## 2014 Nitrate Priority Area Delineation and Ranking Process

**Response to Public Comments—July 2014**

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<th>Comment</th>
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<td><strong>Comments from: George K. Wells, Cassia Co.</strong></td>
<td><strong>DEQ Response</strong></td>
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<td>The cassia county ground water advisory committee would like to submit a comment on DEQ's draft document 2014 Nitrate Priority Area Delineation and Ranking Process. After discussion on our Meeting April 17 and May 20, a motion was made to change the name from Cassia county nitrate Priority area to; Marsh Creek Nitrate Priority Area. The reasons for this are as follows: 1. The name Marsh Creek is more representative of the location of the watershed where the high nitrate values are located. 2. The name Cassia County is a much larger area and does not represent the area which is of high nitrate values.</td>
<td>Thank you for your comment. The 2014 Cassia County NPA has been renamed to Marsh Creek Nitrate Priority Area.</td>
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<td>Thank you for this consideration: George K. Wells Chairman Cassia County Ground Water Committee</td>
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DEQ Response

Thank you for your comments.

The nitrate priority area (NPA) ranking and delineation process was initiated to comply with DEQ policy memorandum PM-004, which outlines the process to define and prioritize areas of the state with degraded ground water quality that could adversely affect a beneficial use. The ultimate purpose is to prioritize limited resources by targeting the most severely degraded areas in the state. DEQ has worked with the Ground Water Monitoring Technical Committee (GWMTC) since 2000 to develop and refine the process for delineating and prioritizing the areas. Membership is comprised of agency ground water professionals meeting several times each year with a smaller technical working group meeting more frequently to continually refine the NPA process.

Comment 1:

DEQ has included a graphic example illustrating the changes in nitrate trend from 2002 to 2014 to the 2014 NPA report.

Comment 2:

In 2002, the NPA delineation was based on ground water quality and professional judgment. Professional judgment consists of overlaying several GIS layers or coverages such as land use including LANDFIRE and GAP, geology, soils, aquifer vulnerability, hydrogeologic aquifer systems of Idaho, geologic structure, and topography. The suggested LANDFIRE and GAP GIS coverages maybe more appropriate to use when trying to identify sources of nitrate, however, nitrate source identification is beyond the scope of the NPA process. Historic and local knowledge was also taken into account, as well as political boundaries for implementing management strategies. Following the 2002 NPA ranking, the GWMTC was concerned that the professional judgment component could be considered subjective. In 2008 and 2014, the delineation process was
robustly strengthened for defensibility by adding the statistical component of indicator and predictive kriging to define degraded areas.

The scoring system to rank the areas was developed by the GWMTC for the 2002 NPA ranking and was slightly modified for the trend score component in 2014. The ranking process considers several components, of which the trend is just one of several. The trend analyses for the 2002, 2008, and 2014 NPAs compared nitrate concentrations between two time periods for each NPA analyses.

Comment 3:

The vast majority of the sites used in the NPA analysis are either sampled on a yearly basis, or as a one-time investigative follow-up sample, or for a short-term monitoring project. For sites with multiple sampling events, the GWMTC discussed options for selecting a single value to represent the nitrate concentration. No option was without downfalls. For example, using the maximum value or a minimum value during a time period would bias the information. The consensus of the GWMTC was that using the most recent value was a simple, straightforward unbiased approach that would be appropriate for the scope of this project.

Of the 10,955 sites used in the 2014 NPA analysis, 5,526 sites were sampled by DEQ or its contractors, 3,795 sites were sampled by IDWR/USGS and 2,695 sites sampled by ISDA. The data are dated from 1990 through 2011.

IDWR has administered the Statewide Ground Water Monitoring Program and has collected ground water samples since 1990. The number of sites in the program has varied and are contingent upon funding, with the highest number of 1,500 sites in 1994. About 400 sites are sampled each year; 100 sites are sampled annually; and the remaining sites are sampled on 5-year rotations. For several years, the USGS collected samples for the Statewide Ground Water Monitoring Program in addition to USGS regional and local monitoring projects.
The data contributed by DEQ includes public water system regulated monitoring, in which the frequency of sampling varies. DEQ has often collected a follow-up sample to investigate potential problems based on a complaint or concern and may not revisit the site. Occasionally a follow-up sampling event will lead into a monitoring project. Since 1990, DEQ has had regional or local monitoring projects but very few have continued long term. Monitoring depends upon available funding.

ISDA conducts regional and local monitoring projects to obtain ground water for nutrient and pesticide analysis. The number of sampled sites and the frequency has also varied over time. ISDA also samples dairy production wells on an annual basis.

For the trend analysis, DEQ contracted with IDWR. IDWR, like DEQ, consulted with the GWMTC about the process. IDWR observed that peak concentrations in nitrate values sometimes occurred in the middle of a time period at individual sites rather than at the end of a time period. For sites with multiple sampling events, the GWMTC discussed options for selecting a single value to represent the nitrate concentration. No option was without downsides. For example, using the maximum value or a minimum value during a time period would bias the information. The consensus of the GWMTC was that using the most recent value was a simple, straightforward unbiased approach that would be appropriate for the scope of this project. For details regarding the trend analysis, visit the following:


Comment 4:

The GWMTC recognizes nitrate concentrations may vary seasonally. Seasonality of nitrate concentrations was not considered for the trend analyses due to limited resources and a desire to apply consistent methods to all NPAs. Seasonal nitrate concentrations are not available for the vast majority of the sites used in the NPA analysis. The sites
are either sampled every 5 years, on a yearly basis, or as a one-time investigative follow-up sample. For sites with multiple sampling events within a year, the GWMTC consensus was that using the most recent value was a simple, straightforward unbiased approach that would be appropriate for the scope of this project.

For details regarding the trend analysis, visit the following:

**Comment 5:**

DEQ recognizes that nitrate in Idaho ground water continues to be a concern that needs to be addressed. The purpose of the NPA process is to identify areas with degraded ground water quality and rank them based on degree of severity. The NPA results can be used to direct additional investigation activities. These activities may include further data evaluation and statistical analysis to address seasonality and link land use practices to nitrate concentrations in ground water. This information could be used to more effectively implement best management practices.

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2. IDL comments re: 2013 Nitrate Priority Area (NPA) Identification and Ranking Process.