# Project Implementation

## Project Implementation Overview

The project schedule, milestones and estimated cost of management measures are primary components to consider when preparing for the implementation phase of a WPP. In addition, the project implementation could not be undertaken and transformed to on-the-ground management measures without securing adequate project funding. This chapter details the financial, as well as the technical, assistance needed to successfully implement the nonpoint source reduction management measures previously discussed in Chapters 6 and 7. Expected load reductions will be presented along with a water quality monitoring plan. An adaptive implementation approach will allow contingencies if the progress of the implementation of the Double Bayou WPP is either falling short or ahead of schedule. All management measures are voluntary and contingent on available funding.

## Technical Assistance

The successful implementation of the Double Bayou WPP relies on a number of entities including stakeholders, local government agencies, nonprofits, municipalities, counties and Extension agents. The stakeholders possess the motivation and local knowledge but will require the technical expertise, personnel and resources of the supporting entities to improve the water quality of Double Bayou on a watershed scale. The implementation phase will require further support from two full-time positions that will each operate under their specialty to fulfill the criteria set out in this chapter in partnership with the Double Bayou stakeholders. Resources will be targeted to stakeholder selected high priority management measures. The project implementation will require a collaborative effort between stakeholders and other essential land and natural resource management entities.

## Wastewater Management Measures

The wastewater management measures that have been recommend by the stakeholders will require the expertise and input of the WWTF plant operators, City of Anahuac and Chambers County staff to advise and coordinate the implementation of the collection system infrastructure improvements and the WWTF operations management measures. Funding will be sought to facilitate the stakeholder suggested improvements to the public wastewater systems.

## Septic Systems Management Measures

An initial component of the septic system management measures is to maintain and expand the OSSF database started by the stakeholders and the geographic task force. The database will be the responsibility of Chambers County to manage and successfully implement. The active involvement and experience of County personnel will be imperative for continued success of OSSF operations with population growth. Funding will be targeted to aid the county in overseeing these operations. To optimize load reductions, high priority subwatersheds identified with SELECT will be targeted.

## Agricultural Management Measures

Support and technical guidance from the TSSWCB, AgriLife Extension, the SWCD and the USDA-NRCS will be crucial for the selection of appropriate agricultural management measures and assistance with their placement. However, many of the stakeholders in Double Bayou are landowners/agriculture producers whom already operate under WQMPs and effectively execute agricultural conservation practices. The stakeholders that have a WQMP in place represent a valuable resource in the watershed. Their experience will also be essential to providing knowledge and advice on which management measures will perform best in the local environment and where the measures should be placed on individual properties.

In order to support WQMP development, the stakeholders recommended that a WQMP Technician position be created. This position would be dedicated to assisting landowners in the creation and implementation of the WQMPs. Because a number of WQMPs are already certified in the watershed, the WQMP Technician will not only focus on enrolling more landowners, but will also place an emphasis on WQMP plan updates. The technician would be involved in writing, updating/planning and promotion of the WQMPs. In addition, the technician would help secure potential funding for current and new WQMPs.

## Wildlife and Non-Domestic Plant/Animal Management Measures

Active stakeholder participation will be required to implement Wildlife and Non-Domestic Plant/Animal Management Measures because man power will be required for invasive species physical removal days and the trapping of feral hogs watershed wide. The management of the feral hog population will require a large scale regional effort. The existing Texas AgriLife Extension Feral Hog Specialists for South Texas will be able to lend technical assistance and insight for trapping and managing the feral hog population. It will be up to the County feral hog personnel to provide guidance and coordination of the feral hog removal effort on the local level. The County feral hog position will assist stakeholders with technical advice while providing valuable resources, such as traps and equipment.

## Recreation Management Measures

The Galveston Bay Foundation will provide technical expertise on recreational boating issues while Chambers County will support the initial instillation and long-term maintenance of a boat waste pump out station. The ChambersWild website can serve as a valuable platform and outreach tool for passing on key implementation updates and information to stakeholders.

## Project Schedule, Milestones, Estimated Cost

The implementation schedule will be described for short-term (1-3 years), mid-term (4-6 years) and long-term (7-10 years) milestones (Table 8-1 Management measures). Milestones are project goals used to keep the implementation phase on track. The project schedule can be broken down into initial implementation and long-term operation and maintenance phases. Depending on the management measures, some will be adopted early on in the process and may not require extensive maintenance and monitoring while others will require ample time for research and development, funding to be acquired and the personnel engaged. The three project phases help to spread the needed funding, resources and personnel over the 10 year timeline instead of all resources being needed at once. Progress indicators provide quantifiable benchmarks that will be used to assess the implementation of the management measures and nonpoint source load reductions outlined in this WPP. Operating within the confines of the developed framework will guide the success of this WPP by providing the criteria to gauge the progress of the management measures. The estimated cost will take initial costs as well funding for the continued maintenance of the management practices when required into consideration.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Management Measures** | **Lead Entity** | **Unit Cost** | **Number Implemented per Year Range**  | **Total Cost**   |
| **Year** |
| **1 to 3** | **4 to 6** | **7 to 10** |
| ***Wastewater Management Measures*** |
| Collection System Study (*smoke test and video lines*) (high priority) | City of Anahuac/ TBCD | $50,000/study | 1 | **---** | **---** | $50,000 |
| Upgrade Collection System Line and Manhole Replacement  | City of Anahuac/ TBCD | $250,000/biennium  |   |   |   |   |
| Lift Station Upgrades (*bypass pumps*) (low priority) | City of Anahuac | $1,680,000/lift station |   |   |   |   |
| Prevent Wire Thefts from Anahuac WWTP (low priority) | City of Anahuac |   | 1 | **---** | **---** |   |
| Pump Repair and Replacement (*high priority*)  | City of Anahuac |   |   |   |   |   |
| ***Septic Systems Management Measures*** |
| Identify OSSFs in Watershed and Maintain OSSF Database | Chambers/ Liberty Counties  | Cost Contributed | 1 |   |
| Increase Septic System Review and Inspection Capacity (*including relief lines and laterals*) | Chambers/ Liberty Counties | $42,000/year for inspection | 1 | $420,000 |

Table 8- Management measures

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Management Measures** | **Lead Entity** | **Unit Cost** | **Number Implemented per Year Range**  | **Total Cost**   |
| **Year** |
| **1 to 3** | **4 to 6** | **7 to 10** |
| Water Quality Management Plans (WQMP) | SWCD/ Landowner | $15,000/plan | 23 | 30 | 40 | $1,395,000  |
| WQMP Technician (*new position-shared with Cedar Bayou*) | SWCD  | $75,000/year | 1 | $750,000 |
| ***Wildlife and Non-Domestic Plant/Animal Management Measures*** |
| Physical Removal Days (a*quatic and terrestrial invasive species*) | Watershed Coordinator  | $TBD | 3 | 3 | 4 | N/A |
| Feral Hog Specialist (*existing*)  | AgriLife Extension  |   | 3 | 3 | 4 |   |
| Feral Hog County Position | Chambers/ Liberty Counties | $90,000/year | 1 | $900,000 |
| Feral Hog Control (*equipment*) | County Position | $500/trap | 20 | 15 | 20 | $27,500 |
| Feral Hog Bounties (*county*) | Chambers/ Liberty Counties | $5  | 1 | N/A |
| ***Recreation Management Measures***  |
| Boater Waste Pump Out Station at Job Beason Park (*Installation and Maintenance/Promotion*) | Chambers County/ Galveston Bay Foundation | $12,000/unit | **---** | 1 | **---** | $12,000\* |
| Potential Additional Restrooms Throughout Watershed  | Chambers Wild | $TBD | **---** | **---** | 1 | N/A |

\*Cost includes unit price, installation parts and labor; eligible for 75% reimbursement from TPWD See 8.10 CVA

Table 8-1 Management measures (continued)

## Outreach and Education

As detailed in Chapter 7, an extensive outreach and education campaign will be vital to raise awareness and stakeholder participation in the Double Bayou watershed. This initiative will require support and collaboration from stakeholders, TSSWCB, AgriLife Extension, the Galveston Bay Foundation, municipalities and the County. The watershed coordinator will facilitate the communication of these entities and act as a liaison to ensure the information is provided watershed-wide. This section will provide the lead entity and financial details of the stakeholder identified outreach and education management measures (Table 8-2 Outreach and education management measures). The stakeholders also suggested the number of outreach and education programs to be implemented per year over theF 10 year project term. These will be used as a quantifiable metric to indicate the success of the implementation phase of this WPP.



Table 8- Outreach and education management measures



Table 8-2 Outreach and education management measures (continued)



Table 8-2 Outreach and education management measures (continued)



\*Includes sign, post, hardware, concrete and sign maintenance (estimate based on Scott’s response)

Table 8-2 Outreach and education management measures (continued)

## Watershed Coordinator

To further support the technical and financial assistance outlined in this chapter, the stakeholders recommended the creation of a Watershed Coordinator position. The person in the watershed coordination position will oversee and coordinate implementation activities while routinely interacting with stakeholders, local city councils, county commissioner courts, Extension, GBF, TCEQ, TSSWCB and other watershed interest groups to keep them informed and involved in implementation. The Watershed Coordinator will be crucial to facilitate collaboration among partners and actively ensure that a quality outreach and education campaign be maintained watershed wide. Working with the WQMP Technician, the Watershed Coordinator will organize and host workshops. The Watershed Coordinator also will work to secure external funding to facilitate stakeholder recommended implementation activities outlined in the Double Bayou Watershed Protection Plan. See Chapter 7 for a detailed discussion of the Watershed Coordinators’ primary responsibilities under each of the respective workgroup categories.

## Sources of Funding

A crucial aspect to the implementation of the management measures is to secure funding that will support the personnel, equipment and resources behind the actions. Project funding can be acquired from a variety of state and federal programs. Typically, funds for project and program development can be issued in the form of a grant or loan. Grant proposals will be given a priority. In Texas, a principal funding entity is the Texas Water Development Board (TWDB); they focus on the conservation and responsible development of water, including wastewater and flooding mitigation projects. Some focused funding sources that may be applicable to the needs of the Double Bayou Watershed are provided in this section:

**Environmental Quality Incentives Program (EQIP)**

The Environmental Quality Incentives Program (EQIP) provides financial and technical assistance to agricultural producers. The program is oriented towards conservation and requires contracts up to a ten year term. The contracts provide financial assistance to help plan and implement conservation practices that can improve water quality.

**Section 319(h) Federal Clean Water Act**

Section 319 of the Federal Clean Water Act covers the Nonpoint Source Management Program. States are eligible to receive grants that support a variety of initiatives that assess the success of specific nonpoint source implementation projects.

**Water Quality Management Plan Program**

Water Quality Management Plans (WQMPs) are site-specific plans designed to reduce nonpoint source runoff from silvicultural and agricultural land uses. The plans are supported by the Trinity Bay Soil and Water Conservation District #434 (SWCD) and TSSWCB. To receive financial incentives from TSSWCB, the landowner must develop a WQMP with the SWCD that is customized to fit the needs of their operation.

**TCEQ Small Business and Local Government Assistance (SBLGA)**

The TCEQ Small Business and Local Government Assistance is not in itself a grant program but offers a suite of tools and information to provide confidential assistance to small business and local government without threat of enforcement. The program also provides possible sources of funding and covers air, water and waste environmental issues.

**TWDB State Loan Program Texas Water Development Fund II (DFund)**

The Water Development Fund is a state funded loan program that combines multiple loan opportunities such as water and wastewater into a single loan. The DFund loans can be applied to water supply, wastewater and flood control projects.

**TWDB Rural Water Assistance Fund (RWAF) Program**

The TWBD’s Rural Water Assistance program allows rural political subdivisions to obtain low-cost financing for water and wastewater projects. The financing is often provided with tax-exempt equivalent interest rate loans that have long-term finance options. This programs funding can be applied to water related projects as well as water quality enhancements that may include planning, design and construction projects such as water treatment plants, wastewater collection and treatment and nonpoint source pollution abatement.

**Clean Water Act State Revolving Fund**

The Clean Water Act State Revolving Fund provides low interest rates and flexible terms that are often well below the national market interest rate. The funds provide significant support for nonpoint source pollution control and estuary protection. A multitude of borrows are eligible to borrow from the CWSRF.

**Clean Vessel Act Grant Program (CVA)**

The Clean Vessel Act Grant Program (CVA) provides grant funds to states for the construction, renovation, operation, and maintenance of pump out stations and waste reception facilities for recreational boaters and for educational programs that inform boaters of the importance of proper disposal of their sewage.

**USDA Rural Development Program (USDA-RD)**

The USDA Rural Development Program (USDA-RD) program offers loans, grants and loan guarantees to support essential services such as water infrastructure.

**Farm Service Agency – Conservation Reserve Program (CRP)**

The Conservation Reserve program is managed by the Farm Service Agency and is focused on land conservation. The program provides a yearly rental payment to farmers that conserve environmentally sensitive land instead of using it for agricultural production. A typical contract is between 10-15 years. The goal of the program is to re-establish land cover that will help improve water quality, reduce sedimentation and erosion and provide wildlife habitat.

**Agricultural Water Conservation Loan Program**

The Agricultural Water Conservation Loan Program is administered by the TWDB to provide agriculture water conservations loans to political subdivisions to facilitate water conservation improvements. The loan can be applied under a conservation program as well as to individual conservation projects.

**Texas Farm & Ranch Lands Conservation Program**

This program assists private landowners in protecting land from development while maintaining the land under the private owner in agricultural production. The program provides cash and tax advantages for financial incentives. A conservation easement is required to protect and preserve the natural resources of the land.

**Feral Hog Abatement Grant Program**

The Feral Hog Abatement Grant Program under the Texas Department of Agriculture is a grant program that strives to manage the damage caused by feral hogs across the state. Currently Texas AgriLife Extension Service - Wildlife Services and the Texas Parks and Wildlife Department receive funding under this grant program to develop technologies and projects to control the population.

**Outdoor Recreation Grants**

Managed by the Texas Parks and Wildlife Department, this program provides 50% matching grant funds to municipalities, counties, municipal utility districts (MUD) and other local units of government with a population less than 500,000 to acquire and develop parkland or to renovate existing public recreation areas. There are two funding cycles per year with a maximum award of $500,000. Eligible sponsors include cities, counties, MUDs, river authorities, and other special districts. The projects must be complete in a short-term three year time period.

**Environmental Education Grants (EE)**

An EPA program that seeks grant proposals to support environmental education projects that will promote environmental awareness and stewardship. Ideal proposals to receive support include the design, demonstration or methods and techniques of environmental education projects.

**Landowner Incentive Program (LIP)**

The Landowner Incentive Program is a collaborative effort between TPWD and Inland Fisheries Division to support private, non-federal landowners in enacting good conservation practices on their lands that will encourage healthy land management.

**Economically Distressed Area Program (EDAP)**

The Economically Distressed Area Program (EDAP) is a TWDB initiative that provides financial assistance to provide water and wastewater services to economically distressed areas where these services are not available or the current system does not meet the applicable requirements. This funding can be applied to planning, land acquisition design and construction of first time improvements to water supply and wastewater collection and treatment works. Grants or a combination of grants/loans are available.

**Regional Water Supply and Wastewater Facility Planning Program**

A TWDB program that offers grants to multiple political subdivisions that are scaled to a regional level. The grants can be used to determine the most feasible alternatives to meet regional water supply and wastewater facility needs, cost estimates and to identify institutional arrangements that will provide regional water supply and wastewater services.

**Section 106 State Water Pollution Control Grants**

The Section 106 State Water Pollution Control Grants of the Clean Water Act section 106 allows the EPA through the TCEQ to provide federal assistance to states to establish and maintain water pollution control programs including water quality assessment and monitoring, water quality planning and standard setting, Total Maximum Daily Load (TMDL) development, point source permitting, training, and public information. This initiative targets the watershed approach at the state level in order to improve water quality by eliminating pollution sources. The program is grant based.

**Supplemental Environmental Projects Program (SEP)**

The Supplemental Environmental Projects Program (SEP) is overseen by the TCEQ and allows environmentally beneficial projects stemming from the settlement of an enforcement action. The fines, fees and penalties resulting from environmental violations can be used to support pollution prevent, pollution reduction and water quality enhancement projects.

## Expected Load Reductions

Expected load reductions of *E. coli* bacteria in the nontidal portions and Enterococci in the tidal portions of the bayous as a result of full implementation of the Double Bayou WPP are detailed in Table 8-3. The load reductions provided are considered estimates due to the dynamic nature of watersheds and nonpoint source bacteria contamination. The load reductions represent an expected improvement towards meeting the bacteria water quality standards in Double Bayou. The bacteria management measures discussed throughout this WPP will require implementation and continued support from stakeholders and responsible parties in order to maintain progress and ensure that the expected load reductions are realized (Table 8-3 Expected load reductions).

|  |  |
| --- | --- |
| **Management Measure** | **Expected Bacteria Load Reduction** |
| ***Wastewater Management Measures*** |
| Leaky Pipe System Campaign | TBD  |
| Collection System Study (*smoke test and video lines*) |
| Upgrade Collection System Line and Manhole Replacement  |
| Lift Station Upgrades (*bypass pumps*) |
| Increase WWTF Staffing Capacity |
| Prevent Wire Thefts from Anahuac WWTP |
| Pump Repair and Replacement (*high priority*)  |
| ***Septic Systems Management Measures*** |
| Identify OSSFs in Watershed and Maintain OSSF Database |  TBD |
| Continued Enforcement of Septic System Complaints with Population Growth |
| Increase Septic System Review and Inspection Capacity (*including relief lines and laterals*) |
| Connect Homes with Septic Systems to Sewer Line (*expand sewer system*) |
| ***Agricultural Nonpoint Source Management Measures*** |
| Water Quality Management Plans (WQMP) |  TBD |
| WQMP Technician (*new position-shared with Cedar Bayou*) |
| ***Wildlife and Non-Domestic Plant/Animal Management Measures*** |
| Physical Removal Days (*aquatic and terrestrial invasive species*) | TBD |
| Feral Hog Specialist (*existing*) |
| Feral Hog Management  |
| Feral Hog County Position |
| Feral Hog Control (*equipment*) |
| Feral Hog Bounties (*county*) |
| ***Recreation Management Measures***  |
| Boater Waste Pump Out Station at Job Beason Park |  TBD |
| Potential Additional Restrooms Throughout Watershed  |

Table 8- Expected load reductions

## Monitoring Plan

The objective of the water quality monitoring plan is to provide sufficient data to characterize current water quality conditions in support of the WPP implementation. Water quality data will be analyzed for short term and long term trends. Sampling station locations will remain the same as current water quality monitoring in order to examine long term trends. Enterococci values at tidal stations and *E. coli* values at nontidal stations will be compared to the desired load reductions outlined in Section 8.12 to determine effectiveness of implemented management measures, and allow for adaptive management of the implementation of the WPP.

Efforts for the initial onset of the monitoring plan will pursue funds appropriate for a 24-month sampling period. Opportunities to fund further monitoring will be pursued as appropriate. For the initial 24-month sampling plan, ambient in-stream data is proposed to be collected at 4 mainstem sites once per month, collecting field, conventional, flow, and bacteria parameter groups. The sampling station locations will remain the same as current monitoring efforts for continuity (see Chapter 4, Figure 4-2). Ambient monitoring data will be collected at the WWTF site once per quarter. Biased-flow monitoring data will be collected at 4 mainstem sites plus the WWTF site, during 2 storm events during the sampling period, collecting field, conventional, flow, and bacteria parameter groups.

Currently, routine ambient monitoring is conducted once per quarter year at one station by TCEQ (10657; field, conventional, and bacteria parameters only) and at two stations by the Trinity River Authority (18361, 10658; field and conventional parameters only) through the Clean Rivers Program. Sampling through this subtask will complement existing routine ambient monitoring regimes.

Field parameters are pH, temperature, specific conductance, turbidity and dissolved oxygen. Conventional parameters are suspended solids, sulfate, chloride, nitrite+nitrate nitrogen, ammonia nitrogen, total kjeldahl nitrogen, chlorophyll-a, orthophosphorus, and total phosphorus. Bacteria parameters are *E. coli* and Enterococcus. Flow parameters are quantitative flow collected by gage, electric, mechanical or Doppler, including severity. The parameters listed here include constituents that are not necessary to assess current impairments or screening level concerns, but monitoring for this suite of parameters will detect the possible development of additional water quality problems as well as characterize trends for overall water quality conditions. The water quality data analysis will provide excellent milestones to gauge the progress of project implementation and to monitor percent of load reductions as management measures are implemented.