

Westfield Estates Watershed Protection Plan Implementation- Houston Galveston Area Council

Scope of Work

Problem / Need Statement:

The Westfield Estates watershed is located in northeast Harris County, Texas adjacent to Halls Bayou. It is entirely within the East Aldine Management District. The community of Westfield Estates, which covers 65% of the watershed, has the highest need for public sewer services in Harris County (Harris County Precinct 2 Study, 2007). The community of approximately 700 homes is served entirely by private septic systems. Westfield Estates has a disproportionate number of minorities, disabled, under-educated, foreign-born, non-English-speaking, lower income and higher average family size than Houston as a whole, Texas, or the United States.

High numbers of county septic system violations occur in the community. Stagnant black-colored water is found in ditches during dry weather from which a strong "sewer" odor emanates. Elevated levels of bacteria (>100,000 MPN/100 ml) were found at most of the 20 sites examined in Westfield Estates in the first phase of this work, Failing Septic System Initiative Phase I, concluded in 2007; (Phase I). Bacteria in ditch water flows through street ditches in the watershed, especially during rain events (11,800 to 141,000 MPN/100 ml). Presumably, the majority of the contamination comes from failing septic systems. However, FSSI-I also indicates that a significant amount of bacterial impairment comes from non-human sources (65-70%), primarily chickens and dogs, with a component(s) still unknown. Bacteria levels 6 to 600 times the Water Quality Standards both in the Westfield Estates may pose a potential for human illness.

A permanent solution to the human bacterial source problem (municipal sewer service) is unlikely to occur in the foreseeable future because of logistics, resident income, and funding requirements (\$16 million). Interim solutions, which include remediation or replacement of existing septic systems, and best management practices for decreasing bacterial contamination from both human and non-human sources, coupled with a watershed protection, plan pose a viable option to reducing the bacteria load in the watershed.

The Westfield Estates Watershed Protection Plan (Westfield Estates WPP) proposes Bacterial Impairment Management using structural septic system construction or modification and behavioral BMP components.

Education and Public Outreach are critical to the success of this project. In a historically underserved low-income, minority community where services were promised before but not delivered, credibility must be established and maintained. Resident's participation in the Phase I Town Meeting was excellent and interest was high. A stakeholder's group, which includes elected officials with jurisdiction over the community has been established and is involved in a watershed protection plan for the area. After funding is confirmed, residents will be actively engaged in project process/progress, and in the development of a community-based watershed protection plan.

General Project Description:

The Westfield Estates WPP proposes to reduce bacterial impairment in the watershed or alternately the bacteria load in other East Aldine Management District communities by

- Maintenance, repair, and/or replacement of failing septic systems or installation of septic systems;

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- Development and implementation of Best Management Practices (BMPs) to reduce impairment (bacteria) from human and non-human sources;
- Update Watershed Protection Plan to include specifics needed to address bacteria impairments;
- Broaden base of stakeholders group for the watershed protection plan; and
- Transfer “ownership” of watershed protection plan to the stakeholders group. H-GAC will chair the group, provided funding is provided by TCEQ after the implementation project is completed.

In the Westfield Estates WPP, the primary benefit from inspection, repair, remediation, installation, and/or replacement of failing systems is a direct reduction of human source bacteria in the watershed. To monitor progress, bacteria levels will be determined at locations on the Bayou above and below the community throughout the study, and at its conclusion. H-GAC will also repeat watershed and water body monitoring for bacteria at previously examined sites (FSSI- Phase I) to quantify the amount and source of bacteria reduction leading to quantifiable load reduction at the end of the project. Additional success will be measured by a decrease in septic system violations. The absence or reduction of standing water in ditches may also be a measure.

BMPs to reduce the non-human impairment (bacteria) will be developed and implemented. Additional monitoring will identify remaining non-human sources from FSSI-I and quantify the reduction. Public outreach will educate residents on the proper maintenance of septic systems, and involve them in the development and implementation of BMPs for non-human bacteria sources.

Project outcomes will be measured by

- Repair, install, replace, or provide maintenance to 5–15% of septic system depending on available funds;
- Develop and implement BMPs for non-human bacterial sources (e.g. dogs and chickens);
- Town Meetings two times per year to share progress with watershed residents;
- Final Town Meeting "Wrap-Up" and transfer of the Watershed Protection Plan to permanent stakeholder advisory group. . H-GAC will chair the group, provided funding is provided by TCEQ after the implementation project is completed.
- ;
- Education for BMPs on behavioral modification and care of septic systems, including maintenance agreements with responsible entity, (e.g. Sunbelt Freshwater Supply District – Oakwilde); and

Secondary benefits from the project include

- Drainage ditch maintenance in flood prone area previously hindered by presence of bacteria;
- Estimate of human health issues associated with failing septic systems before/after project.
- Possible reduction of human illness associated with bacterial contamination, estimated by EPA at 5% of the population in the Community (est. 150 persons);
- Development of Impairment (Bacteria) Reduction Plan useful for TMDL.
- Broad-based acceptance of a community-based watershed protection plan.

TASK 1: PROJECT ADMINISTRATION and MANAGEMENT

Goal: *To effectively coordinate and monitor all technical and financial activities performed under this contract, preparing regular progress reports, and managing project files and data.*

Task 1.1 Project Oversight – The GRANTEE's Project Manager will provide technical and fiscal oversight of the GRANTEE project staff and/or sub grantee(s)/subcontractor(s) to ensure Tasks and Deliverables are acceptable and completed as scheduled and within budget.

With the TCEQ Project Manager's authorization, the GRANTEE may secure the services of sub grantee(s)/subcontractor(s) as necessary for technical support, repairs and training. Project oversight status will be provided to the TCEQ with the Quarterly Progress Reports.

Task 1.2 **Quarterly Progress Reports** – To be submitted to TCEQ by the 20th of the month following each state fiscal quarter for incorporation into the Grant Reporting and Tracking System (GRTS). Progress reports will contain a level of detail sufficient to document the activities that occurred under each task during the quarter, and contain a detailed tracking of deliverable status under each task.

Task 1.3 **Reimbursement Forms** - Reimbursement forms will be submitted to the TCEQ by the last day of the month following each state fiscal quarter.

Task 1.4 **Communication Plan** -- The GRANTEE Project Manager will maintain regular telephone and/or email communication with the TCEQ Project Manager regarding the status and progress of the project in regard to any matters that require attention between Quarterly Progress Reports. This will include a call or meeting each January, April, July, and October. Minutes recording the important items discussed and decisions made in each call will be attached to each Quarterly Progress Report. Matters that must be communicated to the TCEQ Project Manager in the interim between QPRs include:

- Requests for approval of activities or expenditures those are not specifically included in the scope of work.
- Notification in advance when GRANTEE has scheduled public meetings or events, initiation of construction, or other major task activities under this contract
- Events or circumstances that may require changes to the budget, scope of work, or schedule of deliverables. Such information must be reported within 72 hours of discovering these events or circumstances

Task 1.5 **Contractor Evaluation** - GRANTEE will participate in an annual Contractor Evaluation.

Task 1.6 **Project Fact Sheet** – The Project Manager will develop a one-page fact sheet of the project using the TCEQ NPS Projects Template. The fact sheet will briefly describe what the project is going to accomplish, gives background information on why the project is being conducted, the current status of the project and lists who is involved in the project. The project fact sheet will be submitted to the TCEQ within 60 days after receipt of fact sheet template from TCEQ. The fact sheet will be updated annually and submitted with the fourth quarter progress report. The fact sheet may be updated more often, as the project status changes. The fact sheet will be published on the GRANTEE's website after approval from the TCEQ Project Manager, which will be within 30 days of submission by the Grantee..

Measures of

Success: *Adherence to the TCEQ administrative requirements; timely completion and submittal of progress reports and deliverables.*

Deliverables:

- **Quarterly Progress Reports-** 6/15/2009; 9/15/2009; 12/15/2009
3/15/2010; 6/15/2010; 9/15/2010; 12/15/2010
3/15/2011; 6/15/2011; 8/31/2011
- **Reimbursement Forms-** 6/30/2009; 9/30/2009; 12/31/2009
3/31/2010; 6/30/2010; 9/30/2010; 12/21/2010
3/31/2011; 6/30/2011; 9/30/2011

- **Communication Plan-** 6/15/2009; 9/15/2009 12/15/2009
3/15/2010; 6/15/2010; 9/15/2010; 12/15/2009
3/15/2011; 6/15/2011; 9/15/2011;
- **Contractor Evaluation-** 8/31/2009; 8/31/2010; 8/31/2011
- **Project Fact Sheet-** 60 days from receipt of template after contract execution
6/15/2010; 6/15/2011

TASK 2: STAKEHOLDER ADVISORY GROUPS

Goal: *To lead the community-based component of the Watershed Protection Plan and Project by continued broadening and completing development of a balanced and diversified Stakeholder Advisory Group.*

Task 2.1 Stakeholder Advisory Group (SAG) Interface – Utilizing the existing partner network, which includes local officials, county government, state and federal government, special interest groups, environmental groups, developers, and citizens, SAG will provide advice on plan updates, QAPP amendments, scope of work, implementation phase, and community education. The group will determine guidelines for future SAG role, involvement, and responsibility for the Plan after completion of implementation phase. This group will work toward Community acceptance of project, promoting continuing education, support maintenance programs, best management practices, and development and of long term sustainability of watershed protection plan. Meetings will be held on a regular basis. This group will transition to assuming the leadership role in managing the watershed protection plan at the end of the project. Additional stakeholders may be added to the group as the need and opportunity arises.

Task 2.2 Stakeholder Advisory Group Meetings - Hold meetings with the Stakeholder Advisory Group to establish priorities and focus of work effort. Meetings will be held on a regular basis to provide status of work progress to the group and obtain input on next steps. Stakeholders will review and approve the plan prior to finalization.

Task 2.3 Dissemination of Information on Status of Project – Use Stakeholder Advisory Group meetings to disseminate project information held on a quarterly basis the first year and thereafter as warranted by developments in the project (at least twice a year), and at project conclusion. Town Meetings in English and Spanish will be held in print, radio, and television.

Measure of Success: Continuation of a community-based Stakeholder Advisory Group where information is disseminated, dialogue, and discussion of issues occurs, and feedback is received to and from the community.

Deliverables: The following will be submitted with quarterly reports if listed activity occurs within a particular quarter.

- Stakeholder group activities (e.g. announcements, agendas, minutes, or press releases)
- Changes to SAG operating structure
- Changes in SAG membership
- Official acceptance letter(s) from the Stakeholder Group approving the watershed protection plan.
- Education and outreach materials developed or utilized

- Attendance at local and regional meetings to communicate and obtain input on the project - describe activities in progress reports

TASK 3: WATER QUALITY MONITORING, BACTERIA SOURCE IDENTIFICATION, DATA COLLECTION, VALIDATION, AND DETERMINATION OF EFFECTIVENESS OF CORRECTIVE MEASURES

Goal: *To (1) further characterize indicator bacteria levels and possible sources pre-implementation and (2) to assess effectiveness of implementation practices.*

Task 3.1 **QAPP** – This project will be conducted under an amended QAPP for Phase I submitted to and previously approved by TCEQ. The QAPP was approved by stakeholders and draft QAPP provided to TCEQ on December 15, 2008. A planning meeting with TCEQ held approximately 30 days later to discuss their comments on the QAPP. The Final QAPP was approved shortly after this meeting.

Task 3.2 **QAPP Amendments and Updates** – QAPP will be revised as necessary for two sampling phases (FY09 and FY11). GRANTEE Project Manager will develop amendments as needed and submit to the TCEQ an updated Quality Assurance Project Plan (QAPP) with project specific data quality objectives consistent with the EPA QA/R5 format 45 days prior to the initiation of any data collection. TCEQ Project Manager will provide comment and approval on the QAPP within 30 days of receipt of the amended QAPP. Updates will on an annual basis if needed according to procedures in the QAPP.

Task 3.3 **Water Quality Monitoring Plan** – Water Quality Monitoring plan was previously approved by the stakeholders. There are several objectives of the monitoring component of this project. First, it will provide pre-and post implementation data for ascertaining the effectiveness of BMP measures. Secondly, it strives to further characterize the impairments (bacteria) through identification of the source of bacterial marker species. A detailed post-implementation monitoring is planned. This will enhance baseline data and provide comparative pre- and post-project data at a site that has had previous detections of indicator bacteria. The data will be used to further characterize the indicator bacteria levels and to determine the impact of multiple best management practices (BMPs) over time at the watershed scale for the Westfield Estates Watershed Protection Plan. H-GAC monitors two CRP sites immediately upstream and downstream of the watershed inflow in Halls Bayou. Since improvement in the impairment post-project may take up to two years to become evident, monitoring through the CRP program after the conclusion of the project is essential. A summary of the CRP results will be provided with annual reports throughout the course of the study.

Task 3.4 **Data Collection-** Sampling sites in the watershed and sampling times will correspond to those used in FSSI – Phase I study. Additional sites may be added if necessary.

Task 3.5 **Data Submittal-** H-GAC will submit the data to TCEQ at the conclusion of each sampling phase in report form, in the quarterly report following completion of the report and prior to use, or prior to presenting to stakeholders.

Ambient data collected quarterly under the CRP program, and the CRP QAPP will be pursuant to the CRP data reporting requirements.

Measure of Success:

Annual updates by the TCEQ and continuing conformance to QAPP provisions.

Deliverables: The following will be submitted with quarterly reports if listed activity occurs within a particular quarter.

- QAPP update and input (annually) – 30 days prior to end of the fiscal year
- Water quality data submittal (CRP) – annual
- Water quality monitoring non-conformances will be included in quarterly progress reports.

TASK 4: DETERMINATION OF MANAGEMENT MEASURES

Goal: *Identify and quantify need for correction of specific failing septic systems and non-human bacteria impairment sources through home surveys, characterization and prioritization of needs, qualification of homes for assistance, and further analysis to identify additional non-human bacteria impairment sources.*

Task 4.1 Survey Community – Approximately 700 homes in Westfield Estates will be inspected for status of water use and septic system issues.

Task 4.2 Failing Septic System Inspection - In-depth inspection and rehabilitation plan development for approximately 5-15% of the homes, estimated to be half of those needing remediation.

Task 4.3 Prioritization – Development of criteria for prioritization of homes in need of corrective action and completing ranking process.

Task 4.4 Qualification - Qualify residents for grant assistance based on need; Develop intake forms, including information on system, health issues of applicant (HIPPA regulations apply); agreements for maintenance and connection to public sanitary system if one becomes available; outreach for participation; collection and review of applicants; and development of action list.

Task 4.5 Description of needed management measures for specific sites to be included in the Watershed Protection Plan

Measure of Success: *Completion of survey, inspections, prioritization, qualification, and analysis.*

Deliverables: The following will be submitted with quarterly reports if listed activity occurs within a particular quarter.

- Inspection criteria for homes
- In-depth inspection and rehabilitation plan for homes
- Criteria for prioritization and qualification
- Prioritization of structural implementation

TASK 5: IMPLEMENTATION OF STRUCTURAL CORRECTIVE MEASURES

Goal: *Implement corrective measures addressing failing septic systems to decrease bacterial impairment of the bayou*

Task 5.1 **Corrective Maintenance of Certain Systems** - Addresses impairment (bacteria) issues in the community through pump-out and related maintenance for qualifying systems.

Task 5.2 **Construction** - Remediation, replacement, or installation of septic systems according to rehabilitation plan, priority, and applicant qualification for homes, or as many homes as funding allows.

Task 5.3 **Maintenance Program**- Work with partners and homeowners to ensure recipients of maintenance or constructed systems participate in maintenance agreement program.

Measure of

Success: *Failing septic systems returned to useful service or replaced, with participation in maintenance program.*

Deliverable: Updates on the implementation of structural corrective measures will be included in quarterly reports. The following will be submitted with quarterly reports if listed activity occurs within a particular quarter.

- Structural corrective measures implemented
- Corrective maintenance plans
- Construction design of the onsite-septic systems
- Maintenance Program plan and agreement form for the homeowner

TASK 6: DEVELOPMENT AND IMPLEMENTATION OF BEHAVIORAL MEASURES

Goal: *To reduce bacterial impairment resulting from non-human bacterial sources through development and implementation of best management practices.*

Task 6.1 **Develop BMPs** - With Community involvement develop BMPs for human and non-human sources (dogs, chickens, and other determined sources) contributing to bacterial impairment of the watershed.

Task 6.2 **Implementation of BMPs** – Based on stakeholder and community resident involvement as part of education and outreach program on septic system care and maintenance and behavioral modification for watershed activities contributing to non-human source contributions to bacteria levels.

Measure of

Success: *Development of BMPs and implementation through public outreach meetings.*

Deliverable: Activities on the Implementation of Behavioral Measures will be included in the quarterly report. The following will be submitted with quarterly reports if listed activity occurs within a particular quarter.

- BMPs Developed
- Education and outreach materials and activities

TASK 7: EDUCATION AND PUBLIC OUTREACH

Goal: *Develop an information/education component that will be used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing the NPS management measures proposed in the Westfield Estates WPP.*

- Task 7.1** **Update Westfield Estates WPP-** Preliminary description of education and outreach efforts included with WPP. These efforts will be expanded as the project moves forward to incorporate specific maintenance aspects necessary for long term success.
- Task 7.2** **Education on Septic Systems Maintenance and Failure-** Project promotion and education programs, bilingual in nature where possible. Examples may include manned tables at local businesses (e.g. grocery store), elementary school, faith-based organizations, water bills inserts, fliers, residents going door to door, and town meetings.
- Task 7.3** **Continuing Education-** Education (bilingual) on on-site septic system care including septic system brochures, with classes at community center; program transitioned to local stakeholder's advisory group management at end of project.
- Task 7.4** **Watershed Protection Plan Website** – Updates of Westfield Estates WPP on H-GAC's Watershed Protection Plan web page. To include maps; Phase I report; meeting information, notes and agenda; survey; and regular status updates on the implementation phase and WPP itself.
(<http://h-gac.com/westfield>)
- Task 7.5** **Education on Behavioral Best Management Practices**
Project promotion and education programs, bilingual in nature where possible. Examples may include manned tables at local businesses (e.g. grocery store), elementary school, faith-based organizations, water bills inserts, fliers, residents going door to door, and town meetings

Measure of Success: *Description of education and outreach in WPP, development of educational material, public participation in town meetings and continuing education classes and inclusion of WPP update on H-GAC's webpage.*

Deliverable: **Education and public outreach activities will be included in the quarterly report.**The following will be submitted with quarterly reports if listed activity occurs within a particular quarter.

- Education and outreach materials
- Webpage Updates

TASK 8: WATERSHED PROTECTION PLAN UPDATE

Goal: *Update the Westfield Estates WPP as it addresses bacterial impairment in the Westfield Estates watershed.*

Task 8.1: **Update Plan** – Update based on information collected under this project, including stakeholder-based input. Finalizing the Stakeholder Advisory Group, which will take responsibility for maintaining the plan, will not occur until the project "Wrap-Up meeting.

Measure of

Success: *Plan updated as needed.*

Deliverable: Activities for the quarter on the watershed protection plan updates will be included in the quarterly report. The following will be submitted with quarterly reports if listed activity occurs within a particular quarter.

- Westfield Estates WPP updated as needed.

TASK 9: INDICATORS TO MEASURE PROGRESS, AND EFFECTIVENESS OF IMPLEMENTATION EFFORTS POST-CONSTRUCTION

Goal: *To determine the effectiveness of remediation of a significant number of failing septic systems in a community on reducing bacterial impairment in the bayou.*

Task 9.1 Pre- and Post-construction Monitoring - Monitor selected sites in the watershed for levels of bacteria and source of contamination in accordance with sites and protocols in the QAPP.

Task 9.2 Survey Septic Violations - Determine level of septic system failure violations in community pre and post-construction.

Task 9.3 Quantify Impairment Reduction- Determine decrease of non-human bacterial sources in watershed by DNA analysis and indicator bacterial level reduction

Task 9.4 Continuing Maintenance- Maintenance of on-site septic systems through arrangement with partner Sunbelt Freshwater Supply District-Oakwilde and monitored by SAG until transfer to the permanent stakeholder's advisory group.

Measure of Success: *Collection and review of sampling data to assess success of failing septic system corrective measures on reducing bacterial impairment in the bayou. Inclusion of data in the final report.*

Deliverable: The following will be submitted with quarterly reports if listed activity occurs within a particular quarter.

- Monitoring, data collection, and analysis pre-a and post - implementation
- Septic systems maintenance agreements

TASK 10: FINAL REPORT

Goal: *To provide the TCEQ and the EPA with a comprehensive report on the activities and success of the pilot project conducted by the **Grantee Organization** during the course of this project.*

Task 10.1 Draft Final Report – Provide a comprehensive, technical report summarizing all project activities, findings, and the contents of all previous deliverables, referencing and/or attaching them as web links or appendices. This comprehensive, technical report will provide analysis of all activities and deliverables under this scope of work. The report may include the following information in acceptable format:

Title
 Table of Contents
 Executive Summary
 Introduction
 Project Significance and Background
 Methods
 Results and Observations
 Discussion
 Summary
 References
 Appendices

TCEQ Project Manager will review this report within 30 days of receipt and provide comment.

Task 10.2 Final Report revising the Draft report to address comments provided by the TCEQ Project Manager.

Measure of Success: *Acceptance of the report by the TCEQ.*

Deliverables:

- **Final Draft Report**– 7/15/2011
- **Final Report**- 8/31/2011

Deliverables Due Dates

Schedule of Deliverables Based on Project Funding/Initiation of February 17, 2009. Schedule and Scope of Work will be amended accordingly if Project Funding/Initiation is delayed.

Task No.	Deliverable	Due Date
	Post Award Meeting	To be determined
1.2	Quarter Three Progress Report FY 09	6/15/09
1.2	Quarter Four Progress Report FY 09	9/15/09
1.2	Quarter One Progress Report FY 10	12/15/09
1.2	Quarter Two Progress Report FY 10	3/15/10
1.2	Quarter Three Progress Report FY 10	6/15/10

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1.2	Quarter Four Progress Report FY 10	9/15/10
1.2	Quarter One Progress Report FY 11	12/15/10
1.2	Quarter Two Progress Report FY 11	3/15/11
1.2	Quarter Three Progress Report FY 11	6/15/11
1.2	Quarter Four Progress Report FY 11	8/31/11
1.3	Quarter Two Reimbursement Request FY 09	3/31/09
1.3	Quarter Three Reimbursement Request FY 09	6/30/09
1.3	Quarter Four Reimbursement Request FY 09	9/30/09
1.3	Quarter One Reimbursement Request FY 10	12/31/09
1.3	Quarter Two Reimbursement Request FY 10	3/31/10
1.3	Quarter Three Reimbursement Request FY 10	6/30/10
1.3	Quarter Four Reimbursement Request FY 10	9/30/10
1.3	Quarter One Reimbursement Request FY 11	12/31/10
1.3	Quarter Two Reimbursement Request FY 11	3/31/11
1.3	Quarter Three Reimbursement Request FY 11	6/30/11
1.3	Quarter Four Reimbursement Request FY 11	9/15/11
1.4	Quarterly conference call with TCEQ	4/15/2009
1.4	Quarterly conference call with TCEQ	7/15/2009
1.4	Quarterly conference call with TCEQ	10/15/2009
1.4	Quarterly conference call with TCEQ	1/15/2010
1.4	Quarterly conference call with TCEQ	4/15/2010
1.4	Quarterly conference call with TCEQ	7/15/2010
1.4	Quarterly conference call with TCEQ	10/15/2010
1.4	Quarterly conference call with TCEQ	1/15/2011
1.4	Quarterly conference call with TCEQ	4/15/2011
1.4	Quarterly conference call with TCEQ	7/15/2011
1.5	Contractor Self-Evaluation	8/31/09
1.5	Contractor Self-Evaluation	8/31/10
1.5	Contractor Self-Evaluation	8/31/11

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1.6	Project Fact Sheet	60 days after receipt of template after contract initiation
1.6	Project Fact Sheet Update	8/31/09
1.6	Project Fact Sheet Update	8/31/10
1.6	Project Fact Sheet Update	8/31/11
10.1	Draft Final Report	7/15/11
7.2, 10.2	Final Report	8/31/11

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