



Scope of Work

Capital Area Ground Water Conservation Commission (CAGWCC)

June 2018

MISSION OF CAGWCC

The mission of the CAGWCC is to provide for the efficient administration, conservation, orderly development and supplementation of groundwater resources in the parishes of East Baton Rouge, East Feliciana, Pointe Coupee, West Baton Rouge and West Feliciana.

The CAGWCC will develop, promote, and implement management strategies to provide for the conservation, preservation, protection, recharging and prevention of waste of the groundwater resources, over which it has jurisdictional authority, for the benefit of the people that the Capital Area District serves.

ISSUE AND POTENTIAL NEED

The Capital Area Ground Water Conservation District was created by the Louisiana Legislature through Act 678 of 1974 due to concerns in the region including water level declines of as much as 400 feet, saltwater encroachment in several local aquifers, and land subsidence caused by over-pumping of groundwater. The District's governing commission began work in January 1975. Its job is to develop, promote and implement management strategies to provide for the conservation, protection, and sustainable use of local groundwater resources in the District.

Saltwater encroachment has continued to be an issue over the years in the Southern Hills Aquifer System. Therefore, the CAGWCC has invested in monitoring, modeling, and additional science to inform its decision-making in setting groundwater use priorities and production limits as well as facilitate aquifer conservation. In addition, members have already invested in projects to identify actions to meet objectives and reduce groundwater withdrawals (such as utilizing water from the Mississippi River) and are in the process of planning for scavenger well(s) to be drilled along the local fault line to draw saltwater away from the freshwater wells.

However, there are questions as to whether the state of the science informing CAGWCC decisions is sufficient, scavenger well(s) will be effective enough to conserve the aquifer over the long-term, and whether other strategies or alternatives need to be considered as the Baton Rouge area grows and water resource needs increase.

The Water Institute of the Gulf is a non-profit, non-advocacy research institute headquartered in Baton Rouge, LA. The Institute has technical expertise in groundwater as well as experience in evaluating and developing science that specifically supports decision-makers. The Institute's *unbiased approach* to producing science in support of resource management and helping to resolve water-related issues makes it ideally situated to work with the CAGWCC.



PROPOSED PROJECT OBJECTIVES

Objective 1: Work with the CAGWCC and other technical stakeholders to identify and evaluate feasible, realistic, and cost-effective science-based alternatives which meet long-term water resource needs.

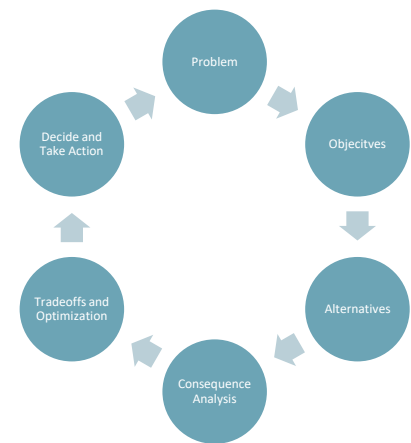
Objective 2: Evaluate the state of the science/information related to groundwater use and aquifer conservation needed to evaluate alternatives and inform decisions.

Objective 3: Work with the CAGWCC to identify management alternatives that are economically feasible and acceptable, and to develop a strategic plan for the long-term water supply for the District.

PROPOSED PHASED APPROACH

The Institute proposes to use a phased approach to meet project objectives following the PrOACT cycle. PrOACT is a useful framework for structuring decisions. This includes:

- Defining the Problem
- Determining the Objectives
- Identifying Alternatives
- Evaluating alternatives and forecasting the Consequences
- Evaluating the Trade-offs
- Making the decision and taking action



PHASE 1: FACILITATED WORKSHOPS & SCIENTIFIC REVIEW (CURRENTLY PROPOSED)

Phase 1.1: Facilitated Workshops

The CAGWCC is the authority to manage the District's groundwater resources. As with any process, it's important to work closely with these decision-makers in a transparent manner which facilitates a process to identify a path forward. There are numerous stakeholders within the District regulated by the CAGWCC, but there is not yet consensus on a potential path forward. Therefore, the Institute would take a structured, facilitated approach (via meetings/workshops) in working with the CAGWCC (and other technical stakeholders as needed) to articulate/identify: (1) the potential problems/issues based on the mandates, laws, preferences, and scope of current decisions of the CAGWCC, (2) the specific long-term fundamental *objectives* of the CAGWCC, and (3) the potential management *alternatives* (including the status quo) that the CAGWCC would consider. It's important to first work with the CAGWCC to appropriately frame the problem and define objectives before developing alternatives, as alternative-focused thinking could lead to the CAGWCC problems/issues being framed too narrowly to address and achieve CAGWCC objectives.

Deliverable: Working through a facilitated structured approach with the CAGWCC, framing and objective setting that lead to identification of alternatives (including the status quo) that address the long-term water resource needs will be clearly articulated (via a report to be utilized for



evaluation in Phase 2; concurrent with this a complimentary assessment of the “state of the science” will be generated as part of Phase 1.2 below).

Phase 1.2: Scientific Review

Third party evaluation of the state of the science, information, and data related to ground water use and aquifer conservation. This step would include the Institute working with USGS experts engaged in monitoring and modeling, local experts with groundwater system knowledge (such as Dr. Frank Tsai) as well as other specialists, such as in natural resource economics or in human dimensions, that can evaluate the state of knowledge/science, risk and gaps/needs regarding the long-term management needs of the CAGWCC.

Deliverable: A report on the “state of the science”, identified gaps, and proposal for evaluating alternatives and filling gaps in Phase 2.

Time: 1 year

Cost: \$237,184

PHASE 2: ALTERNATIVES ANALYSIS (PROPOSED WHEN COMPLETING PHASE 1)

Phase 2.1: Filling Gaps and Evaluate alternatives

Based on the outcomes of Phase 1.1 and 1.2, the set of identified *alternatives* will be evaluated to determine the best combination of actions (i.e., strategy) for meeting the CAGWCC’s stated objectives. It’s possible that some alternatives will not be able to be evaluated until additional scientific and monitoring gaps are filled, but that is unknown until the completion of Phase 1 and the initial alternatives analysis for Phase 2. This phase will also include *consequences* of each alternative based on sound data and science (evaluation could include the modeling by the USGS, other social and economic modeling/evaluation tools, and expert elicitation), as well identification of possible *tradeoffs* (economic or others) between objectives.

Deliverable: Report articulating the alternative evaluation process, with consequences, tradeoffs, and identified optimal strategies.

Phase 2.2: Selection of alternative(s)

Ultimately it is the responsibility and mandate of the CAGWCC to define a course of action. The products of Phase 1 and 2.1 can inform this choice. The CAGWCC is the decision-maker and coming to consensus on a path forward is of utmost importance. Therefore, through a facilitated meeting/workshop with the CAGWCC, the alternative evaluation process, tradeoffs, and optimal alternatives will be discussed. For example, it is possible that the most feasible alternative is the status quo, or that additional novel alternatives might be combined with existing strategies to form a feasible, reasonable, and cost-effective alternative, or there might be one single, dominant alternative identified. A series of options and potential paths forward will be part of the agenda with the goal of the CAGWCC coming to consensus, by the end of the workshop, and selecting an alternative or more than one preferred alternative (i.e. course of action).

Deliverable: Report articulating the selected alternative(s) with proposal for Phase 3.



Time & Cost: The Time and Costs for Phase 2 depend upon the results of Phase 1. This will be affected by the level of effort for the alternatives analysis as well as the potential need to fill science and monitoring gaps.

PHASE 3: LONG-TERM STRATEGIC PLAN (PROPOSED WHEN COMPLETING PHASE 2)

Based on the alternative(s) selected by CAGWCC, a long term strategic plan will be developed in partnership with CAGWCC as well as other experts in the field (consultants, USGS, academia, etc.). This will include:

Phase 3.1: Develop Strategic Action Plan

- Develop an action plan that drives implementation of the selected alternative(s) toward CAGWCC goals; and
- Develop annual work plans that turn objectives into stepwise actions that lead toward long-term strategic goals.

Phase 3.2: Stand up Strategic Plan Systems

- Inclusion of the plan within an adaptive management framework, in order to manage uncertainty, new information, technology, and change throughout implementation of the plan;
- Establishment of a data collection and management program, to fill data gaps identified in earlier phases, and to inform the adaptive management process throughout project life cycles. Design data program to provide sufficient information to support decision making and drive toward goals identified in the selected alternative(s); and
- Stakeholder engagement throughout the process.

Phase 3.3: Strategic Plan Implementation Support

- Technical assistance with policy, regulatory, and funding processes for program and project implementation, possibly including permitting, bonding, and other support; and
- Implement adaptive management procedures for monitoring, and for modifying strategies based on changes in the external environment or the organization.

Time & Cost: The Time and Costs for Phase 3 depend upon the results of Phase 2.