

## Review of the Rio San Antonio Watershed Based Plan

### GENERAL COMMENTS:

Overall, the Rio San Antonio watershed based plan (WBP) has a good foundation and with some revisions will be a good WBP. The temperature impairment is well documented and supported by an NMED TMDL. The plan does mention dissolved oxygen and bacteria impairments as well, but does not flesh out the steps needed to fully identify the causes/sources, load reductions, and management measures to address these impairments. The plan outlines activities that should serve to achieve load reductions for the temperature impairment.

Specifically, the WBP needs more detail in Element A (sources), **Element C (management measures)**, **Element E (outreach)**, **Element G (milestones)**, **Element H (criteria)**, and **Element I (monitoring)**. Additionally, the Table of Contents appears to have a formatting error as several content bullets have the text “Error! Bookmark not defined.” The plan should correct this formatting error. See below for more specific comments. This review document contains comments/revisions for all elements of the WBP in red and should be used as a guide to revise the plan to meet EPA’s nine key elements of watershed planning.

The plan is clear and well written and we expect that incorporating some additional information will further increase the quality of the plan. Please see the comments embedded in this review document and revise the WBP to address them. We anticipate acceptance of this plan if these comments can be addressed and additional information is included. If you have any questions, please contact:

Brian Fontenot  
EPA Region 6  
NPS Program Manager for the state of New Mexico  
[Fontenot.brian@epa.gov](mailto: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, the sources of pollution leading to the temperature impairment are identified as grazing, flow modification, loss of riparian vegetation, and streambank alteration. While these sources do contribute to temperature, the locations of each source should be characterized in the watershed to more effectively target BMPs and identify priority restoration areas at the subwatershed scale. The plan currently has a map that identifies the individual subwatershed reaches and monitoring stations and some reaches are defined as priority areas due to low canopy cover, but exact areas where streambank destabilization, grazing, and riparian vegetation repair BMPs are needed should be included. A very useful way to show this is to create a map identifying where the NPS sources are located in the watershed (e.g. grazing areas in each reach).**

**The plan does not address the sources of the dissolved oxygen (DO) and bacteria impairments. Since there is no TMDL for these impairments, the plan defines them as out of the scope. However, EPA views WBPs as holistic, living documents so we would like to see some plan to address the data gaps regarding DO and bacteria causes/sources to be included in a potential future update to the WBP.**

- b. Are loads from identified sources quantified?

**Overall loads for temperature for each subwatershed reach are included but are not broken down by loadings from each individual source. Understanding the loading from individual sources is crucial in the planning process to allow for effective targeting of BMPs and effectiveness monitoring. While the overall loading to a watershed is useful information, if the majority of loadings come from grazing pressure and the majority of BMPs do not focus on mitigating**

grazing pressure, then the overall loadings in the watershed will not be reduced as effectively. This may be difficult to accurately quantify for a temperature impairment however, so the current loading information is sufficient for this WBP. Loads for DO are given, but not connected to sources and no loads are given for the bacteria impairment and we would like to see a plan to address these data gaps in a potential future update to this WBP,

- c. Are there any sub-watershed areas? If so, are the sources broken down to the sub-watershed level?

Yes, the plan lists multiple reaches in the watershed. However, the sources are not identified to sub-watershed level and we would like to see more fine scale characterization of sources and their location. Once the sources are identified, described, and mapped at the sub-watershed level, this element will be greatly strengthened.

- d. Are data sources, estimates and assumptions sufficient, cited and verifiable?

The plan uses the NMED TMDL so the data sources are sufficient. The estimates are based on the SSTEMP model which is routinely used and a good choice.

- e. Are existing data gaps identified? Is there a plan to address data gaps? Are data gaps significant enough to delay implementation?

No. Existing data gaps for DO and bacteria are identified, but the only impairment with a TMDL that is addressed by this WBP is temperature. The DO and bacteria gaps are significant and while they may be beyond the scope of this initial version of the WBP, the plan should be holistic in nature and address all of the water quality impairments as the plan matures. We suggest that the data gaps for these impairments be investigated and a brief plan be devised to address the data gaps in the future (e.g. how will the necessary data be obtained and from what sources, what resources will be required to address the data gaps, etc.). This need not be an exhaustive description of data gaps, but just to ensure that the plan can grow in the future if new data sources are necessary or become available. For example, since there is little information on DO and bacteria, the plan to address this data gap would include a brief description of steps to take to gather data to address these impairments in the future.

## **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?

Yes, the load reductions for temperature are expected to meet water quality standards if they are realized.

2. Are expected load reductions linked to a pollution cause/source identified in Element A?

Yes, load reductions are linked to pollutant sources identified in element A, but the plan needs to provide sub-watershed scale characterization for this element and for element A (see above comments).

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. The SSTEMP model is routinely used in watershed planning.

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, the plan lists BMPs that should address the temperature impairment.

2. Are the expected BMPs mapped in the watershed? Have critical and priority areas been identified?

Not entirely. The plan includes a map showing where the reaches are and reaches that have the highest temperature reductions necessary are characterized as priority areas, but this is at a broad scale. BMPs are located by reach, but a map showing more fine scale location of NPS sources and potential BMP locations is recommended. If the plan is revised to include a description and mapping of all potential NPS sources as suggest above, this could be a starting point to identify critical and priority areas for BMP placement. For example, the map could be modified to show where the grazing sources are contributing to the loadings and then expected BMPs could be overlaid on this critical (priority) area. The placement of BMPs need not be exact, but location of BMPs at the subwatershed scale is crucial to a successful restoration plan. The identification of critical and priority areas for load reductions via BMP implementation are vital to satisfying this element of an effective watershed based plan.

3. Is the rationale given for the selection of BMPs? Yes, the plan provides information such as the price per unit, potential funding source, technical assistance, permits, and responsible party. This is all very useful information and is presented in a very clear fashion. Are selection methods documented? No. Were selections made from stakeholder input or literature search? We suggest that providing citations that demonstrate BMP effectiveness be included. Many of these measures can be found in NRCS technical guides for example.

- 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, the BMPs are feasible and appropriate for the impairment. Once the plan is revised to include more fine scale characterization of sources and their location in the watershed, the BMPs can be accurately linked to their targeted load reductions at the sub-watershed scale.

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, but more characterization of how BMPs were selected and sited at the sub-watershed scale is needed. Otherwise, the estimates, assumptions, and other data are technically sound.

#### **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. The plan include specific sources of technical assistance for each management measure in a table. Most of the sources are listed in acronym format. We would like the acronyms to be defined so the reader can see the full names of the technical assistance sources
  - b. Does the WBP describe the anticipated involvement of assisting agencies, watershed groups or volunteers?

No, the plan mentions responsible entities, but doesn't detail their anticipated involvement and this should be included.
  - c. Are additional technical assistance needs identified?

No. This could also relate to the data gaps section mentioned earlier. It is likely that additional technical assistance will also be needed to address DO and bacteria data gaps and this should be outlined in the plan.
2. Estimate of Financial Assistance Needed
  - a. Is a detailed cost estimate included?

Yes, the plan includes a detailed cost estimate.
  - 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?

No, the plan does not include an exhaustive list of potential funding sources for each management measure, but the plan does not include an overall estimated contribution from each potential funding source.

#### **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?

Relevant stakeholders are only identified in very broad terms. There should be a section that specifically details all of the various stakeholders involved in the development and maintenance of the plan.

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

Yes, the outreach section lists meetings and an email list. However, this portion of the plan needs more detail. How are landowners going to be targeted? Are the stakeholder meetings open to the public? How will they be advertised? What kind of content will be presented? Will stakeholder input be used in adaptive management and course correction?

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

Unclear. The plan includes some training workshops, but in general the outreach section needs more detail and a better description of how outreach targets will be identified, what the communication methods will be, how progress will be measured, and a clear description of continued participation in BMP maintenance and plan development in the future.

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

The plan mentions stakeholder involvement in plan development, but provides no detail about how this occurred. The plan should provide a more detailed list of stakeholders and what their input and role in plan development was. Did this involvement come from one or more public meetings? An email list? Targeted door to door interviews? The plan needs more detail in this area.

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

The plan does not mention this as planned content for education and outreach is not detailed. There needs to be more detail about how the public will be educated and the need to achieve water quality standards should be the central focus of outreach activities.

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

7. The plan does mention this briefly, but it is not detailed. There needs to be more detail about how the public will be educated about maintenance of BMPs.

## **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, the milestones are likely attainable, and the plan has measurable trackable milestones with incremental milestones that have anticipated completion dates. If milestones are not met, then corrective action and adaptive management could be used to get the plan back on track, but there is no mention of adaptive management or course correction procedures.**
2. Does the WBP identify incremental milestones with anticipated completion dates?  
**See above comment**
3. Does the WBP include progress evaluations and possible “course corrections” as needed?

No. The plan needs to include what actions will be taken if progress is not being made. Additionally, the plan should describe who will make these evaluations and who will determine the appropriate course corrections/adaptive management measures.

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. The criteria listed are appropriate for the temperature impairment. However, there appear to be no criteria for DO and bacteria and a plan to address this should be included in the discussion of data gaps.
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. This should be linked with the identification of loadings and the monitoring component as well.
4. Are target achievement dates identified?  
Yes at a broad scale.
5. Does the WBP include a review process to determine if anticipated reductions are being met?  
No. See related comments in milestones section. This process should be detailed and included who will evaluate, how they will evaluate, how often they will evaluate, and what course correction measures will be taken.
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?  
No.

7. Is there a clear commitment to adaptive management in the WBP?  
**No adaptive management strategies or actions are listed and this definitely needs to be included.**

## **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?  
**The plan provides a very brief description of how monitoring will be used to identify load reduction effectiveness.**
  - b. Will the monitoring plan effectively measure the evaluation criteria identified in Element H?  
**This is unclear as the The plan includes brief descriptions of baseline monitoring, pre and post BMP monitoring, and what parameters were/are/will be monitored. These are acceptable approaches, but the plan needs far more detail as to how and when these activities will take place and who will conduct them. How often will sampling happen? Will sampling only take place at monitoring stations or will other sites be incorporated if needed? Who will primarily conduct the sampling? Are there any specialized trainings or certifications needed? What are the plans for quality assurance and control? How will monitoring data be curated and reported? Are there seasonal or flow related factors that need to be considered? Will bacteria be monitored in the future? Is photo point monitoring an effective measure of temperature reduction or is it being used to gauge overall watershed health? This type of information is important to include in the monitoring portion of the WBP as it is the only way to measure whether or not the activities are leading toward water quality restoration.**
  - c. Does the WBP include a routine reporting element in which progress and methodology are presented?

No and this needs to be included.

2. Monitoring Methods

a. Are the parameters appropriate?

They likely are, but the plan needs more information about bacteria and DO parameters in addition to the currently listed parameters.

b. Is the number of sites adequate?

Unclear, the plan needs more information.

c. Is the frequency of sampling adequate?

Unclear, the plan needs more information.

d. Is the monitoring tied to a quality assurance plan?

Unclear. The temperature data appears to be related to a PQAPP but monitoring for other parameters and post BMP effectiveness monitoring needs to be tied to its own EPA approved QAPP. The WBP should factor in how the monitoring will be tied to a QAPP and when/who will write it.

e. Will the monitoring method effectively link the load reduction from implementation to improvements in the waterbody?

Unclear, the plan needs more information.

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

<b>State</b>	New Mexico
<b>Watershed</b>	Rio San Antonio
<b>Region</b>	6
<b>Date</b>	1/21/14
<b>Author(s) and Organization</b>	Chimayo Conservation Corps and Rocky Mountain Ecology
<b>Reviewer(s)</b>	Brian Fontenot, EPA Region 6

<b>Pollutants Of Concern 303(d) listing</b>	Temperaure (also DO and bacteria)
<b>Land Uses</b>	Grazing, riparian vegetation loss, streambank alteration, flow alteration
<b>Targeted Sources of Pollution</b>	Canopy cover loss
<b>Watershed Size/HUC</b>	HUC: 130100050301 and HUC: 130100050302
<b>Model Used</b>	SSTEMP