general stakeholder outreach and education, water planning, and drought. Participants range from professional organizations and civic groups to municipal and corporate customers. The number of BRA stakeholder and customer meetings held during each of the past five years is shown in **Figure 3–1**. The highest number of meetings was held in 2012 during development of BRA’s Water Management Plan, a regulatory tool that aids in the management of water according to BRA’s pending System Operation Permit with the state.

FIGURE 3–1
BRAZOS RIVER AUTHORITY STAKEHOLDER AND CUSTOMER MEETINGS, JANUARY 2010 TO MAY 2014

YEAR	MEETINGS
2010	48
2011	31
2012	61
2013	52
2014	15

NOTE: 2014 includes information up to May 2014.
SOURCE: Brazos River Authority.

BRA partners with TWDB and the Lower Colorado River Authority to provide elementary schools with the Major Rivers Water Education Program. Designed for grades four through six curricula, the program addresses aspects of water in the state including ground and surface water, reservoirs, transportation, and treatment. The 10-day course plan is available through other river authorities and water providers at a cost of \$45 per package. Since 1994, BRA has provided these programs to any elementary school within the basin free of charge. During fiscal year 2011, BRA expanded its educational efforts by establishing Water School, a website focusing primarily on water conservation projects, topics and issues.

ACCOMPLISHMENT

- ◆ BRA has held and attended more than 200 stakeholder and customer education and outreach meetings throughout the basin since 2010. BRA holds and attends in-person meetings and uses the Internet and

social media platforms to update the public regarding the authority’s activities.

FINDINGS

- ◆ BRA has a decentralized system for responding to questions, complaints, and general input from the public. Although this system provides for a regional and personalized interaction with the public, the lack of a central repository to log and access information related to public information requests and complaints can lead to inefficiencies and does not ensure accountability.
- ◆ Notice of upcoming board meetings is not communicated in BRA’s quarterly newsletter or through other online media. Board meetings are not streamed on the website and are archived on the BRA website only in audio format. Materials presented during board meetings are not made available online.

RECOMMENDATIONS

- ◆ **Recommendation 5: BRA should designate a department to maintain a centralized database for public information requests and complaints and resolution efforts by BRA and the board. Regional customer service representatives should include the Government and Customer Relations department in communications with basin managers relating to public inquiries and complaints.**
- ◆ **Recommendation 6: BRA should increase public awareness for quarterly board meetings by including this information in BRA newsletters, broadcasting board meetings in real time, and making presentation materials available on the BRA website. BRA should continue to pursue efforts to increase the effectiveness of its website.**

DETAILED ACCOMPLISHMENT

CUSTOMER EDUCATION AND OUTREACH

BRA has held and attended more than 200 stakeholder and customer education and outreach meetings throughout the basin since 2010. BRA holds and attends in-person meetings and uses the Internet and social media platforms to update

the public regarding the authority's activities. During the LBB review, LBB staff received input from various interested stakeholder groups, primarily around Lakes Granbury and Possum Kingdom. The Granbury Chamber of Commerce provided positive feedback regarding BRA. BRA is, according to the chamber, in the top tier of state agencies considering transparency and ease of access. The chamber noted significant improvement in public relations efforts by BRA in recent years.

BRA has made itself available to the public as a resource for water-related issues through its Speaker's Bureau program and establishing a presence on the social media website Facebook. From July 2008 through July 2014, BRA staff participated in more than 38 Speaker's Bureau program events throughout the basin. Board members also have participated in additional events and speaking engagements. During this public outreach and education process, BRA has collaborated with other governmental entities and external stakeholders. Partnering with other local governmental entities and retail water providers allows an alternate method of crafting and delivering educational messages regarding the origin and purpose of reservoirs and the water supply delivery network.

DETAILED FINDINGS

DECENTRALIZED PUBLIC RESPONSE (REC. 5)

BRA has a decentralized system of responding to questions, complaints, and general input from the public. Although this system provides for a regional and personalized interaction with the public, the lack of a central repository to log and access information related to public information requests and complaints can lead to inefficiencies and does not ensure accountability. Statutory requirements for responding to public information requests are set in the Texas Government Code, Chapter 552. Requirements include treating all requests for information uniformly, responding to requests within a reasonable timeframe, and certifying that all of the requested information was made available previously to the requestor. BRA tracks public information requests as they are received, but the disposition of the request is not formally tracked. As a result, it was not possible to ensure that BRA complies with all statutory requirements for responding to public information requests.

The board and regional office staff throughout the basin and staff at BRA headquarters receive and respond to public complaints, while public information requests are routed through BRA headquarters. BRA staff responds to complaints

as they are received, but there is no centralized database to track complaints or other issues brought forward by customers or basin stakeholders. BRA staff stated they have spent significant amounts of time away from their primary job duties in responding to public complaints. This additional duty reduces staff's ability to fulfill their primary job requirements. Additionally, no standardized method of responding to complaints received by board members is in place.

BRA's system for responding to public inquiries or complaints does not ensure the efficiency and effectiveness of resolving all complaints. The lack of a centralized compilation of complaints and inquiries received across the basin inhibits the identification of trends relating to areas in which services could be improved or misperceptions could be addressed. No single entity is responsible for ensuring that all complaints are addressed; therefore the process makes it difficult to determine if complaints are addressed. During the LBB review, it was not possible to determine whether instances of a complaint not being resolved have occurred due to the lack of information regarding complaints received and their dissolution. Additionally, without a centralized repository, staff does not have easy access to previous responses that could be used to help address subsequent issues. This lack of logged responses may result in redundancies and duplicative staff work when responding to similar requests. Regional customer service representatives are established to provide a more tailored, regional relationship with customers in the upper, central and lower portions of the Brazos River Basin. The subject matter these representatives address with their relative constituents may overlap. The GM and the board are involved in public information requests and public complaints only on an ad hoc basis.

A centralized, more efficient system would help to ensure that staff time and resources are not used unnecessarily. To address this need, BRA should designate a department to maintain a centralized database for public information requests and complaints and resolution efforts by BRA and the board. Regional customer service representatives should include the Government and Customer Relations department in communications with basin managers relating to public inquiries and complaints. This communication would provide for additional aggregation of requests and complaints at a centralized and searchable level.

To ensure that the GM and the board have information regarding contact with the public, the GM should receive a monthly compilation of requests and complaints, and the

board should receive this compilation on a quarterly basis to coincide with board meetings. This additional communication also would help ensure accountability in addressing complaints. Reports to the GM and the board should meet similar reporting requirements of certain state agencies. For instance, statute requires the Texas Department of Banking to maintain a centralized request and complaint log. Information categorized for these issues must include the following:

- name of the person filing the request or complaint;
- date of filing;
- subject matter;
- name of each person contacted in relation to the issue;
- summary of the results of the review or investigation of the complaint;
- summary of agency response (including email or documents provided); and
- explanation of the reason the file was closed if an investigation is not undertaken.

BRA could implement this recommendation using existing resources.

PUBLIC AWARENESS (REC. 6)

Notice of upcoming board meetings is not communicated in BRA's quarterly newsletter or through other online media. Board meetings are not streamed on the website and are archived on the BRA website only in audio format. Materials presented during board meetings are not made available online.

Notification for BRA board meetings is posted on the BRA website but not communicated through its email newsletter or Facebook page. Board meetings are not streamed online in real time and are posted in audio format only upon conclusion. No presentation materials are made available to the public via the website before or after the board meeting.

BRA's current website format is not user-friendly. BRA has engaged with the public to a substantial degree, but misinformation and criticism of aspects of BRA management and responsibilities persists. This misinformation includes statements received during LBB staff's engagement with stakeholders such as: (1) BRA is responsible for all water in the basin; (2) BRA is a for-profit entity; (3) BRA water sales provide a source of income for the State of Texas; and

(4) BRA is not attempting to develop additional supplies of water. To continue informing and educating the public, BRA has been redesigning its website, which is expected to be completed during fiscal year 2015. BRA should increase public awareness for quarterly meetings of the board by including information related to board meetings, agenda topics, and other relevant BRA events in BRA newsletters. BRA's website should stream board meetings in real time and make presentation materials from those meetings available. BRA should continue to pursue efforts to increase its website's effectiveness.

BRA could implement this recommendation using existing resources.

At its October 27, 2014, meeting, the BRA board directed staff to implement a live video feed for all future board meetings, to be streamed online on the BRA website. BRA reports that the first board meeting following this new process will take place in January 2015.

APPENDIX A: BEST MANAGEMENT PRACTICES FOR WHOLESALE WATER PROVIDERS, FEBRUARY 2013

BEST MANAGEMENT PRACTICES PUBLISHED BY TEXAS WATER DEVELOPMENT BOARD	BRAZOS RIVER AUTHORITY PRACTICES	
Implementing wholesale water provider's water conservation and drought contingency plans		
Description of wholesale water provider's service area.	<p>Population and customer data.</p> <p>Water use data.</p> <p>Water supply system data.</p> <p>Wastewater data.</p>	<p>Included in Water Conservation Plan.</p> <p>Included in Water Conservation Plan.</p> <p>Included in Water Conservation Plan.</p> <p>Description but no data included in the Water Conservation Plan.</p>
Quantified 5-year and 10-year targets for water savings.	<p>Target goals for municipal use in gallons per capita per day for service area when appropriate.</p> <p>Maximum acceptable water loss.</p> <p>Basis for development of these goals.</p>	<p>Adopted recommendations of state Regional Water Planning Area G (Brazos G) for 2012 State Water Plan of 140 gallons per capita per day.</p> <p>Goal for distribution systems within the Brazos River Authority's (BRA) service area is 12 percent.</p> <p>Derived from recommendations made by the Brazos G Regional Water Planning Area for the 2012 State Water Plan.</p>
Wholesale water system accounting and measurement.	<p>Which practices or devices will be utilized to measure and account for water diverted from source of supply.</p> <p>Monitoring and record management program to determine water deliveries, sales, and losses.</p> <p>Metering and leak detection and repair for provider's water storage, delivery, and distribution.</p>	<p>BRA System Water Availability Agreements require customers that divert more than 5 acre feet of water per year to meter their diversions and report diversion amounts to the BRA with an error of approximately 5 percent.</p> <p>The U.S. Geological Survey provides stream flows from gauging stations to the BRA. BRA performs daily water balance accounting in all reservoirs in the BRA System. BRA raw water contracts have a clause requiring customers to take daily meter readings and report the data to BRA by the tenth day of each month.</p> <p>BRA regularly inspects, maintains, and repairs damaged pipelines and pump stations.</p>
Requirement in wholesale water supply contract that wholesale customers develop and implement a water conservation plan that meets the Texas Administrative Code requirements for public water suppliers.		<p>BRA System Water Availability Agreements have a clause requiring customers to implement water conservation and drought management programs if requested by the BRA or required in accordance with law or regulation.</p>
Wholesale provider should implement water rate structure that provides incentives to conserve. (For example, higher rates for higher consumption.)		<p>Although BRA has a two-tier contract within this category, the authority is transitioning all contracts, when available, to the uniform System Rate.</p>

BEST MANAGEMENT PRACTICES PUBLISHED BY TEXAS WATER DEVELOPMENT BOARD

BRAZOS RIVER AUTHORITY PRACTICES

Assistance for wholesale water provider customers.	Technical assistance to develop plans and implement programs.	None listed in the Water Conservation Plan or the Drought Contingency Plan.
	Development of consistent methodologies to account and track water loss and gallons per capita used per day.	BRA customers self-meter and provide data to the BRA by the tenth day of each month. BRA may request additional information related to customer water loss and GPCD from TWDB.
	Develop procedures to calculate program savings, costs, and benefits.	None listed in the Water Conservation Plan or the Drought Contingency Plan.
	Coordinate conservation incentive activities.	None listed in the Water Conservation Plan or the Drought Contingency Plan.
	Implementation of service area-wide education and outreach programs.	Conservation tips and drought status are listed on the BRA website.
	Cost sharing, including joint management of retrofit and education programs and partial funding of rebates for specific conservation measures.	None listed in the Water Conservation Plan or the Drought Contingency Plan.
Program for reuse and recycling of waste and gray water.		The BRA states in its Water Conservation Plan that it will pursue wastewater reuse opportunities as they arise.
Any other water conservation practice, method, or technique which the wholesaler shows to be appropriate to achieve goals of water conservation plan.		None listed in the Water Conservation Plan or the Drought Contingency Plan.
Means to implement a water conservation program, evidenced by official adoption of the wholesale water provider’s best management practice initiatives by wholesale customers.		Unable to determine if any customers have adopted the wholesale water provider’s best management practice initiatives.

Determination of water savings and cost effectiveness for wholesale water provider

Wholesale water provider should calculate water savings due to implemented water conservation programs, such as water loss programs or programs delivered to retail customers.	None listed in the Water Conservation Plan or the Drought Contingency Plan.
--	---

Wholesale water provider customer contract requirements

Wholesale water providers should require, as a condition of supply contracts, that municipal water users develop and submit to the wholesale water provider plans for water conservation and drought contingency that meet, at a minimum, the requirements of the Texas Administrative Code, Chapter 288.	BRA System Water Availability Agreement requires customers who sell water to third parties to be in compliance with state requirements for water conservation. No specific provision identified to require customers to also submit plans to BRA.
Requirement that customer’s drought contingency plan is consistent with the drought stages and water reduction targets provided in the wholesale water provider’s drought contingency plan.	None listed in the Water Conservation Plan or the Drought Contingency Plan. Customers are requested to adhere to BRA Drought Contingency Plan Stages 1 to 3 and required to adhere to pro rata curtailment in Stage 4.
Requirement that customers beneficially use water only for authorized purposes, without waste.	BRA System Water Availability Agreement requires customers to use water for purposes explicitly stated in the System Water Availability Agreement.
Wholesale water provider should give assistance to customers to develop their drought contingency plans.	None listed in the Drought Contingency Plan.
Wholesale water provider’s water conservation and drought contingency plan rule requirements should include a provision to allow the provider to update the rules periodically to reflect changing conditions and to require that customers update their plans accordingly.	The BRA reviews and updates its Water Conservation Plan and Drought Contingency Plan every five years. No provisions for changes to rules are listed in either plan.

BEST MANAGEMENT PRACTICES PUBLISHED BY TEXAS WATER DEVELOPMENT BOARD	BRAZOS RIVER AUTHORITY PRACTICES
Rules for wholesale water provider customer water conservation and drought contingency plans	
Determine which customers need to develop water conservation and drought contingency plans.	BRA System Water Availability Agreement requires customers who sell water to third parties to be in compliance with state requirements for water conservation. BRA does not appear to make the determination for customers.
Contain specific criteria to determine what constitutes an emergency water shortage.	Included in the Drought Contingency Plan.
Outline the process to notify customers of an emergency water shortage.	The Drought Contingency Plan states that customers will be informed of any drought response stages. It appears from information on the BRA website that customers are notified by paper letters of drought stages.
Procedures for the implementation of the pro rata reduction of water supply during periods of emergency water shortages.	As listed in the Drought Contingency Plan, pro rata curtailment occurs in Stage 4 Drought Response. Curtailment is governed by the Texas Water Code, §11.039.
Consider adding additional requirements for contracts with either a volume or number of connections exceeding a certain threshold level.	None included in the BRA System Water Availability Agreements.
Consider adding additional water saving requirements, such as requiring limits on daytime irrigation and day-of-week watering.	May request entities prohibit certain activities, such as outdoor watering or establishing new landscaping.
Require customers to identify a conservation coordinator, who is responsible for the customer's implementation of plans and for reporting to the wholesale water provider regarding progress in implementing plans.	Not required by the Water Conservation Plan, the Drought Management Plan, or the BRA System Water Availability Agreements.
Require customers to provide yearly updates on plan implementation progress to the wholesale water provider.	Not required by the Water Conservation Plan or the Drought Contingency Plan.
Consider adding additional requirements, such as setting landscape water limits to no more than two watering times per week during the first stage of drought restrictions.	In Stage 1 Drought Watch Condition, customers are requested to reduce nonessential water use and to initiate voluntary landscape watering schedules.
Require prompts and response measures for water supply reduction.	Drought stages are activated when BRA System reservoir surface elevations and water storage amounts fail to meet a certain level. Each drought stage has specific response measures for customers to reduce water use.
Require that the customer's water use reduction targets are consistent with the wholesale water provider's drought contingency plan.	Certain customers are required by law to develop water conservation and drought contingency plans. No requirements identified to specifically link customer targets and methodologies with BRA plans.
Consider development of model drought contingency plans that can be adopted by customers.	It does not appear that the BRA has developed a model drought contingency plan.
Require that a customer's water conservation and drought contingency plans be approved by the wholesale water provider before any contract with the customer is signed.	Not required within the BRA System Water Availability Agreements.

BEST MANAGEMENT PRACTICES PUBLISHED BY TEXAS WATER DEVELOPMENT BOARD	BRAZOS RIVER AUTHORITY PRACTICES
Consider including penalties for customer non-compliance with water conservation and drought contingency rules.	The BRA has a clause in the System Water Availability Agreements providing remedies for overuse, but not for compliance with the Water Conservation Plan or Drought Contingency Plan.
Suggested timeframe to develop rules for customer water conservation and drought contingency plans	
Develop draft rules: Two months	No rules have been developed.
Gather customer input: Two months	No rules have been developed.
Revise rules based upon customer input and wholesale water provider governing board approves rules: Two months	No rules have been developed.
Notify customers of new rules: Immediately following adoption	No rules have been developed.
Begin implementing rules with new and amended water contracts: Three to six months	No rules have been developed.
Cost-effective considerations to monitor customer development of water conservation and drought management plans	
Best management practices should complement cost-share, outreach, and customer programs to reduce effects to the wholesale water provider and the customer.	Water conservation and drought planning are conducted by BRA staff that have other administrative responsibilities.
Number of staff needed to monitor development and implementation of water conservation and drought contingency plans.	The BRA does not monitor its customers' development and implementation of water conservation and drought contingency plans.
Purchase of water conservation materials for distribution.	BRA provides print materials regarding topics of indoor and outdoor water conservation
Technical assistance and outreach to customers to develop water conservation and drought management plans	
Provide direct assistance to customers to develop water conservation and drought contingency plans.	The BRA does not provide customers with assistance to develop water conservation and drought contingency plans.
Solicit customer input to determine what services customers need to help develop their water conservation and drought management plans.	The BRA does not provide customers with assistance to develop water conservation and drought contingency plans.
Include services offered to customers to develop water conservation and drought contingency plans within the wholesale water provider's water conservation plan.	None are included in the BRA Water Conservation Plan.
Develop water conservation outreach materials, such as brochures, handouts, bill inserts, seasonal reminders, and newsletter articles.	The BRA offers electronic conservation materials on its website.
Research and provide advice to customers regarding how to implement specific conservation programs or measures.	Unable to determine if the BRA has conducted any research regarding implementation of specific conservation programs or measures.
Bulk purchasing	The BRA does not appear to make any bulk purchases on behalf of its customers.
Provide training to employees of customers on how to implement conservation programs.	The BRA does not appear to provide training to its customers' employees on how to implement conservation programs.
Develop metrics for conservation programs.	The BRA does not appear to develop metrics for conservation programs.
Assist customers in determining cost-benefit and cost-effectiveness of a best management practice.	No assistance provided to customers for cost-benefit and cost-effectiveness analyses.
Host workshops regarding specific conservation topics or issues.	No conservation-specific workshops identified.

BEST MANAGEMENT PRACTICES PUBLISHED BY TEXAS WATER DEVELOPMENT BOARD		BRAZOS RIVER AUTHORITY PRACTICES
Provide presentations or host informational booths at community events.		The BRA may address conservation issues through its Speaker's Bureau program.
Conduct regionwide media campaign.		The BRA doesn't appear to have a media campaign centered on conservation for the entire area it serves.
Have staff with specific knowledge sets provide technical assistance to customers.		The BRA does not provide technical assistance to customers to develop water conservation and drought management plans.
Host customer meetings two to three times per year to discuss conservation measures.		The BRA hosts many customer meetings. It is uncertain whether conservation measures are discussed at these meetings.
Maintain conservation information on a website.		Provided on the BRA website.
Develop a regional stakeholder group to address the issues and challenges of water conservation.		There does not appear to be a regional stakeholder group to discuss conservation. From interviews conducted with BRA staff, there is interest in establishing a stakeholder advisory group for water management and planning.
Develop conservation materials to present at customer and stakeholder meetings.		Conservation materials are available on the BRA website. Materials were not presented at the 2014 Customer Meeting or at the BRA board meeting in July 2014.
Develop water conservation partnerships with customers to implement programs, media campaigns, or other outreach activities.		The BRA does not appear to have any conservation partnerships with customers.
Develop a strategic work plan for how services are implemented, focusing on where customers need services.		The BRA does not appear to have a strategic work plan to provide technical services to customers for water conservation and drought contingency plans.
Develop a tracking system for technical assistance and outreach activities.		There does not appear to be a tracking system for providing technical assistance.
Provide yearly water conservation plan surveys to customers to monitor progress of plan implementation and to quantify water savings.		The BRA does not appear to send conservation plan surveys to its customers.
Cost-share programs		
Areas where a cost-share program could (not limited to) provide funding.	Water loss reduction efforts.	No cost-share programs listed in the BRA Water Conservation Plan or Drought Contingency Plan.
	Recycling and reusing condensate or reclaimed water.	No cost-share programs listed in the BRA Water Conservation Plan or Drought Contingency Plan.
	Demand-side conservation programs with proven water savings.	No cost-share programs listed in the BRA Water Conservation Plan or Drought Contingency Plan.
	Retrofitting irrigation equipment to be more efficient.	No cost-share programs listed in the BRA Water Conservation Plan or Drought Contingency Plan.

BEST MANAGEMENT PRACTICES PUBLISHED BY TEXAS WATER DEVELOPMENT BOARD

BRAZOS RIVER AUTHORITY PRACTICES

Implementing a cost-share program

Wholesale water provider should identify basic cost-share program elements.

No cost-share programs listed in the BRA Water Conservation Plan or Drought Contingency Plan.

Program elements should be incorporated into an application package for participants.

No cost-share programs listed in the BRA Water Conservation Plan or Drought Contingency Plan.

Wholesale water provider should develop evaluation criteria for project proposals.

No cost-share programs listed in the BRA Water Conservation Plan or Drought Contingency Plan.

Wholesale water provider should market cost-share programs to customers and other participants.

No cost-share programs listed in the BRA Water Conservation Plan or Drought Contingency Plan.

Cost-effectiveness of cost-share programs

Recommend 0.25 full-time-equivalent (FTE) positions needed for mid- to large-sized wholesale water provider to administer cost-share programs.

No cost-share programs listed in the BRA Water Conservation Plan or Drought Contingency Plan.

Majority of funding for cost-share programs should be awarded to participants.

No cost-share programs listed in the BRA Water Conservation Plan or Drought Contingency Plan.

Consider setting a limit on matching funds.

No cost-share programs listed in the BRA Water Conservation Plan or Drought Contingency Plan.

Wholesale program of collective purchase and direct distribution of conservation equipment

Identify which conservation measures are most effective in the service area.

No cost-share programs listed in the BRA Water Conservation Plan or Drought Contingency Plan.

Wholesale water provider and customer should enter into a contract or other bulk purchase agreement.

No cost-share programs listed in the BRA Water Conservation Plan or Drought Contingency Plan.

Contract or agreement should be approved by the wholesale water provider's board and by the municipality's council or court.

No cost-share programs listed in the BRA Water Conservation Plan or Drought Contingency Plan.

Wholesale water provider should develop a method to track bulk purchases.

No cost-share programs listed in the BRA Water Conservation Plan or Drought Contingency Plan.

Wholesale water provider should develop program procedures, templates for the program application, marketing materials, FAQs, and other program materials.

No cost-share programs listed in the BRA Water Conservation Plan or Drought Contingency Plan.

SOURCE: Texas Water Development Board.