



# NUTRIENT CORE TEAM MEETING WEDNESDAY, SEPTEMBER 21, 2011 10 AM – 2 PM

## ATTENDANCE:

<u>Representative</u>	<u>Stakeholder Group</u>	<u>Affiliation</u>
Walt Baker	Chairman	DEQ/Division of Water Quality
Donna Spangler	Public Information Officer	DEQ
Florence Reynolds	Drinking Water Utilities	Salt Lake City
Tina Laidlaw	EPA	USEPA Montana Office
Merritt Frye	Environmental Interests	National Rivers Council
Elise Boeke	Agriculture	NRCS, State Resource Conservationist
Ron Davidson	Agriculture	UDAF, Assistant Director
Don Leonard	GSL Artemia	Great Salt Lake Brine Shrimp Cooperative, Inc
Erica Gaddis	Science Expert	SWCA Environmental Consultants
Leland Myers	POTWs	Central Davis
Christine Pomeroy	Stormwater	University of Utah
Jim Web	Agriculture	Circle 4 Farms
Kathleen Clarke	Agriculture	UDAF, Deputy Director
Niels Hansen	Agriculture	NRCS, State Conservation Agronomist
Eric Stucki	Recreation	Division of State Parks, Asst. Region Manager
Darwin Sorensen	Surface/Groundwater Interface	Utah State University
<b>DWQ Support Staff</b>		
John Whitehead	DWQ	Assistant Director, Permits/Compliance/TMDL
Jeff Ostermiller	DWQ	Water Quality Management Section, program manager
Nick Von Stackelberg	DWQ	Water Quality Management Section
Mike Shupryt	DWQ	Water Quality Management Section
John Mackey	DWQ	Engineering Section
Scott Daly	DWQ	Watershed Protection Section

## 10:00 AM - WELCOME, INTRODUCTIONS, AND PURPOSE OF MEETING:

**-WALT BAKER**

## 10:15 AM - NEED AND DRIVERS FOR NUTRIENT CRITERIA DEVELOPMENT:

**-WALT BAKER**

[Need and Drivers for Nutrient Criteria Study Presentation](#) (4.8 MB file)

Walt discussed the national perspective, what other states are doing, and steps DWQ has taken.

## 10:45 AM - NUTRIENT CRITERIA DEVELOPMENT PLAN:

### -JEFF OSTERMILLER

Jeff Ostermiller outlined the Division of Water Quality's approach for developing nutrient water quality standards in a short presentation and emphasized an adaptive scientific approach through collaboration of key stakeholders. He explained the rationale for this approach with a schematic showing numerous relationships between nutrients, the anticipated direct and indirect responses to nutrient pollution, and the impacts on the aquatic life, recreational, and drinking water beneficial uses. For example, excess nutrients may cause excessive algal and microbial growth, which could lead to decreased dissolved oxygen concentrations and elevated pH resulting in impairment of the aquatic life beneficial use.

DWQ anticipates utilizing a multiple lines of evidence approach to include numeric nutrient indicators, response indicators including chlorophyll a, compositional indicators, and functional indicators. These indicators will then be used to identify nutrient-related problems. In the end, these analyses will be compiled to develop numeric criteria protective of the beneficial uses and as well as a process for accounting for socioeconomic and ecological ramifications.

### COMMENTS/DISCUSSION:

Comments were made about how the DWQ was going to account for the socioeconomic "offramp" or variance policy offered in the approach

-The DWQ will take into account the cost of the implementation (see POTW Cost Study) and the economic benefits (see Economic Benefits Study). Exactly how the rule is going to be written is still undecided and is something for consideration within this group when all studies are completed.

## 11:30 AM DWQ NUTRIENT COST AND BENEFIT STUDIES

### POTW COST STUDY -JOHN MACKEY/PAUL KRAUTH

#### [Statewide POTW Nutrient Removal Cost Study](#)

John Mackey discussed the results of the POTW Nutrient Removal Cost Study that DWQ completed in 2010. DWQ examined the economic impacts of establishing state-wide nutrient discharge standards for 30 mechanical and one lagoon wastewater treatment facilities. The study also quantified the effects on water quality from state-wide effluent limits, provided economic and technical support for POTWs, and examined four effluent scenarios:

- Tier 1 N - 0.1 mg/L TP and 10 mg/L TN;
- Tier 1 - 0.1 mg/L TP
- Tier 2N - 1.0 mg/L TP and 20 mg/L TN
- Tier 2 - 1.0mg/L TP

The study yielded good cost estimates for statewide nutrient limits, cost metrics for analysis of treatment upgrades, a broad range of POTW upgrade options, nutrient load reduction estimates from POTW controls, and limitations of POTW controls. The results also indicated that these scenarios imposed significant cost impacts to small community POTWs and discharging lagoons.

### COMMENTS/DISCUSSION:

## ECOLOGICAL BENEFITS STUDY - MIKE SHUPRYT

### [Ecological Benefits Study](#)

Mike Shupryt presented DWQ's work to develop a relationship between numeric nutrient indicators and three response indicators including primary production, compositional indicators, and functional indicators. This work will serve as the foundation for developing the relationships between nutrient pollution and its impacts on the aquatic life beneficial use for a variety of stream ecosystems throughout Utah. This study focused data collection at 17 reference sites and 9 POTWs as well as incorporated data from a number of previous Utah-specific stream assessments.

DWQ conducted a nutrient diffusing substrate experiments to determine the functional response of a stream to nutrient pollution. The nutrient diffusing substrate experiment determines nutrient limitation by comparing the response of algal growth between substrate media spiked with different levels of nitrogen and phosphorus. This study showed that 80% of reference sites have some form of nitrogen limitation and that none of the reference sites were solely limited by phosphorus. Additionally, 6 of 7 below POTW sites were not limited by nutrients.

Mike also presented the work DWQ is conducting related to compositional response indicators. Mike looked at the response of macroinvertebrate taxon to increasing nutrient concentrations and identified the response threshold at which taxon negatively or positively respond the addition of nutrients.

### COMMENTS/DISCUSSION:

A comment was made regarding the ability to determine the point at which the beneficial use is supported. Developing a policy to identify beneficial use support is an important first step in developing nutrient criteria.

How is DWQ determining the affect of covariates like habitat degradation on compositional response? To be defensible, DWQ needs to determine the role that habitat degradation plays on the health of the aquatic ecosystem. If habitat is determined to be the limiting factor for compositional response then decreasing nutrient concentrations will likely have no impact on improving the beneficial use. The DWQ collected physical habitat data for each of the sites and will be included in future analyses.

A comment was made asking if the DWQ expect all waters to be indistinguishable from reference condition streams. No, reference condition (or least disturbed) analysis is only one of many lines of evidence the DWQ will use when developing nutrient indicators

A comment was made regarding the open waters of the Great Salt Lake and the need for sufficient nutrients to support the brine shrimp industry.

How does DWQ intend to develop similar indicators for lakes and reservoirs?

### ACTION ITEMS:

This study is still in the analysis phases and the Nutrient Core Team will be updated as part of the regular meeting schedule

## ECONOMIC BENEFITS STUDY- NICK VON STACKELBERG

### [Assessing the Economic Benefits and Costs of Nutrient Criteria Implementation](#)

Nick Von Stackelberg introduced a study underway to assess the economic costs and benefits of implementing numeric nutrient criteria. The study objective is to conduct a comprehensive analysis of the aggregate benefits and costs of implementing nutrient criteria, estimate the economic benefits of reducing excess nutrients on recreation demand and quality of life, and compile site-specific information on benefits and costs of nutrient reduction.

The benefits and costs included in the study are recreation demand, quality of life, property value, water treatment costs, waste water treatment upgrades, stormwater, nonpoint source pollution, and TMDL administration. These items will be estimated using the results from two surveys currently being administered from a sample of all Utah house holds and a group of Utah recreationists, which are designed to estimate public perception of nutrient pollution and their willingness to pay to protect water quality and recreational behavior changes in response to nutrient pollution.



### COMMENTS/DISCUSSION:

The group requested a presentation from the research team to discuss the survey design and the analytical methods used to summarize the results. This presentation should include a forum to review the survey questions and the measures taken to reduce survey bias.

Comment was made that economic benefits of out-of-state recreationists should be included in the benefit cost analysis. Although not included in the survey, an attempt will be made to quantify out-of-state recreation through existing data sources from Utah Office of Tourism, Utah State Parks, Utah Wildlife Resources, and US Fish and Wildlife Service.

Comment was made that the estimate of benefits are "soft" numbers, while the estimate of costs are "hard" numbers, and that should be taken into consideration when basing decisions on the results of this study.

### ACTION ITEMS:

DWQ will invite the research team to present once they have results from the econometric modeling - February 2012 timeframe. This presentation will address the study design, survey bias, and the methods employed to interpret the results. The DWQ will regularly update the Nutrient Core Team when new phases of the study are completed

### 12:30 PM WORKING LUNCH/ DISCUSSION

#### -WALT BAKER

- Does this approach sound reasonable?
- Are there issues we have not considered?
- What are the primary concerns your stakeholders will have?
- Are there others we need to consult?
- How do you suggest we work with the stakeholders you represent?
- Can you assist us in approaching your stakeholders?

This item was not discussed in detail due to extended discussion of previous agenda items. Walt asked the group to consider the list of questions presented on the agenda and come prepared to discuss them at the next meeting.

### 1:30 WRAP UP

#### -WALT BAKER

### NEXT STEPS

### NEXT MEETING

Date: Wednesday November 30<sup>th</sup>, 2011

Time: 1:30 PM to 3:30 PM

Location: DEQ Building, 195 North 1950 West. Red Rocks Conference Room, 3<sup>rd</sup> floor.

### 2:00 ADJOURN