

MEETING NOTES AND ACTION ITEMS

Missouri Water Plan – Water Quality Technical Workgroup Meeting 2

Date: February 8, 2018

Time: 9 a.m. to 12 p.m.

Location: Missouri Department of Natural Resources Offices – Roaring River Room
1730 East Elm Street, Jefferson City, MO 65102-0176

Attendees:

Name	Organization
Barr, Miya	U.S. Geological Survey
Blanchard, Paul	Missouri Department of Conservation
Brundage, Robert	Newman, Comley & Ruth P.C.
Casaletto, David	Ozarks Water Watch
Fuchs, Eric	Missouri Rural Water Association
Hefner, Steven	Natural Resources Conservation Service
Holloway, Leslie	Missouri Farm Bureau
Hooper, Lynne	Boone County Resource Management
Kromrey, Mike	Watershed Committee of the Ozarks
Lynn, Kenny	Ameren Missouri
Morrison, Rob	Barr
Steen, Darrick	Soybean and Corn Growers Association's
Thorpe, Tony	University of Missouri - Lakes of Missouri Volunteer Program
Tomlin, Ken	Missouri Department of Natural Resources, Public Drinking Water Branch
Beydler, Hylan	Missouri Department of Natural Resources, Communications
Voss, Robert	Missouri Department of Natural Resources, Watershed Protection Section
Funkhouser, Jaysson	U.S. Army Corps of Engineers – Little Rock District
Hoggatt, Jennifer	Missouri Department of Natural Resources, Water Resources Center Director
Becklenberg, Jessica	Missouri Department of Natural Resources, Water Resources Center
McCluskey, Mark	CDM Smith, Project Manager
Morea, Sue	CDM Smith, Project Director
Bennett, Brian	CDM Smith, Water Quality Task Leader
Fritche, Jessica	CDM Smith, Demands Task Leader

Meeting Objective

The objective of the Water Quality Technical Workgroup meeting was to provide an overview of the methodology, data sources, and results for the demands through 2060, as well as that will be used to characterize water quality needs.

Detailed Notes

The following notes capture discussion that took place during the meeting. The slide deck from the meeting is attached as an appendix to capture the technical presentation. Action items listed in the detailed notes are summarized in a table at the end of the section.

Slide Presentation

Jennifer Hoggatt welcomed everyone to the meeting (Slide 1).

- Thanked everyone for attending the first meeting in November 2017.
- Mark McCluskey introduced Brian Bennett, CDM Smith Water Quality Task Lead.
- Jennifer Hoggatt introduced Rob Hunt, MoDNR's Water Quality Liaison.
- Noted that Sherri Stoner moved to a position at Missouri Geological Survey.

Jennifer Hoggatt gave an overview of the agenda for the meeting (Slide 3).

- Reviewed the goals and vision of the Missouri Water Resources Plan.
- Explained the meeting will contain an overview of the demands to 2060 for all sectors; the same overview will be given to all the **technical workgroups**.
- **Presented** an overview of the surface water supply task and some preliminary results on water quality.

Jennifer Hoggatt reminded the group of the vision for the Missouri Water Resources Plan (Slide 4).

Jennifer Hoggatt went through the project vision noting that we are working to better understand our water resources needs for the planning horizon through 2060 (Slide 5).

Jennifer Hoggatt went through the goals of the project. She noted a poster board in the room to remind participants of the goals, and mentioned there may be items identified or discussed that may not align with those goals and be outside the vision of the plan. A flip chart was available for parking lot ideas for additional consideration outside the plan (Slide 6).

Jennifer Hoggatt mentioned that in May, there will be a combined Consumptive and Infrastructure technical workgroups; therefore, the date and time of the next technical workgroup meeting will move from Thursday morning to Tuesday, from 1:00 p.m. to 4:00 p.m. (Slide 7).

Sue Morea provided an overview of the current and upcoming technical workgroup meetings. Today, all technical workgroups will be getting an overview of the demands for all sectors to 2060, in addition to an update on water quality. In May, all groups will get an overview of the water supply budgets for the HUC4 basins; in August, all groups will get an overview of infrastructure and scenario planning.

Demands for all Sectors to 2060

Jessica Fritsche began the update on demands. She talked about consumptive and non-consumptive demands including an update on agricultural demands being performed by the University of Missouri (Mizzou) (Slide 8).

Jessica Fritsche reviewed the consumptive demand approach (Slide 9).

Jessica Fritsche reviewed the approach for homes and businesses, identifying water use sectors, and primary data sources (Slide 10).

- Leslie Holloway asked are we using the census data, at the national or state level?
 - Jessica Fritsche noted we have used the Missouri census data and it will be discussed later in the presentation.

Jessica Fritsche summarized the primary data sources used to determine current water use (Slide 11). She summarized the definitions of water systems included in each data source noting that these data sources cover 96 percent of the population served in Missouri.

Jessica Fritsche discussed the demographic approach and data sources used for demand projections (Slide 12). Jessica Fritsche noted that CDM Smith coordinated with the State Demographer to determine the best source for this information and he agreed with the approach to use data from Woods and Poole.

Jessica Fritsche reviewed the approach for estimating water use at the county level (Slide 13). She noted the population served by major water systems is calculated first, then the remainder in the self-supplied domestic and minor systems is calculated (which is split 17 percent and 83 percent, respectively).

Jessica Fritsche showed the spatial distribution of public supply wells and intakes within the state based upon data available from MoDNR (Slide 14).

Jessica Fritsche noted we are now going to get into the details of each of the three sectors and show draft results (Slide 15).

Jessica Fritsche reminded the group about the approach to calculate water use for major water systems (Slide 16).

Jessica Fritsche showed draft results of the change in statewide gallons per capita per day (GPCD) and adjusted population served through 2060—our planning horizon for the plan.

- Population from Woods and Poole by county.
- Population served by major water systems (6.5 million people by 2060).
- Eric Fuchs asked why are there fluctuations in the GPCD?
 - Jessica Fritsche stated the fluctuations are based on characteristics of data, where growth is occurring and passive conservation.

Jessica Fritsche provided a summary of the water use from major water systems in the state through 2060 (Slide 18). She noted the higher growth in the Ozark region and some smaller counties with a high growth rate but have small populations, thus any change is a big percentage.

- Tony Thorpe asked is accounting for demands from population moving in to state and within state?
 - Jessica Fritsche responded that yes, this is incorporated in the data and projections including fertility rates.

Jessica Fritsche showed the seasonality of major water systems (Slide 19).

Jessica Fritsche discussed how we are incorporating information obtained from regional studies (Slide 20). These studies are being reviewed and incorporated to the extent possible.

Jessica Fritsche reviewed the definition and approach for self-supplied domestic and minor systems (Slide 21).

Jessica Fritsche showed the draft results for the self-supplied domestic and minor systems (Slide 22). She noted that we expect GPCD rates to be lower.

- Darrick Steen asked about cows/turkeys that are fed by domestic systems.
 - Jessica Fritsche noted we account for that separately so not to double-count; here we are estimating for house only and livestock is separate.

Jessica Fritsche showed a figure and table of the draft results for self-supplied domestic and minor systems through 2060 (Slide 23).

Jessica Fritsche defined and identified the data sources for self-supplied non-residential (Slide 24).

Jessica Fritsche presented a summary of the self-supplied non-residential (current use by category) (Slide 25).

Jessica Fritsche showed the draft projections for self-supplied non-residential through 2060 (Slide 26). Most of the growth will be supplied by groundwater supplies (shallow). The largest growth is expected in Boone County.

Jessica Fritsche defined and described thermoelectric power generation demands (Slides 27 to 29).

Jessica Fritsche presented the draft projections for thermoelectric power generation demands (Slide 30).

- Kenny Lynn (Ameren) made a comment that they are expecting a more of a flat line growth in the future due to a decline in per capita use; energy efficient appliances.
 - Jessica Fritsche said we will follow up with Kenny to learn more about their projections.

Jessica Fritsche presented a table of the withdrawals and consumption by source for thermoelectric demands (Slide 32).

Jessica Fritsche presented a summary of the agricultural demands analysis being performed by Mizzou. (Slide 33). She noted the approach, data sources, and current demands for crop irrigation (Slides 34 to 36). She noted the approach, data sources, and current demands for livestock (Slides 37 to 39).

Jessica Fritsche presented a summary figure showing the consumptive demands for all sectors from 2016 to 2060 (Slide 40).

Jessica Fritsche presented the Non-Consumptive demands (Slide 41). She went through the definition and goal of non-consumptive demands (Slide 43) and an overview of the approach to quantify non-consumptive demands (Slide 44).

Jessica Fritsche went through the results of the non-consumptive demand analysis (Slide 45).

- Defined hydroelectric power generation, showed locations and list of facilities within Missouri (Slides 46 to 48).
- Defined commercial navigation, showed commercially navigable rivers, and dependence on upstream watershed outside of Missouri (Slides 49 to 53).

Jessica Fritsche summarized aquaculture and wetland demands (Slide 54 to 57).

Jessica Fritsche went through water-based outdoor recreation (Slides 58 to 64). She provided the definition, features, and data sources for waters suitable for recreation, trout waters, float rivers, access points, and their economic impacts in Missouri.

Surface Water Supply Overview

Mark McCluskey provided an overview of the surface water supply analysis (Slides 65 to 70). He went through the objectives. In this meeting we gave the technical workgroup a primer on the analysis that will be discussed in greater detail and with preliminary results in the May meeting.

- Performing the analysis at the HUC4 level.
- Looking at both supply and demands through 2060.
- Results will drive the infrastructure task.
- Reviewed the components of the water budget (Slide 70).
- Slides 71 to 80 were not discussed in the meeting due to time.

Brian Bennett presented and update on water quality (Slide 81).

Brian Bennett reiterated the goals, elements, and considerations of the water quality task (Slide 82). He noted that analysis will be focusing on water quality in respect to the effects in meeting drinking water supply.

Brian Bennett went through the methodology (Slide 83), the components of the water quality analysis (Slides 84 and 85), setting and climate (Slide 86), physiography (Slide 87), major watersheds (Slide 88), and land cover (Slide 89). He noted that landcover is one of the biggest drivers in water quality.

- Tony Thorpe asked if the presentation slides will be made available.
 - Jennifer noted that the meeting notes and presentation slides will be posted on the Missouri Water Plan website and BaseCamp site.

Brian Bennett discussed the water quality approach (Slide 90), identified the primary parameters of concern (Slide 91), provided a summary of the Missouri 303(d) list (Slide 92), and showed a figure from MoDNR 2016—the 303(d) impaired waters in the state.

Brian Bennett stated we will update the 303(d) list if the 2018 numbers become available.

Brian Bennett showed a figure overlaying the 303(d) listed waters with drinking water intakes, highlighting six potential areas of concern (Slide 94).

- Robert Brundage asked how many are 303(d) for drinking water criteria?

- Brian Bennett noted that there are very few listed.
- Eric Fuchs commented that Truman is listed for Atrazine.
 - Sue Morea noted looking at infrastructure needed to treat drinking water due to quality.

Brian Bennett showed a summary of impairment causes by pollutant (Slide 95).

- Tony Thorpe mentioned that East Locust Creek is looking at treatment.
- Brian Bennett summarized 303(d) impairment increases due to assessment.
- Impairments for bacteria are higher because of monitoring and cheaper gauges.
 - Leslie Holloway mentioned bacteria criteria changed in 2008; MoDNR does not track the trend of beach closing done by owner/operator.

Brian Bennett showed a summary of changes to the 303(d) list from 2002 to 2018 (Slide 96) and a plot of impaired stream miles by year (Slide 97). Brian noted that it is important to know/recognize the changes to stream monitoring (equipment, access to data, etc.).

Brian Bennett showed plots of the changes in the impaired stream miles over time (Slide 98) and the number of impaired lakes over time (Slide 99). Brian noted that plan to separate out the drinking water supply lakes.

Brian Bennett discussed how the water quality parameters of concern and trends change regionally. We will be evaluating these changes using available data from MoDNR, USGS, and USACE (Slides 101 and 102). Brian noted the correlation to flows and the potential limitation due to data availability and sample size.

Brian Bennett presented an example temporal trend analysis for Shoal Creek in the Joplin area (Slides 103 to 105).

Brian Bennett noted that we reviewed the Unified Watershed Assessment (UWA) and the methods and data presentations that were used.

- Jennifer Hoggatt noted we are using some of those examples in our analysis but there were items that were not applicable to the focus of the Missouri Water Resource Plan (Slide 106).

Brian Bennett provided an overview of how assessing groundwater quality (Slide 107). We are looking at the various groundwater formations within the state (Slide 108) and reviewing available data for each of the groundwater providences (Slide 109). We recognize that groundwater data may be limited.

Brian Bennett discussed emerging issues; that may have regulatory impacts within the planning period of 2060 (Slide 110). This is not to drive regulations but be aware of potential regulations that would affect water treatment requirements and infrastructure.

- Eric Fuchs noted that small areas don't have ability (\$) to run their plants.
- Jennifer Hoggatt reminded the groups that this is a statewide plan; there may be local studies that are needed in addition to the plan.

Brian Bennett discussed the next steps for the water quality task (Slide 112).

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- Rob Morrison asked to break out by drinking and recreation water quality.
- Brian Bennett stated that at the May meetings, we will be looking at spatial and temporal trends based on data hoping to have insight on priorities (initial).
- Jennifer Hoggatt noted that MoDNR focus on drinking water supply.
- Sue Morea noted looking at cost for treatment in conjunction with infrastructure.
- Paul Blanchard mentioned treatment requirements for Total Suspended Sediments (TSS); not show up in this analysis.

Meeting adjourned.

Action Items

Assigned To	Action Item
Missouri Department of Natural Resources	Post copy of the presentation slides to Missouri Water Resources Plan website.
CDM Smith	Follow up with Ameren to learn more about their energy projections and water demands.