Appendix G – Response to Public Comments

Comments were received from:

(a) Marla Peek, Oklahoma Farm Bureau (OKFB)
(b) Larry Cofer, Oklahoma Dept. of Wildlife Conservation (ODWC)
(c) Oklahoma Water Resources Board (OWRB)
(d) Shelly Morgan, Lake Texoma Association (LTA)
(e) U.S. EPA Region 6 (EPA)
(f) Oklahoma DEQ Staff (DEQ)

This key is used in the summary of comments below to identify the commenter. DEQ responses to comments are indicated in *italics*.

1. (OKFB) Is the probabilistic monitoring used for actual waterbody impairment determination or is it just used to predict trends?

   DEQ Response: *The probabilistic study results are not used for impairment determinations. The study results are only used to present an estimate of the overall condition of the waters in the state and to indicate water quality trends. The water quality data collected for a specific monitoring site is only used to make assessment determinations on that specific waterbody. No changes were made as a result of this comment.*

2. (OKFB) On the 303(d) report, is there somewhere it is reported the date and type of monitoring data that was used to put it on the list? I saw that for the 305(b) but not the 303(d).

   DEQ Response: *The date and type of monitoring data used for assessment is not provided for the 303(d) list. The dates on the 305(b) list are a projected date for the future monitoring activities on the specified waterbody. The column heading in Appendix B has been changed to "Next Monitoring Date" to provide clarification.*

3. (OKFB) On page 8 of the synopsis, 3rd paragraph, last sentence it says, "Historical data and assessments (prior to May 1, 2008) were only used when insufficient current data was available to assess a waterbody." Any idea how old the oldest data is that was used to make water quality impairment determinations and how can that data be located?

   DEQ Response: *The oldest data used in the 2014 Integrated Report is from 1999. The only way to determine the age of data used for assessments is to look at the monitoring data for each individual waterbody. We are currently working on a project to develop a water quality database to query this type of information. No changes were made to the report as a result of this comment.*

4. (OKFB) Is there any explanation of why the OWRB and the Conservation Commission don't use the same monitoring protocol for fish and bug sampling?

   DEQ Response: *The Oklahoma Conservation Commission and the Oklahoma Water Resources Board use the same biological assessment protocols with the exception of reach lengths for large wadeable, as well as boatable rivers. OWRB uses longer reach lengths to adjust for the larger streams. Due to their larger size, these systems require a method of setting variable reach lengths to account for waterbody size. No change was made as a result of this comment.*

5. (ODWC) Can you tell me what this means: "Wildlife other than waterfowl" among the potential pollution sources?

   DEQ Response: *"Wildlife other than waterfowl" refers to waste produced by animals other than waterfowl, domesticated animals, and livestock.*

6. (OWRB) The Lower Illinois River (segment number OK121700010010_00) needs to be listed for Dissolved Oxygen under cause category 5a. The segment has been monitored at multiple locations from 2012-2014 with multiple occurrences of DO below 2.0 mg/L.

   DEQ Response: *The requested change has been made to segment OK121700010010_00 in the final version of the 2014 Integrated Report submitted to EPA. This segment has been added to the 2014 303(d) list for Dissolved Oxygen.*

7. (LTA) Please see the attached comments and recommendations for the 2014 Water Quality Integrated Report on behalf of the Lake Texoma Association. (This letter is included in Appendix G.)

   DEQ Response: *Thank you for your comments and concerns regarding the Upper Red River, Washita River, and Lake Texoma watersheds. These comments and concerns will be shared with the Oklahoma Water Resources Board, the Oklahoma Conservation Commission, and other agencies involved with water quality standards, the NPS program, and TMDL development. No changes to the report were made as a result of these comments.*

8. (EPA) We request that the delisting justifications provided for minerals identify the mean of collected samples, the yearly mean standard being applied, the number of exceedances of the sample standard, and the sample standard being applied. This will help us (and the interested public) identify which criteria in Chapter 45, Appendix F are being used and the observed findings. This was done for a few waters, including that provided for sulfates in Red River (OK311100010190_20) on page 8 of the delisting justification document. We request that this information be provided for the following waters/pollutants:

   a) Delaware Creek (OK121300010150_00) - Chloride
   b) Little Cabin Creek (OK121600060080_00) - Total Dissolved Solids
   c) Spring Creek (OK310830040010_00) - Total Dissolved Solids
   d) Dry Creek (OK311200000080_00) - Chloride
   e) Sweetwater Creek (OK311510020120_00) - Total Dissolved Solids
   f) Fish Creek (OK311800000130_00) - Chloride **and** Total Dissolved Solids
   g) Crooked Oak Creek (OK520520000150_00) Total Dissolved Solids

   DEQ Response: *The delisting justifications in Appendix D of the Integrated Report have been updated to provide the requested information.*

9. (EPA) The following waters are said to be attaining WQS based on criteria calculated for Station 1505 on Segment 621000 in Appendix F. Shouldn't have criteria from Segment 621010 been used. (Arkansas River, Salt Fork – OK621010010010_00)

   DEQ Response: *This segment of Arkansas River, Salt Fork is located in both Segment 621000 and Segment 621010. The monitoring station used for assessment is located below the Great Salt Plains Lake dam is Segment 621000. Since the monitoring site is the same location as Station 1505, the criteria published in Appendix F for Station 1505 was used for assessment. No changes were made as a result of this comment.*

10. (EPA) Please provide a rationale for delisting Willow Creek (OK520610010080_00) for turbidity. The draft delisting justification table includes an entry for E. coli, which was not listed as a pollutant in this water in 2012, but none is provided for turbidity.

    DEQ Response: *The delisting justification for Willow Creek (OK520610010080_00) has been updated in Appendix D of the 2014 Integrated Report. Nineteen turbidity samples were collected during the assessment period with no samples exceeding the criterion.*

11. (EPA) We request that ODEQ provide Region 6 a list of any waters added to, or removed from, the finalized list that is ultimately sent to EPA after all public comments are considered. This will allow us to focus only on those waters moved on or off the list in our final review and to update our own internal list tracking system.

    DEQ Response: *The requested information will be provided to EPA Region 6 at the time the final version of the 2014 Integrated Report is submitted to EPA.*

12. (DEQ) During review of data for permit applications and TMDL development, DEQ staff noticed the following waterbody assessments needing corrections:

    OK121600040060_00 Tar Creek – This segment should be delisted for Enterococcus. The geometric mean of the most recent 11 samples is 112.6 cfu/mL, which is below the SBCR criterion for Enterococcus of 165 cfu/mL..

    OK410200010200_00 Little River – The turbidity samples for this segment were collected in a mixing zone. These samples are not valid for assessment.

    DEQ Response: *These changes have been made to the final version of the 2014 Integrated Report.*

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Joe A. Long, Water Quality Division
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January 22, 2015

SUBJECT: Draft Water Quality 2014 Integrated Report

Thank you for the opportunity to provide comments and recommendation regarding the Draft 2014 Integrated Water Quality report. We understand the focus of the draft report was on assessment and reporting the status of state water bodies. We appreciate the report and actions to inform and protect the public including swimming and fish communities as well as public water supplies for these areas.

We are also concerned about the "cumulative effects" of excessive pollution and nutrients such as but not limited to phosphorous and nitrogen that are being generated throughout the total Red River River Basin and watershed by point and non-point sources of pollution. As you are aware, Lake Texoma receives a significant amount of the "cumulative pollution" flowing from the 48,000 square mile watershed consisting of the Upper Red River, Washita River and the Lake Texoma watersheds. The TMDL's may be evaluated and set to meet segment standards but when pollutants from multiple segments and sources are added it often results in significantly impaired main bodies of lakes and streams. The problems are worsened due to lack of monitoring and missing data including phosphorous on several segments of the Lake Texoma watershed including the lake.

Most professionals and several studies have documented excessive nutrients in Lake Texoma and its inflows which are causing Harmful Alga Blooms (HAB's) such as blue-green and possibly golden algae and resultant critical public health, environmental and economic problems. Some of the Lake Texoma waters will be increasingly impaired for recreation, fishing, swimming and public water supplies during certain conditions.

Recent major toxic microcystin blue green algae issues in Lake Erie and Toledo, Ohio water supply and increasing problems in many other U.S lakes requires more effective actions by federal, state and local governments, businesses and individuals according to a Great Lakes Group and professionals. We observe what occurs when effective action is delayed too long and need to be proactive within the Upper Red River and Lake Texoma Watershed.

Additional comments and recommendations are attached.

Sincerely,

Shelly Morgan

Executive Director, Lake Texoma Association

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Attachment - Oklahoma Draft Water Quality 2014 Integrated Report Comments and Recommendations

Monitoring and testing of watershed segments

We understand and appreciate the reasons for monitoring and testing of watershed segments. But the *cumulative effects* should be evaluated and considered also in developing a systems approach to overall and segment TMDL's in Oklahoma and Texas areas of the Red River watershed. Point sources are often evaluated at the end of the discharge pipe instead of also including impacts on the receiving water body *and watershed*. Non-point source TMDL's are also focused on segments.

The current Draft Oklahoma Draft Water Quality 2014 Integrated Report describing the Red River Basin including Lake Texoma does not include measurement and evaluation of numerous segments and areas including phosphorous which is one of the major underlying causes of Harmful Alga Blooms such as blue green algae.

Recommendations:

- Significantly increase 303(d) Impaired Water Bodies and 305(b) Water Quality Inventory Report monitoring, assessment and reporting of Lake Texoma and Red River Basin segments.
- *Cumulative effects* should be evaluated and considered also in developing a systems approach to overall and segment TMDL's in Oklahoma and Texas areas of the Red River watershed including Lake Texoma.
- TMDL standards should be established, evaluated, and reported for the cumulative impacts of multiple segments on main bodies of lakes and streams.
- Major lake and stream data should also be summarized to improve and simplify public and key official information and understanding of 303(d) Impaired Water Bodies and the 305(b) Water Quality Inventory Report. In other words, what does this major lake or stream data mean and what can be done to improve conditions?

Expert Workshop: Nutrient Enrichment Indicators in Streams

"For the past 15 years, the U.S. Environmental Protection Agency (EPA) has encouraged states and tribes to adopt numeric criteria into water quality standards to protect waters from the widespread and growing problem of nutrient pollution. Excess nutrients (nitrogen and phosphorus) cause algal growth that degrades aquatic communities and cause fish kills, degrades beaches and shorelines with nuisance algae, and adversely affect human health from algal toxins and trihalomethane formation in drinking water. State progress toward adopting numeric nutrient criteria has been limited in flowing waters in part because of the technical challenge of developing numeric nutrient criteria when multiple factors (e.g., light, flow) can influence responses (e.g., algal biomass) and confound nutrient response models. Such conditions can make it difficult to predict nitrogen and phosphorus concentrations that adversely affect aquatic

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life. One approach to overcome such challenges and to reduce uncertainty when implementing numeric criteria is to integrate biological response indicators with numeric nutrient criteria in a decisional framework.
This workshop proceedings document captures the insight of the technical experts. This information will be beneficial in efforts to provide technical support for states on the derivation and implementation of numeric nutrient criteria in flowing waters."
The following content describes the primary workshop findings.
http://www2.epa.gov/nutrient-policy-data/expert-workshop-nutrient-enrichment-indicators-streams
Recommendation: Significantly increase adoption of state numeric criteria into water quality standards to protect waters from the widespread and growing problem of nutrient pollution.

Excessive Nutrients

Recent major blue green toxic algae issues in the Lake Erie water supply and increasing problems in many other U.S lakes requires more effective actions by federal, state and local governments, businesses and individuals according to a Great Lakes Group and professionals. Great Lakes concerns and proposals are to significantly reduce different types of nutrients such as phosphorous. The Great Lakes Group is focusing on Alga toxins such as microcystin instead of cell counts/ml. *We cannot wait until waters are significantly impaired to monitor and assess nutrients in all contributing segments, streams and lakes and develop effective reduction plans. At the present time, Oklahoma state standards for phosphorous are only established for Oklahoma Scenic Rivers (page 56 of the 2014 Integrated Report).*

We note also that Phosphorous is only identified under the Aesthetics category on pages 55-56 of the Oklahoma Draft Water Quality 2014 Integrated Report.

Studies have indicated excessive phosphorous entering the Red and Washita River and Lake Texoma watersheds. Excessive phosphorous levels certainly cause impairment of water quality and public use for recreation, swimming, and fishing as experienced at Lake Texoma and other lakes in 2011. In addition, excessive nutrients can increase causing harmful alga blooms and seriously impairing essential public water supplies. For example in 2014 Toledo, Ohio city water supplies had to be temporarily shut down due to a major algae bloom *and* excessive microcystin in water samples.

It would be very helpful to conduct additional studies to determine the factual scope of the problem, possible sources and recommended remedial actions. "A TMDL document uses scientific data collection and analysis to determine the amount and source of each pollutant entering the system, and allocates pollutant loads to each source at levels that would ultimately restore water quality to meet clean water standards. A TMDL is the amount of each pollutant a waterway can receive and not violate water quality standards. A TMDL takes into account the pollution from all sources."

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We also note that caution is required when measuring, evaluating, establishing TMDL limits and controlling phosphorous and other nutrients entering the Lake Texoma watershed. Phosphorous and nutrient abatement and reduction programs must be time phased to balance water quality improvements and positive/negative economic impacts. Some of the necessary studies, plans and improvements will take significant time and federal, state and local funds as well as involvement of stakeholders.

Fishery biologists advise that the end objective should be to reduce the Lake Texoma nutrients to acceptable levels. Elimination of all or most nutrients can harm the productivity of the overall aquatic community and food chain in Lake Texoma since it is an older lake established in the 1940's.

Recommendations:

- Establish state TMDL water quality standards for nutrients and phosphorous from major point-source discharge facilities such as wastewater treatment plants and city stormwater runoff and non-point sources such as septic systems and agricultural operations. Start with the Lake Texoma watershed.
- Consideration should be given to incrementally increasing the TMDL limits on phosphorous over time.

Oklahoma Nonpoint Source (NPS) Control Program

(Reference page 24-27 of the Oklahoma Draft Water Quality 2014 Integrated Report.)

"The NPS program is a cooperative effort of state, federal and local agencies. Some of these agencies include OCC, DEQ, ODAFF, OWRB, Corp. Comm., local conservation districts, and local landowners. The management programs identify the state, federal and local agencies with responsibilities relative to the nonpoint source of pollution in question and outline a plan of action to reduce or eliminate those sources."

"Current NPS projects are ongoing in the watersheds of Lake Eucha, Illinois River, Grand Lake, the North Canadian River between Canton Lake and Lake Overholser, and Lake Thunderbird in cooperation with several agencies including the Natural Resources Conservation Service (NRCS), ODAFF, OSRC, local conservation districts, and state universities." *We note that most if not all of these streams and lakes have also experienced significant Harmful Alga Blooms.*

Recommendation: Add Lake Texoma to the state Nonpoint Source (NPS) Control Program.

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Additional Notes and Information for Upper and Lower Red River, Lake Texoma and Water Quality

The Draft 2014 Integrated Report and related Appendices can be found on-line at: http://www.deq.state.ok.us/wqdnew/305b_303d/index.html

Report Appendix A - Segment Numbering

- Lake Texoma 6-digit Planning Basin (311100)
- Upper Red River 6-digit Basin (311600, 311310, 311200, 311100)
- Oklahoma 8-digit Planning Basins 3 (Upper Red River) and 4 (Lower Red River)

Appendix B

- Upper Red River including Lake Texoma start on page 70 of 94.
- Most segments are incomplete or not assessed.
- Some example areas are non-attainment.
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    - Texoma Lake, Washita River, Lower Arm page 52
    - Washita River page 56
    - Texoma Lake, Upper Red River Arm page 70
    - Red River page 71

Appendix F Probabilistic Monitoring for Streams and Rivers

- Provides information on fish and microvertebrates.

The Federal Clean Water Act

The Federal Clean Water Act requires states to develop Water Quality Standards (WQS) Based on the WQS, DEQ develops plans with goals and pollution control targets for improving water quality where minimum standards are not met. The waterbodies where these minimum standards are not met are considered to be "impaired. Impaired waterbodies are listed on what is known as the 303(d) list, which refers to section 303(d) of the Clean Water Act. The plan to improve water quality for impaired waterbodies is accomplished by establishing limits known as Total Maximum Daily Loads (TMDLs) for each pollutant exceeding the standards. TMDLs set levels for pollutants that allow waterbodies to achieve their WQS for beneficial uses. Beneficial uses include water for drinking, recreation, aesthetics, irrigation, fishing, and swimming.

The reports include one of the beneficial uses, Primary Body Contact Recreation (PBCR) which includes swimming. The foci of this beneficial use are excess pathogens. The other beneficial use evaluated in this study was the Warm Water Aquatic Community (WWAC) subcategory of Fish and Wildlife Propagation. The WWAC subcategory evaluates whether the water quality and habitat are adequate to support a climax (fully-developed) fish community. One of the threats to the fish community is turbidity.

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A TMDL document uses scientific data collection and analysis to determine the amount and source of each pollutant entering the system, and allocates pollutant loads to each source at levels that would ultimately restore water quality to meet clean water standards. A TMDL is the amount of each pollutant a waterway can receive and not violate water quality standards. A TMDL takes into account the pollution from all sources.

An important part of TMDL analysis is the identification of individual sources of pollutants in the watershed that affect pathogens and the amount of loading contributed by each source. Under the Clean Water Act, sources are classified as either point or non-point sources.

Previous 2012 Red River Study Excerpt - Conclusions and Recommendations

The Red River Study Area contains waterbodies that are in violation of Oklahoma Water Quality Standards with respect to pathogens and/or turbidity. The TMDL calculates the reduction in bacteria and turbidity that would be needed in order for these streams to be in compliance with Oklahoma's WQS. This was done using load duration curves. The calculations include present and future sources as well as a margin of safety.

After re-evaluating both bacteria and turbidity data following Oklahoma's assessment protocol, 21 TMDLs were developed for the 11 streams in the Red River Study Area. Most of the pathogens come from non-point sources, though it is not known which sources these are specifically from without additional study. The health effects of pathogens should be a concern for the public who uses these waterways for activities such as swimming, wading, or boating. This is because some waterborne pathogenic bacteria can cause serious human illness or disease.

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