

Review of the Frog Bayou Watershed Based Plan

GENERAL COMMENTS:

Overall, the Frog Bayou WMP is a good holistic characterization of the watershed and the water quality issues that identifies potential threats and locations in need of prevention/restoration practices. The overall goal of 10% sediment reduction (and accompanying nutrient reductions) is feasible, especially since the waterbody is not currently impaired. This proactive approach puts this WMP in the unofficial category of a "Protective Watershed Based Plan" which EPA Region 6 and even national EPA are eager to see more examples of from our states. Along with the Lee Creek WMP, this plan gives ANRC two protective watershed based plans. The plan is data rich and considers loadings at both base and storm flow levels. Additionally, identifying loadings on a per acre basis is useful for prioritizing and ranking NPS hotspots at the subwatershed scale. This review document contains specific comments for all 9 of EPA's Key Elements of watershed planning in red. The plan is clear and well written and I find that it meets the 9 Elements so this plan is officially accepted. If you have any questions, please contact:

Brian Fontenot
EPA Region 6
NPS Program Manager
Fontenot.brian@epa.gov

Element A

An identification of the causes and sources or groups of similar sources that will need to be controlled to achieve the load reductions estimated in this watershed based plan (and to achieve any other watershed goals identified in the watershed based plan), as discussed in item (b) immediately below. Sources that need to be controlled should be identified at the significant subcategory level with estimates of the extent to which they are present in the watershed (e.g., including a rough estimate of the number of cattle per facility; Y acres of row crops needing improved nutrient management or sediment control; or Z linear miles of eroded stream-bank needing remediation).

Element A serves as the cornerstone for the logical development of the remaining eight elements. Good sampling data collected through an appropriate water quality monitoring program, field surveys, and land-use characterization, are necessary to identify and quantify the sources of pollution. The data serve as a baseline from which to determine whether water quality goals have been met. Sufficient time and funds should be allocated to develop good information and data before moving forward to developing element B.

A. Causes/Sources of Pollution Identified

Causes/sources of pollution that need to be controlled to meet watershed goals should be identified.

- a. Are sources of pollution identified, mapped and described? Are causes identified?
Yes, pollution sources and their causes are identified, mapped, and described.

- b. Are loads from identified sources quantified?
Yes
- c. Are there any sub-watershed areas? If so, are the sources broken down to the sub-watershed level?
Yes and yes
- d. Are data sources, estimates and assumptions sufficient, cited and verifiable?
Yes, the data comes from the ongoing FSU monitoring program and USGS data as well as data collected specifically for this plan.
- e. Are existing data gaps identified? Is there a plan to address data gaps? Are data gaps significant enough to delay implementation?
No specific data gaps are identified, but the adaptive management review process should address any data gaps that are identified in the future. As this is a protective WBP, it is likely that any existing data gaps are not significant enough to delay implementation.

Element B

An estimate of the load reductions expected for the management measures described under paragraph (c) below (recognizing the natural variability and the difficulty in precisely predicting the performance of management measures over time). Estimates should be provided at the same level as in item (a) above (e.g., the total load reduction expected for row crops; eroded streambanks, etc.).

Numerous models are available to determine which BMPs are more appropriate for reducing pollutant loads and to aid in selecting locations most likely to achieve greatest load reductions. All models have limitations, but the utility of models is optimized when good data are used. Sufficient allocation of time, resources and funding are necessary to achieve this element of the WBP before moving to Element C. The likelihood of achieving water quality improvements and standards attainment relies heavily on Element B.

B. Expected Load Reductions for Solutions Identified

- 1. Are expected load reductions analyzed to ensure water quality standards and/or other goals will be achieved?
As this is a protective WBP, the water quality standards are already met. The plan proposes to maintain and improve water quality further by achieving a 10% reduction in sediment (and associated nutrient) loadings.
- 2. Are expected load reductions linked to a pollution cause/source identified in Element A?
Yes
- 3. Is the complexity of modeling used appropriate for the watershed characteristics, the scale and complexity of the impairment, and the extent of water quality data identified in Element A?
Yes

4. Is the basis of the load reduction effectiveness estimate(s) thoroughly explained?
Yes

5. Are estimates, assumptions, and other data used in the analysis cited and verifiable?
Yes

Element C

A description of the NPS management measures that will be implemented to achieve the load reductions estimated under paragraph (b) above (as well as to achieve other watershed goals identified in this watershed based plan), and an identification (using a map or a description) of the critical areas in which those measures will be needed to implement this plan.

Over the years, much research has been documented to provide the information needed to identify and target needed BMPs. If targeted at key land uses and parcels of land that are contributing significant pollutant loadings to the streams, these BMPs should achieve the load reductions needed to attain water quality standards. This is contingent on the thorough development of elements A and B. Element C is critical to achieving the load reductions needed in the waterbody to attain water quality standards. Waterbody load reductions will be dependent on the use of sufficient water quality data and appropriate modeling for determining BMP type and location.

C. Nonpoint Source Management Measures Identified

1. Does the plan list and describe BMPs that will address the causes/sources of pollution identified in Element A?
Yes

2. Are the expected BMPs mapped in the watershed? Have critical and priority areas been identified?
Individual BMP locations in the watershed are not mapped, however critical and priority areas are identified, described, and mapped. BMPs specific to each priority area are described and their exact placement will occur as the plan is implemented.

3. Is the rationale given for the selection of BMPs? Are selection methods documented?
BMPs were selected based on their efficacy in reducing pollutant loads from specific sources in the sub watersheds.
 - a. Are BMPs applicable to the pollutant causes and sources? Are they feasible and can they be linked to load reductions in the impaired waterbody?
Yes and yes

4. In selecting and siting the BMPs at the sub-watershed level, are the estimates, assumptions and other data used in this analysis technically sound?

Yes

Element D

An estimate of the amounts of technical and financial assistance needed, associated cost, and/or the sources and authorities that will be relied upon, to implement this plan. Expected sources of funding, States should consider Section 319 programs, State Revolving Funds, USDA's EQIP and CRP, and other relevant Federal, State, local and private funds to assist in implementing this plan.

Thorough characterization and understanding of the baseline conditions of the watershed – as defined and identified in elements A-C – will provide the necessary basis for determining the appropriate technical and financial needs to support the implementation actions of the watershed plan. Support from various funding sources will leverage 319 funds and increase the likelihood for success. WBPs should describe available funding sources and how they will be secured. Any leveraging of funding and collaboration concerning technical and financial aspects are a plus and should be included.

D. Technical and Financial Assistance

1. Estimate of Technical Assistance Needed

- a. Are sources of technical assistance included?

Yes

- b. Does the WBP describe the anticipated involvement of assisting agencies, watershed groups or volunteers?

No. In future updates of this plan, this should be addressed.

- c. Are additional technical assistance needs identified?

No

2. Estimate of Financial Assistance Needed

- a. Is a detailed cost estimate included?

Yes

- b. Does the cost estimate include a reasonable estimate of all planning and implementation costs?

Yes

- c. Are all potential funding sources listed? Is there an estimated contribution from each source?

While not exhaustive, many funding sources are listed. No, there is no estimated contribution from each source. This should be addressed in any future updates of this plan.

Element E

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 that will be implemented.

Elements A-C are critical components to provide the public with the correct and credible information needed to strengthen stakeholder support throughout the watershed. This element has three aspects: 1) generate sufficient information and support to allow voluntary implementation by targeted land-users; 2) understanding and support to maintain BMPs after the project is completed, when loadings are determined to be achieved and water quality attained; and (3) generate a stakeholder system that garners sufficient local input in the development of the WBP from the inception to conclusion of the effort.

E. Education/Outreach

1. Does the WBP identify relevant stakeholders?

Yes

2. Does the WBP educate the public? Are there mechanisms to keep the public informed as the WBP is implemented?

The plan does educate the public and includes continued meetings, flyers, signs, interviews, and education/outreach opportunities to keep the public informed.

3. Does the WBP include methods to engage stakeholders and landowners in continued participation and implementation?

Yes

4. Was there active and diverse public participation in the development of the plan?

Yes, it does appear that public input and participation went into the development of this plan.

5. Do the education components emphasize the need to achieve water quality standards?

This is unclear. Despite the fact that Frog Bayou currently meets standards, the education component of this plan should definitely emphasize the need to achieve (or in this case maintain) water quality standards.

6. Does the education process prepare stakeholders for continued proper operation and maintenance of BMPs after project(s) is completed?

Yes, the plan does mention outreach on the use of BMPs and their maintenance.

Element F

A schedule for implementing the NPS management measures identified in this plan that is reasonably expeditious.

Knowledge of where BMPs need to be applied and whether funds are available, either through local funds, grants or loans, is critical to systematic and expeditious implementation in targeted areas. A detailed schedule should be developed and documentation should be provided on how the watershed group will adhere to its schedule. Credibility of the process depends on the thorough schedule for tasks and milestones. An estimate of when WQS will be achieved is important for inclusion, even if that date extends beyond the project period.

F. Implementation Schedule

1. Does the schedule/timeline present projected dates for the development and implementation of the actions needed to meet the goals of the WBP?
Yes
2. Is the schedule appropriate based on the complexity of the impairment and the size of the watershed?
Yes

Element G

A description of interim, measurable milestones for determining whether NPS management measures or other control actions are being implemented.

This measure is closely tied to element F – interim milestones will ensure BMPs are implemented on schedule, and in the most critical areas of the watershed, influencing water quality. Early assessment of control measure effectiveness provides a mechanism for assessing efficient use of funds and gauging the need to utilize adaptive management to adjust implementation. The level of detail for this element will be contingent on the thorough understanding and characterization of the watershed and targeting the appropriate BMPs at the locations within the subwatershed to achieve load reductions in the waterbody. This is also essential for determining which corrective actions and measures will be needed if the current plan is not working.

G. Milestones Identified

1. Are the identified milestones measurable and attainable?
Yes
2. Does the WBP identify incremental milestones with anticipated completion dates?
No, but the incremental milestones are clearly tied to the implementation schedule that does include dates. Future updates to this plan should put completion dates on the incremental milestones as well to increase clarity.
3. Does the WBP include progress evaluations and possible “course corrections” as needed?
Yes
4. Are the milestones appropriately linked with the proposed schedule in Element F?
Yes

Element H

A set of criteria that will be used to determine whether loading reductions are being achieved over time and substantial progress is being made towards attaining water quality standards and, if not, the criteria for determining whether this watershed based plan needs to be revised or, if a NPS TMDL has been established, whether the NPS TMDL needs to be revised.

Implementation should be linked with project expectations. Several components relating to element H could be included in the WBP, including (a) are timelines being met for implementation; (b) are WQS or surrogate measures being met over time; and (c) is a decision process in place to revise the work plan if progress has not been adequate. Element H is critical to gauging WBP effectiveness. The criteria for determining loadings for elements A and B will be reflected in this element.

H. Load Reduction Evaluation Criteria

1. Are criteria measureable and quantifiable?
Yes
2. Do the proposed criteria effectively measure progress towards the load reduction goal?
Yes
3. Are the types of data to be collected identified and appropriate models described?
Yes
4. Are target achievement dates identified?
Yes, in the implementation schedule
5. Does the WBP include a review process to determine if anticipated reductions are being met?
Yes
6. Does the WBP include criteria to determine the need for revisions or mid-course corrections if adequate progress is not made towards the implementation schedule?
Yes
7. Is there a clear commitment to adaptive management in the WBP?
Yes

Element I

A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under item (h) immediately above.

This component is very closely linked to elements A, F, G and H. The evaluation component of BMP implementation is necessary to have credible data and information for judging the effectiveness in achieving the load reductions through modeling and water quality sampling. The element should discuss baseline (before), project-specific (during) and post-project (after) monitoring. The monitoring design should be as streamlined as possible, yet rigorous enough to conclusively assess water quality conditions. Accepted methods for monitoring include use of trends analysis, upstream/downstream comparisons and paired watershed designs. This final element provides the water quality data that will be used in supporting the criteria identified in Element H above. While these two elements are complimentary, the data collected under this element will be used to assess BMP effectiveness in reducing loads to the waterbody.

I. Monitoring

1. Explanation of how monitoring fits into Plan
 - a. Does the WBP include a description of how monitoring will be used to evaluate the effectiveness (in reducing loads to the waterbody) of the implementation efforts?
Yes, the ongoing FSU monitoring program will be supplemented by additional monitoring to evaluate the plan's effectiveness.
 - b. Will the monitoring plan effectively measure the evaluation criteria identified in Element H?
Yes
 - c. Does the WBP include a routine reporting element in which progress and methodology are presented?
Yes
2. Monitoring Methods
 - a. Are the parameters appropriate?
Yes
 - b. Is the number of sites adequate?
Probably, but this can be adjusted as the plan moves forward if more data are needed.
 - c. Is the frequency of sampling adequate?
Probably, but this can be adjusted as the plan moves forward if more data are needed.
 - d. Is the monitoring tied to a quality assurance plan?
Yes it will be
 - e. Will the monitoring method effectively link the load reduction from implementation to improvements in the waterbody?
Yes

**Appendix
Watershed Based Plan Review Summary
for:**

State	Arkansas
Watershed	Frog Bayou
Region	Region 6
Date	September 2015
Author(s) and Organization	GBMc & Associates
Reviewer(s)	Brian Fontenot

Pollutants Of Concern 303(d) listing	N/A (plan focuses on sediment, but there is no impairment)
Land Uses	Developed, open water, forest, pasture, wetlands, crops
Targeted Sources of Pollution	Landfill, cattle, pastures, streambank erosion, septic tanks, unpaved roads
Watershed Size/HUC	271 sq miles/HUC-11110201
Model Used	