

## ***Appendix A Comments and Responses***

**Note:** Please note that several years have passed since the time these comments were submitted. Implementing the actions described in DWQ's responses, such as rulemaking, required significant time and effort. With respect to Great Salt Lake, several studies were completed since these comments were submitted and are discussed in the comment responses. However, these studies were unavailable when comments were submitted.

### **Responses to Comments by Friends of the Great Salt Lake (FRIENDS) 2008 Integrated Report**

Utah's Division of Water Quality (DWQ) sincerely appreciates the interest of FRIENDS in the protection of water quality. DWQ agrees with many of your suggestions and has either edited the Integrated Report (IR) accordingly, or has plans for future revisions to our assessment methods, which are summarized in this response. We appreciate the amount of time and effort FRIENDS devoted to developing these comments, and will continue working with FRIENDS and others to ensure that these efforts pay dividends with regard to improvements in water quality.

With regard to Great Salt Lake (GSL), DWQ agrees that the lake is a critically important ecosystem that warrants additional protection. DWQ shares the underlying concern expressed by FRIENDS with the general lack of numeric criteria and associated assessment methods for the lake. DWQ is actively moving toward filling both of these gaps, seeking resources wherever we can to do so. In the interim, we do not feel that we have sufficient evidence to defensibly state that GSL and its surrounding wetlands are meeting *or* not meeting their designated uses. Among other things, this document summarizes our rationale for making this decision.

#### **General Comments**

FRIENDS suggests, in a number of places, that DWQ is intentionally delaying action on water quality concerns by not listing the Great Salt Lake as impaired (not supporting aquatic life or recreation uses) on the 303(d) list of impaired waters. DWQ provides our detailed technical rationale for listing the Great Salt Lake (GSL) and its surrounding wetlands in Category 3 (insufficient data and information) throughout this response to FRIENDS' comments on Utah's 2008 Integrated Report (IR). However, prior to addressing specific comments, DWQ wishes to address the philosophical underpinnings on what impairment means, or does not mean. Designations of impairment do not, by themselves, improve water quality conditions, they simply identify problems and concerns. The lack of an impaired designation does not preclude DWQ from fulfilling our overarching regulatory responsibility— ensuring protection of GSL's uses for current and future generations.

While a 3 (insufficient data) listing determination obviously delays a final assessment decision (i.e., full support vs. non-support of designated uses), DWQ does not believe that this decision will delay future actions to improve water quality in the Great Salt Lake. All impairment listings are followed by TMDLs, which typically allocate pollutant loads among sources to set specific goals necessary for ultimately reaching numeric water quality criteria. In the case of the GSL, without numeric criteria, the TMDL process would first have to set appropriate endpoints (i.e., site-specific standards for pollutants of concern). As a result, setting appropriate goals for any GSL pollutant would require filling the same data gaps that DWQ believes are needed to make defensible assessments of the lake. In this context, the “delay” from DWQ, while awaiting results of numerous pending studies, may actually expedite future remediation actions by providing data and information that DWQ can use to determine efficient and effective management options that may be appropriate to address any future impairments that are identified.

To address critical knowledge gaps, DWQ—in collaboration with interested stakeholders—continues to make great strides in understanding how the unique hydrology, ecology and biogeochemistry of the GSL influences the affect of pollutants on the biological and recreation uses of GSL. In freshwater ecosystems, DWQ has taken advantage of national and international research to implement numeric criteria, which is simply not possible with the GSL. The GSL has many unique characteristics that make the development of standards and assessment methods complex, including: 1) ecological and biogeochemical processes that vary with changes in salinity, 2) salinity concentrations that vary with lake levels, 3) vertical salinity stratification with a deep brine layer that affects hydrologic and solute exchange among bays, 4) distinct biota that are not commonly used in toxicology investigations, and 5) a lack of comparable reference sites that makes putting lake observations in context. Hence, meaningful water quality actions on the GSL must consider whether the effects on uses result from anthropogenic causes or the unique physicochemical characteristics of the GSL.

DWQ remains committed to devoting as many resources as possible to overcoming the technical challenges to develop and implement scientifically rigorous water quality standards and assessment methods for the GSL. DWQ acknowledges that many of the chemical characteristics of the lake are concerning, especially when compared against freshwater and marine standards. However, this does not mean that it is appropriate to circumvent the scientific investigations necessary to identify criteria appropriate for GSL and the relative importance of anthropogenic causes.

Premature listing actions—without consideration of GSL’s unique characteristics—could potentially result in unanticipated consequences that are actually deleterious to the GSL ecosystem. For instance, many of FRIENDS comments suggest that eutrophication in Farmington Bay represents a threat to lake biota, whereas others have argued that brine shrimp populations are dependent on these nutrient inputs. If nutrients are a threat, then reductions should not be implemented without understanding how N:P ratios influence cyanobacteria blooms, which represent a separate yet related threat to lake biota. As this example illustrates, GSL water quality is more nuanced than FRIENDS convey with their definitive statements about impairment.

To summarize, given the ecological, sociological and economic importance of the GSL, we cannot afford to make management decisions based on inconclusive scientific evidence. Yet, DWQ agrees with FRIENDS that it is also important to not unnecessarily delay management actions that are needed to protect the GSL ecosystem. Striking a balance between these competing objectives is ultimately a management decision informed by both science and policy. In the case of GSL, DWQ is not aware of any evidence that supports the contention that GSL is not currently meeting its designated uses. While not conclusive, little evidence exists to show that bird or brine shrimp populations are in decline. Nonetheless, DWQ agrees with FRIENDS that numeric criteria are needed to ensure that the GSL ecosystem continues to be a vibrant ecosystem and DWQ intends to continue standards development work. In addition, we have developed an assessment framework that provides a roadmap for the development of rigorous assessments of the GSL, which is included as an Appendix to the 2008 IR.

FRIENDS has expressed frustration with the rate of progress with the development of GSL water quality programs. DWQ is proceeding with these efforts as quickly as possible, but it is important to note that while Utah generates millions of dollars in yearly revenue from GSL industries, DWQ currently receives \$100,000 per year to support water quality programs. DWQ will continue to seek additional funds wherever possible to move these programs forward, however development of a robust water quality program ultimately cannot be sustained with uncertain resources. DWQ appreciates FRIENDS continued support with helping to garner attention to the importance of these efforts, which ultimately may result in a commitment of the financial resources necessary to develop and implement a water quality monitoring, standards, and assessment program that is commensurate the importance of this ecosystem.

### **Specific Responses to FRIENDS' Comments**

#### **Page 1, Paragraph 1, Bullet 1**

First, as you know, FRIENDS submitted significant data and studies to DWQ on March 15, 2007. This data, together with DWQ's own monitoring data – shows without doubt that Great Salt Lake is not supporting its beneficial uses and therefore must be listed as impaired on Utah's 2008 303(d) list. Moreover, this impairment is so severe that it warrants designating this water body as a top priority for the development of a total maximum daily load (TMDL).

DWQ considered all existing and readily available data, including the information submitted by FRIENDS, when making assessment decision about the GSL. We do not believe that these data show—"without a doubt"— that the GSL fails to support its designated uses. While we fully acknowledge that some of these data are disconcerting, other information suggests that the biological assemblages of the GSL are currently healthy. Also, studies exist that directly contradict some of the information submitted by FRIENDS (e.g., the cyanotoxin data). Perhaps the most striking example of the counter argument—that GSL is supporting its aquatic life uses—is the lack of any

empirical evidence that populations of birds and other organisms are in decline around the GSL.

After consideration of all information, DWQ has assessed the GSL and its surrounding wetlands as 3, which means that there currently is insufficient data and information to make assess support of the lake's uses. This assessment is consistent with EPA guidance on the use of this assessment category, which is intended to be a temporary listing decision. To help communicate a clear path forward in making a listing determination the 2008 IR includes an appendix, developed in collaboration with EPA, which outlines the data needed to make a defensible assessment. Additional rationale for this listing decision is provided throughout this responsiveness summary.

**Page 1, Paragraph 1, Bullet 2**

Second, rather than analyzing its own data, along with that submitted by FRIENDS and admitting Great Salt Lake is impaired, DWQ improperly delays action to improve water quality entering the lake. In doing so, the agency is violating its obligations under the Clean Water Act.

As stated above, DWQ carefully evaluated all of the data and information at our disposal when making an assessment decision for GSL and its surrounding wetlands. Indeed, as reflected in the appendix of the 2008 *Integrated Report*, these data were evaluated systematically to identify key lines of evidence and to evaluate the relative strength of each piece of information needed to make an assessment (see additional comments below). Once again, DWQ is committed to continue to working with stakeholders to fill these data gaps to help ensure that water quality in the GSL and its surrounding wetlands is sufficient to maintain the many important uses of this waterbody. DWQ does not view these investigations as a delay in improving water quality. Instead, we see these investigations as necessary step to: 1) identify water quality problems, and 2) to identify management solutions to any water quality problems that are identified.

**Page 1, Paragraph 1, Bullet 3**

Third, DWQ improperly segregates the wetlands of the Jordan River from the river itself. The lower reaches of the Jordan River are impaired based on *inter alia*, insufficient dissolve oxygen levels, the presences of *e. coli*, and other pollutants. This means that the wetlands hydrologically connected to the Jordan River, including those of the Jordan River delta, are impaired. Therefore, DWQ must address this impairment with a TMDL.

DWQ does not dispute the importance of considering hydrological connections when evaluating water quality. Federal regulations expressly require DWQ to protect downstream uses (40 CFR 131.10(b)). However, an impairment of a lake or stream does not automatically mean downstream reaches are impaired. This can be observed on the Jordan where a downstream Assessment Unit does not share the impairment of the upstream unit although the share the same beneficial uses.

The Jordan River and GSL wetlands do not share the same beneficial classes. Both Federal and Utah water quality rules and regulations are expressly dependent upon the classification of waterbodies. Beneficial uses are intrinsically predicated on the idea of delineating waters. Numeric criteria are subsequently developed to set appropriate water quality goals for protecting these uses. In this case, the uses of the Jordan River, its surrounding wetlands are clearly different ecosystems. Most of the wetlands at the Jordan River delta are expressly managed to support waterfowl, whereas the Jordan River includes fish in its beneficial uses. DWQ has captured these distinctions in our standards. In an assessment context, federal guidance provides examples of criteria that can be used when creating assessment units (e.g., clear hydrologic breaks, changes in uses), DWQ appropriately followed these guidelines when assessing the Jordan River independent from its wetlands.

While the separation of waterbodies is sometimes necessary to accomplish regulatory objectives, DWQ considers the influence of regulatory actions on directly connected waters. For instance, as alluded to in the comments, a TMDL for dissolved oxygen (DO) and other pollutants is under development for the Jordan River. Similarly, many efforts are in development to assess GSL wetlands. Ultimately, it will be both appropriate and necessary for DWQ to consider management actions necessary to protect the entire Jordan River watershed. However, DWQ did not believe that delaying action on the Jordan River was appropriate given the clear violations of water quality standards. DWQ is moving forward by studying these waters independently, but these studies will ultimately need to be linked.

**Page 2, Bullet 4**

Fourth, DWQ fails to address the fact that, according to DWQ's own monitoring data, numeric water quality standards are not being met in the wetlands of the Jordan River, as well as in the various special management areas around Great Salt Lake. According to state rule, fresh water numeric standards apply to these wetlands. Because these standards are not being met, these waters must be listed as impaired.

DWQ is not ignoring its own data or Utah's numeric water quality criteria; these are critical elements of all DWQ programs because these programs provide the basis upon which DWQ bases nearly all regulatory decisions. The standards associated with these wetlands were created over 30 years ago. Since that time, extensive scientific investigations have been conducted on these waters. These investigations have revealed that the management areas highlighted in our standards contain at least four distinct ecosystems, each with distinctive uses. DWQ believes that protecting these management areas is important, due to their ecological significance. However, new uses and associated numeric criteria are also needed to protect the unique organisms within the ecologically distinct waterbodies within each management area. DWQ believes that making an assessment based on data contrary to scientific evidence is inappropriate. Instead, we will work toward changing our standards to reflect the best available science and then making assessments that actually identify threatened or impaired waters in need of remediation.

Philosophically, DWQ is frequently faced with addressing conflicting interpretations of scientific evidence from stakeholders who have very different goals and objectives.

One of the few tools at our disposal for objectively addressing these conflicts, without costly delays resulting from legal challenges, is science. Science provides a framework that allows us to recast these conflicts into competing hypotheses, which can be tested objectively. Making assessments that contradict scientific knowledge sends a message that DWQ is more interested regulating than “getting it right”. This is not a message that DWQ wants to send to any of our stakeholders, regardless of their perspective.

### **Page 3, Bullet 5**

Fifth, both in its proposed biological assessment protocol and in its treatment of the Jordan River wetlands, the agency fails in its duty under the Clean Water Act to protect “the chemical, physical, **and** biological integrity of the Nation’s waters.” 33 U.S.C. § 1251(a). Contradicting this requirement, DWQ proposes an unlawful system that would deem a water meeting its beneficial uses where chemical analysis shows a violation of water quality standards.

FRIENDS objection refers to situations where biological data indicated full support of aquatic life uses, yet numeric (chemical) water quality criteria assigned to protect these uses were violated. DWQ initially established a series of decision rules that would allow biological information to trump water quality standards violations for nontoxic pollutants. However, DWQ concedes that these procedures are in potential conflict with EPA’s policy of “independent applicability”, which takes the position that if **either** chemical or biological assessments indicate impairment the waterbody should be listed on the 303(d) list of impaired waters. DWQ has changed our assessments on the 2008 IR accordingly. However, DWQ maintains our position that rigorous biological assessments can potentially avoid false positive impairments (Type II errors). As a result, assessments that were modified based on the above scenario will be recommended as a low priority to the TMDL Section until an appropriate policy for addressing independent applicability are developed.

In 1991, EPA issued its position that when conflicts arise between the results of chemical and biological assessment methods, the results should be applied independently. This policy was created when the science of conducting biological assessments was in its infancy. Since that time, hundreds of papers have been published, which have vastly improved the accuracy and precision of biological assessments. As a result, biological assessments are now more scientifically rigorous than methods typically employed to assess chemical integrity. Utah has limited resources to protect water quality and we need tools to focus these resources. Applying limited resources to either TMDL or site-specific standard development to address nonexistent problems diverts resources that could otherwise be applied elsewhere.

DWQ believes that listing a site as impaired (failing to meet its aquatic life uses) for a violation of a nontoxic numeric criterion, when significant evidence exists to show the site to be fully supporting its “existing” biological use doesn’t make sense. Standards are directly coupled to uses. Trout require conditions that would kill bass and vice versa. Indeed, it is impossible to interpret many standards outside of the context of their designated use. For instance, high summertime water temperatures could represent a potential threat or ideal conditions for resident biota. It is DWQ’s position that other

provisions of the Clean Water Act, such as antidegradation, are much better equipped at addressing support of “chemical integrity”.

Addressing this logically inconsistent policy is pivotal to ensuring long-term support for DWQ’s biological assessment programs. Of course, a policy aimed at addressing independent applicability must be consider numerous scenarios to ensure protection of existing uses before biological assessments are allowed to trump chemical assessments. For instance, protocols need to be developed that clearly define the data requirements required to demonstrate that sites are in full support of biological uses. If these data are going to be used to justify removal of a site from the 303(d) list of impaired water, it is appropriate to require a higher confidence in these assessments than what would otherwise be required. These issues, and others, need to be discussed openly to develop procedures that are both protective and sensible. DWQ is committed to working with EPA and other interested stakeholders to develop methods for addressing the logical inconsistencies of the independent applicability policy over the next couple of years. Once these issues are resolved, some of the assessments that were changed in response to this comment may change, but hopefully the collaborative process will improve consensus that future modifications to these assessments are appropriate.

**Page 3, Bullet 6**

Sixth, DWQ improperly ignores other types of data and information, such as undisputed evidence showing significant algae blooms and the presence of toxic algae in Farmington Bay in determining whether Great Salt Lake is meeting its beneficial uses.

Again, DWQ did not ignore any data or information when making assessment decisions. A critical part of scientific inquiry involves a review of previous investigations. Applied science involves taking this knowledge, and then asking how it informs specific regulatory objectives. Good scientific practice also requires that we avoid making sweeping generalizations based on a single study or observation.

In this particular case, DWQ looked at the data referred to in this study and worked with other interested parties to conduct additional studies, which resulted in seemingly contradictory data because these follow-up investigations revealed relatively low cyanotoxin concentrations. There are many things that might explain these discrepancies including: the timing of collections, field collection methods and laboratory methods. However, these changes highlight the difficulties in combining data from different sources (see also DWQ responses to Bullets 6 & 7). DWQ intends to conduct subsequent investigations to reconcile these differences, identify trends in algal blooms in Farmington Bay, and to evaluate the extent to which these blooms are human-caused or the result of unique GSL habitat characteristics. Ultimately these investigations will help DWQ determine if these blooms indeed threaten GSL’s uses.

**Page 2, Paragraph 3, Bullet 6 and 7**

Sixth, DWQ improperly ignores other types of data and information, such as undisputed evidence showing significant algae blooms and the presence of toxic algae in Farmington Bay in determining whether Great Salt Lake is meeting its beneficial uses.

DWQ believes that the data requirements that have traditionally been established are both reasonable and justified. Data that are used to assess waterbodies should be based on recognized and accepted Quality Assurance and Quality Control procedures. The data requirements referenced by FRIENDS refer to data that will be directly combined with those collected by DWQ and given the greatest weight for the purpose of making assessments. DWQ maintains that these requirements are necessary because data collected from those outside DWQ often use different laboratory or field methods. In these situations, directly analyzing outside data alongside data collected by DWQ is akin to comparing apples and oranges. Such comparisons may obscure real water quality problems by increasing the frequency of false positive and false negative beneficial use assessments.

DWQ uses all available data and information to make assessment decisions. In addition to formally requesting additional data and information for Integrated Report assessments, DWQ actively contacts other water quality professionals to obtain outside information. Information submitted to DWQ in the form of articles or reports is reviewed by DWQ to inform final assessment decisions. If reliable data are submitted that are not directly comparable with data collected by DWQ the information is still used to augment other sources of data and information. If data are submitted with incomplete or questionable QA/QC procedures, DWQ uses the information to guide future monitoring efforts (e.g., blue-green algae in Farmington Bay). Also, reports often provide insights that lead to changes to existing monitoring approaches. DWQ sincerely appreciates the effort of FRIENDS and other stakeholders in taking the time to supply water quality data and information, because ultimately these additional pieces of information help improve our monitoring and assessment programs.

DWQ acknowledges that there are elements of our data submission procedures that could be clarified or improved. First, we could do a better job of directly conveying how specific pieces of data and information informed our assessment decisions. Second, we could rework our data submission requirements to make it clear that all information is welcome and appreciated, and to provide additional information about how specific types of data are used to make assessment decisions. Third, as has been done in other States, we are developing a [Monitoring Council](#) with the goal of taking steps to ensure that data collected throughout Utah are more directly comparable. Fourth, we will continue to develop and expand volunteer monitoring groups to help empower watershed groups and other interested stakeholders to provide DWQ with assessment data. Needless to say these efforts will need to be phased into DWQ procedures, and DWQ looks forward to continued feedback as we improve this process.



## Page 2-3, Introduction to Great Salt Lake Concerns

In the *Introduction*, FRIENDS point out the ecological importance of the GSL and its associated wetlands. In particular, data are provided that show the GSL to be critical habitat that supports a large and diverse bird community. DWQ completely agrees that the GSL is an extremely important waterbody that warrants additional attention from DWQ and other resource managers. The *Introduction* also highlights an important quandary that DWQ faces in assessing aquatic life use support of the GSL. While some water quality data are alarming when compared to freshwater or marine standards, interpretation of these data in the context of the GSL is complicated by a long history of human occupation and the lack of comparable, relatively undisturbed waters. Conversely, many pieces of evidence, such as those provided by FRIENDS, suggest that the GSL remains a vibrant and healthy ecosystem. We simply need better tools to more precisely and accurately quantify the condition—and trends—of the lake's uses. To this end, DWQ is developing a detailed plan that documents how it will approach beneficial use assessments for the GSL, which is included as an appendix to the 2008 Integrated Report report. DWQ looks forward to continued dialogue about how this framework can be improved as we continue to improve our understanding of water quality in the GSL.

Over the past several years DWQ has considerably increased our efforts to better understand the importance of water quality in protecting GSL's uses. FRIENDS can expect continued and increasing attention from DWQ to give the lake the attention it deserves given the lake's importance and the increasing threats related to development along the Wasatch Front. That said, our rate of progress will remain dependent upon the resources available to conduct this work. Despite the millions of dollars of revenue generated through mineral extraction, recreation (e.g., duck hunting), and brine shrimp cyst harvests, DWQ receives just over \$100,000 year in State funding to address the lake's water quality. Nonetheless, we continue to seek and receive outside funding, which is used to fund research that aims to improve our understanding of the role water quality plays in maintaining the integrity of the GSL ecosystem.

Historic management of GSL often focused on maximizing resource extraction (e.g., harvest of brine shrimp cysts, duck hunting, mineral extraction). DWQ believes that such approaches are tenable only if the physical and chemical integrity of GSL is maintained. The authority granted to DWQ under the Clean Water Act is among the strongest legal mechanisms available for ensuring long-term protection of the GSL ecosystem. However, additional resources are clearly needed to develop the numeric criteria and associated assessment methods to take advantage of the potential strength of the Clean Water Act in ensure long-term sustainability within the GSL. FRIENDS rightfully cites the obligations of DWQ to protect water quality, yet this cannot be effectively accomplished without a consensus among stakeholders that water quality is necessary to ensure long-term protection of the GSL ecosystem. Sustainability is surely a shared goal among most GSL stakeholders but DWQ needs to a better job in conveying the importance of water quality to meeting this goal.

## **Pages 3,4, 5, Legal Background**

FRIENDS provide a good review of the Clean Water Act and the responsibilities and the appropriate steps in assessing and determining beneficial use support, identifying the cause(s) and the source(s) of a pollutant including natural, point sources, nonpoint sources, and a safety margin.

utilizes a two-pronged approach to prevent pollution and restore the Nation's waters. Point source discharges of pollutants – “end of pipe” conveyances from factories, sewage treatment plants, industrial wastes and the like – are regulated through the National Pollution Discharge Elimination System (NPDES) permit program detailed in Section 402. See 33 U.S.C. § 1342. Through the NPDES program, EPA ensures that polluters institute technological controls at each point source, monitor effluent levels and adhere to quantified pollution levels in their discharges as set by permit.

DWQ issues all required UPDES Permits for discharges to the Great Salt Lake. However, DWQ acknowledges that these efforts would be greatly strengthened with the development and establishment of additional numeric criteria and through a more direct policy that helps translate our narrative criteria to UPDES permits. Both improvements remain goals of DWQ that we intend to actively pursue. We look forward to continued input from FRIENDS and other stakeholders about how to prioritize this work to place our limited resources where they are needed most.

The second prong of the Clean Water Act's pollution control strategy is embodied in Section 303, which confronts the pervasive problem of non-point source pollution, such as sediment from logging and wastes from agricultural run-off, in addition to end-of-pipe pollution regulated under the NPDES program. Section 303 has several key components. Each state must first designate uses (fishing, swimming, drinking etc.) for each water body and then develop ambient water quality standards to protect and restore those uses. Water quality standards must be set at a level to protect designated uses from all sources of pollution, point and non-point source. 33 U.S.C. § 1313 (a)-(c); 40 C.F.R. 130.3.

It is precisely for these reasons that DWQ believes that the Great Salt Lake should be divided in to several subclasses of Class 5 and standards established for these subclasses. Establishing subclasses and standards for the GSL and surrounding wetlands is supported by the Clean Water Act.

### **Page 4, Paragraph 2**

Specifically, water quality standards “must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use” of a particularly water body. 40 C.F.R. § 131.11(a)(1). Water quality standards are typically expressed as numeric limitations, 40 C.F.R. 131.11(b) (“In establishing criteria, States should: (1) Establish numeric values. . . .”), which can be supplemented by “narrative standards.” 40 C.F.R. 131.11(b)(2).

DWQ will continue to work toward establishing numeric criteria for the Great Salt Lake. Indeed, millions of dollars have already been spent on these efforts. As expected, given the unique and complicated biogeochemistry of the lake, and the poorly understood importance of hydraulic exchange among the lake's major bays, initial progress in

developing numeric criteria has been slow. However, as we begin to understand more about the ecosystem, DWQ anticipates that future progress will become increasingly efficient. However, as stated above DWQ is required to base standards on “sound scientific rationale”, which is where current data are lacking. There is clearly a need to collectively prioritize the development of a sufficient number of standards to ensure protection of GSL’s uses.

131.11(b)(2). Indeed, relying solely on narrative criteria to protect designated uses is appropriate only “where numerical criteria **cannot** be established. . . .” 40 C.F.R. 131.11(b)(2) (emphasis added). Moreover, where the state relies on narrative criteria for toxic pollutants, such as selenium,<sup>1</sup> to protect beneficial uses, the State must “identify[] the method by which the State intends to regulate point source discharges of toxic pollutants. . . .” 40 C.F.R. 131.11(a)(2)

DWQ supports that numeric criteria can be established and are working to this end. For instance, we have already made much progress in understanding the importance of selenium and mercury in the maintenance of GSL’s uses, which were previously identified by FRIENDS as priority toxic pollutants. DWQ looks forward to continued dialogue about other toxic pollutants that should be prioritized for future standard development and the rationale for ranking these pollutants.

In addition, subpart (d) of § 303 obligates states to identify waters that are impaired (*i.e.* they do not meet water quality standards) after point source controls are imposed. 33 U.S.C. § 1313 (d)(1)(A). The state must then prioritize each of these water quality limited segments (WQLS), according to the “severity of the pollution and uses to be made of such waters.” *Id.*

DWQ continues to meet this obligation by developing and publishing the *Integrated Report*.

## **Page 5, Farmington Bay**

### **Farmington Bay**

Farmington Bay has enormous biological and recreational value. Surveys reveal that Farmington Bay provides habitat for more than 1% of the estimated North American population for 12 avian species. Counts found 81,000 American avocets, comprising 18.2% of that population, more than 47,000 black-necked stilts (31.4% of the population), over 108,000 Wilson’s phalaropes (7.2%), 19,000 California gulls (3.2%); more than 8,000 cinnamon teal (3.5%); and over 7,000 white-faced ibis (4.9%).

The open water of Farmington Bay also has extensive use as documented by the Great Salt Lake waterbird surveys.<sup>1</sup> For example, species counts on the open water of Farmington Bay during the waterbird surveys from 1998-2001 found 30,230 Franklin gulls, 2,178 northern pintail, 51, 606 American avocet, 4,023 black-necked stilt, 37,620 California gulls, 10,481 Wilson’s phalarope and 16,476 eared grebe.<sup>2</sup> Single day counts from Farmington Bay in 2005 found numbers of American avocet greater than 65,000, phalaropes (Wilson’s and Red necked) greater than 670,000, western sandpiper greater than 41,000, and waterfowl greater than 34,000.<sup>3</sup>

DWQ does not dispute the ecological importance of Farmington Bay. As noted in our comments on the Introduction of FRIENDS’ comments, data such as these and the lack of evidence in the decline in populations, provide evidence that suggests Farmington Bay aquatic life uses are fully supported. We acknowledge that these observations

cannot definitively answer whether more subtle adverse effects are occurring. The potential threats to the use's warrants further evaluations because we aren't relying exclusively on the lack of observed adverse effects.

## Page 6, Great Salt Lake Is Impaired

As demonstrated in detail below, Farmington Bay is impaired. Recent examination of the Bay confirms earlier determinations – the Bay is hypereutrophic. Wurtsbaugh, Marcarelli, *Eutrophication in Farmington Bay* (May 30, 2006) at 23. Indeed, trophic state indices (TSI) from 130 lakes on the Utah 303(d) list show Farmington Bay as the most eutrophic lake in the State with a TSI of 87 in 2005 and 91 in 2001. *Id.* A massive bloom of *nodularia spumigena*, a cyanobacterium, including pervasive surface scums, was present in Farmington Bay for much of May through September of 2005. *Id.* at 3. During this time, almost all measurements indicated that concentrations of *nodularia* were well above 150,000 cells per milliliter, and often ranging from 500,000 to almost 900,000 cells per milliliter. *Id.* at 71.

At the same time, Secchi disk readings averaged only 0.3 meters, while total phosphorus concentrations were  $673 \mu\text{g L}^{-1}$ . *Id.* at 3. Not surprisingly, Farmington Bay was anoxic due to high algal production and shallow water. *Id.*

Nighttime anoxia was frequent, and several bouts of prolonged anoxia for more than one day occurred at both the north and south ends of the bay. After July, a sal wedge protruded into the north end of Farmington [Bay] from Gilbert Bay, and this layer was always anoxic and had high concentrations of hydrogen sulfide, thus making it uninhabitable for aquatic organisms other than bacteria.

Adding to the extremely poor water quality of Farmington Bay were high levels of ammonia. From July through October, Farmington Bay commonly experienced ammonia concentrations greater than  $150 \mu\text{g L}^{-1}$  and as high as  $400 \mu\text{g L}^{-1}$  in May. As the pH in Farmington Bay was usually above 9, this means that total ammonia concentrations in the Bay from July to November greatly exceeded Utah water quality standards, Utah Admin. Code R317-3-14 (Table 2.14.2 & Table on 1-Hour Acute Concentration of Total Ammonia), as well as EPA's suggested standards ( $95 \mu\text{g L}^{-1}$  freshwater;  $90 \mu\text{g L}^{-1}$  marine). *Id.* at 3-4. Brine shrimp are missing from Farmington Bay, while significant cyanobacterial blooms in 2005 also greatly exceeded levels that are considered to pose moderate or high probabilities of public health risk. *Id.*

As described in the Great Salt Lake assessment framework in the appendices of the 2008 Integrated Report, DWQ has identified eutrophication as one of the primary issues that needs to be addressed. This framework identifies some of the primary lines of evidence that DWQ feels would be needed to make an assessment of Farmington Bay.

## **Page 7, Paragraph 1, The lack of numeric standards...”**

Although DWQ may rely on narrative standards instead of numeric standards, this is not the preferred method. Federal regulations encourage states to establish numeric values based on scientifically defensible methods. 40 C.F.R. § 131.11 (narrative standards may be established if numeric standards cannot be set); Natural Resources Defense v. United States EPA, 915 F.2d 1314, 1317-18 (1990). Narrative criteria are appropriate to supplement numeric criteria, or in the interim until numeric criteria can be established. 40 C.F.R. § 131.11(b)(2). Narrative criteria still play a role under the Act since EPA has taken the position that narrative criteria are necessary to comply with section 303(c)(2)(A) of the Act, which requires standards to protect public health or welfare, enhance the quality of water, and serve the purposes of the Act. EPA, *Water Quality Standards Handbook* 6-3 (2d ed. 1993) at 3-24.

The use of narrative standards obligates DWQ to develop a methodology or criteria for implementing those standards so that it can be objectively determined whether those standards have been violated. EPA rules require that where a state adopts narrative toxicity criteria to protect designated uses, the state must also identify procedures for implementing those criteria. 40 C.F.R. § 131.11(a)(2). The state must explain how it will develop specific limits on point source discharges to ensure that the narrative standard is met. *Handbook* at 3-24 to 3-26.

As stated above, missing from DWQ’s narrative standard are any clear procedures for implementing this standard so that it can be objectively determined whether the standard is being met or violated. How specific discharges will be limited/regulated so as to comply with this standard has similarly never been clearly established. DWQ cannot simply rely on vague narrative standards when there is no way to measure whether beneficial uses are being met. The agency should either develop numeric standards as is preferred under the Act or it must immediately develop clear procedures for implementing these narrative criteria.

DWQ continues to work toward more rigorous translators of Utah’s narrative criteria to water quality management decisions. One purpose of standards is to assess beneficial use support and the GSL assessment framework in the appendix of the 2008 Integrated Report outlines a mechanism for interpreting our narrative standards in this context. However, DWQ also acknowledges that the interpretation of narrative criteria with regard to other water quality programs is needed. In particular, DWQ needs to consider how to enforce narrative standards in the context of permitting and antidegradation reviews. DWQ intends to form a workgroup to address these issues. In the interim, DWQ will continue to compile examples how these linkages have been made elsewhere.

### **The Great Salt Lake Assessment Framework (subcategory inserted)**

In its Great Salt Lake Assessment document, DWQ describes a decision matrix upon which it proposes to rely on to determine whether narrative standards are being met in the Great Salt Lake. Initially, DWQ cannot use the development of this decision tree to avoid confronting the real and documented evidence that shows that Great Salt Lake is currently impaired based on excessive nutrients, low dissolved oxygen and mercury. Great Salt Lake must therefore be listed on the 303(d) list because it is not meeting its beneficial uses.

DWQ did not develop the assessment framework with the intent of avoiding any action with regard to addressing water quality concerns on the Great Salt Lake. In fact, the

intent of the document was to create a framework that would move water quality programs forward in the most efficient manner possible. As documented in these comments and elsewhere, significant evidence exists both in support of and against listing the Great Salt Lake as impaired. Understandably, members of the regulated community point toward evidence that suggests the GSL is a healthy ecosystem (e.g., a healthy bird community, no evidence of deformations in bird embryos, a healthy brine shrimp population), whereas others point toward evidence that indicates impairment (e.g., algal blooms, high nutrient concentrations). Moreover, the importance of the lake, both ecologically and economically, results in passionate opinions across stakeholder groups.

Experience has shown DWQ that nothing is more likely to delay actions to improve water quality than to make a controversial decision when the data are equivocal. The GSL assessment framework was created as a tool to facilitate discussions among stakeholders about what specific data are needed to make defensible assessment decisions. It is the view of DWQ that a critical step in efficiently addressing water quality concerns is the generation and ranking a list of the indicators that can potentially be used to assess the beneficial use support of GSL. Disagreements among scientists and other stakeholders on the indicators and associated rankings is likely to occur. However, DWQ hopes that the framework provides a process to systematically and objectively address these disagreements as they arise. In other cases, these disagreements will highlight specific areas where additional research or data are needed. The draft assessment framework represents our first attempt at creating a structured dialogue about these issues.

Moreover, the DWQ decision tree fails to explicitly reference how compliance with any water quality standard is to be determined. As a result, the decision tree fails to comply with the Clean Water Act, fails to ensure compliance with state water quality standards and fails to protect Great Salt Lake and its ecosystem.

The assessment framework does not replace numeric criteria. The framework can however assess the condition of beneficial uses and can be implemented relatively quickly. Once implemented, the assessment framework will provide an objective mechanism for assessing narrative criteria. If impairments are subsequently found, then the information generated in making these assessments would highlight pollutants in greatest need of numeric criteria. In the interim, DWQ will continue to work toward establishing numeric criteria for pollutants that have already been identified as priorities.

DWQ also relies on the weight of evidence approach where the agency identifies critical direct and indirect indicators needed to attain beneficial uses. DWQ identifies thresholds for these indicators and uses a preponderance of the evidence test to make a conclusion. Under the weight of evidence approach there is no need to offer definitive proof. Rather, the data and information needs only to show that the beneficial use at issue is **at risk**. As a result, where a use is at risk DWQ should not require more than evidence of impairment before taking appropriate remedial action.

DWQ is taking action by developing more rigorous tools to assess GSL beneficial uses. We conclude that the weight of evidence is inconclusive and are collecting data and developing methods to support a conclusive determination.

Other methods for assessing compliance with narrative standards include the RIVPACS model, which has not been utilized on Great Salt Lake. This model has only been utilized on rivers and streams, but it has not been applied to analyze narrative standard compliance on lakes such as Great Salt Lake. As one method to be used in conjunction with others, this may be a useful tool for analyzing narrative water quality standard compliance, and should be utilized more widely across different types of water bodies.

RIVPACS models use data collected from physically similar reference sites to predict the biota expected in the absence of human-caused disturbance. It is not appropriate to directly apply Utah's RIVPACS models to the GSL because the predictions of expected conditions are based on stream data. Similar approaches could be used to help interpret indicators of impairment in GSL, but these will be complicated by the fact that the GSL does not have a comparable reference sites. Paleolimnological studies currently being planned by DWQ may prove useful for estimating what the ecosystem was like was like in the past.

## **Page 8, Ample Evidence Indicates that the GSL is not Meeting its Narrative Criteria**

Based on any interpretation or analysis of the narrative standard, the excessive quantities of algae, nutrients, and other contaminants in Farmington Bay and other open waters indicate that the beneficial uses of Great Salt Lake, including the primary contact use, are not being protected. Algae blooms, hypoxic conditions, excess quantities of criteria pollutants such as mercury mean that the public cannot and should not use the lake for primary contact recreation. The narrative standard, on its face, prohibits lake conditions that would cause undesirable aquatic life to proliferate. Such conditions have continued to exist for considerable time. The algae problem, particularly in Farmington Bay, has caused eutrophic and hypoxic conditions that allow

algae to flourish and deplete the bay of oxygen, therefore preventing beneficial uses from being met.

DWQ agrees that if the observed algal blooms in Farmington Bay can be shown to be human-caused and getting increasingly worse since 1975, then this would likely represent an impairment of the narrative criteria. However, we need additional information to understand whether these algal blooms constitute a "nuisance" in the context of expected conditions. A number of studies are planned or underway to answer this critical question.

More broadly speaking, DWQ hopes to refine the language of our narrative criteria to make it clear that scientifically defensible, quantitative methods can be used to determine support of the narrative criterion. We also need to consider how these assessments relate to UPDES permits, although this will be a greater challenge. However, DWQ envisions a similar approach that has been applied to assessments based on biological impairments. Once a site is found to be impaired, the next step would involve identifying causal pollutants, then load allocations would be developed for these pollutants as part of the TMDL process, with attainment goals defined using the same methods that were employed to make the initial assessment. DWQ looks forward

to working with EPA and other interested stakeholders to develop strategies for implementing these assessments.

**Pages 9, Paragraph 3. The submitted Information shows that the Open Waters of Farmington Bay are not swimmable**

Great Salt Lake, including Farmington Bay, is designated for primary and secondary recreation. Utah Admin. Code R317-2-13.11. This means that Great Salt Lake must be clean enough **and** appealing enough to swim in. Utah Admin. Code R317-2-6.2(a); *Handbook* at 4-4 (“Recreational uses traditionally are divided into primary contact and secondary contact (e.g. swimming vs. boating; that is, recreation “in” or “on” the water.”). As a water body often choked with significant algae blooms, Farmington Bay is not swimmable. 33 U.S.C. §1251(a)(2) (national goal of water quality which provides for .... recreation in and on the water be achieved by July 1, 1983); Utah Admin. Code R317-2-6.2(a) (recognizing that Class 2 protects “recreational use and **aesthetics**”); Great Salt Lake Assessment at 2.B.4 (whether contact recreation is supported is a direct indicators of whether beneficial uses are being met). Initially, this is simply because these algae blooms make swimming in the lake unappealing and unattractive. A waterbody designated for primary contact recreation should not be covered with thick and smelly algae because such conditions prevent recreation and deter public use. No parent would allow their child to even enter the algae clogged waters of the lake, much less swim in them.

More alarming is that the algae blooms and eutrophic conditions in Farmington Bay are higher than elsewhere in the state and that these blooms contain an algae associated with a toxin. The health threats imposed by these algae blooms are considerable since both animals and people could be at risk if they were to come in contact with the water in the bay.

According to the Wurtsbaugh study *nodularia* is present in extremely high concentrations in the Bay. Wurtsbaugh, W.A. and A.M. Marcarelli. 2006. *Eutrophication in Farmington Bay*, Great Salt Lake, Utah: 2005 Annual Report. Report to the Central Davis Sewer District, p. 3. *Nodularia* can fix atmospheric nitrogen, and may thus contribute to the overall nutrient loading in Farmington Bay when low salinities allow it to persist. *Nodularia* and other cyanobacteria produce toxins, and are thus thought to be unpalatable to most zooplankton. The United States Center for Disease Control and Prevention (CDC) indicates that *nodularins* can cause skin and eye irritation.<sup>5</sup> The CDC also notes that *nodularins* are tumor promoters in mammals. The high *Nodularia* densities in Farmington Bay in 2005 allowed nitrogen fixation rates that are among the highest reported in any lake.

DWQ agrees that the extensive *Nodularia* blooms in Farmington Bay are potentially a concern for both aquatic life and recreation uses. Cyanotoxins present in these organisms are known to cause adverse effects to aquatic biota and to human health. We appreciate the efforts of Dr. Wurtsbaugh and colleagues that brought this issue to our attention. However, we disagree with the conjecture that these data definitively imply impairment of these recreation uses on both technical and programmatic grounds. We are implementing or plan to implement a number of studies to fill key data gaps. Please note that while we do not discount the data collected by Wurtsbaugh, other studies have been conducted that indicate relatively low cyanotoxin concentrations. Our rationale for not immediately listing is summarized below.



DWQ is not aware of current or historic swimming recreation in Farmington Bay. While individuals may occasionally swim in the bay, these events are currently rare and likely have been since 1972. Swimming access points are rare within the bay and no designated beaches exist. In contrast, Gilbert Bay has frequently used designated swimming beaches with shower facilities. Given the close proximity of Gilbert Bay to Farmington Bay, there is little reason for individuals to use Farmington Bay for swimming recreation. To our knowledge, the primary recreation activities on Farmington Bay are boating throughout the summer and into autumn and duck hunting in autumn.

As the WHO and others have noted, the nature of exposure is critical in determining cyanobacteria cell counts or cyanotoxin concentrations that would be protective recreation uses. Adverse human health effects are more severe when these toxins are ingested (e.g., the carcinogen example noted in FRIENDS comments) than with skin exposure. Dermal contact with cyanobacteria can cause rashes and irritation, but whether this occurs is dependent on the length and nature of exposure and the concentration of the specific cyanotoxins present in the water column. Moreover, as noted by the WHO, it is not clear whether reported effects of dermal contact result from cyanotoxins or from other unmeasured compounds. DWQ believes that the effects of *Nodularia* on recreation uses warrants investigation, but we also believe that these evaluations must consider the nature of recreation that currently occurs— or has occurred since 1975— in Farmington Bay which may require a standards change.

To date, EPA has primarily focused efforts on creating criteria and guidelines for determining unacceptable cyanotoxin concentrations in drinking water. Conversely, EPA's research on recreation indicators has primarily focused on human health threats from fecal contaminants. DWQ can develop standards for cyanobacteria numbers or cyanotoxin concentrations in the absence of uniform federal guidance. However, as noted by FRIENDS, all water quality criteria must be scientifically defensible. In the case of recreation uses, numeric criteria have traditionally been determined through epidemiology studies that evaluate rates of reported illness (typically expressed as number of illnesses/1000 individuals) at varying pollutant concentrations. In this case, development of appropriate criteria would involve reviewing available literature to summarize illness rates resulting from the type of recreation activities in Farmington Bay. In addition we would probably want to consider the timing of both algae bloom and recreation activities. For instance, greater protection may be warranted during the duck hunting season when most of the recreation activity takes place.

DWQ agrees with FRIENDS that we must protect “existing” recreation uses, which is precisely the reason for our reluctance to list the Great Salt Lake as impaired based on limited data and by comparisons against general WHO guidelines, which are intended to be broadly protective of recreation uses. Given the difficulties of developing and implementing numeric criteria, DWQ is first working to better characterize the extent and magnitude of algal blooms and historic trends of these blooms. We anticipate that these data will be first applied in assessing uses, then later to standards. Please note that cyanobacteria have been included as key indicators in the draft assessment framework. DWQ intends to evaluate subsequent cyanobacteria data against threats to both human health (recreation uses) and to lake biota (aquatic life uses).

## **Page 10, Existing Data and Mercury Proves that Narrative Criteria Have Been Violated...**

The narrative standard is violated when a waterbody is contaminated to such an extent that poor water quality leads to undesirable physiological responses in desirable resident fish or other desirable aquatic life, or undesirable human health effects. Existing data on mercury shows that mercury levels within Great Salt Lake exceed safe levels. Great Salt Lake in particular is known as a local hot spot for excessive quantities of mercury. In 2001, United States Geological Survey (USGS) and Fish and Wildlife Service researchers studying the Great Salt Lake found alarmingly high levels of mercury in the water and in birds that feed on the lake's brine shrimp.

[excellent review of human health mercury concerns omitted]

Based on the above, DWQ is right to be concerned about the impacts of mercury in Great Salt Lake on the public health. However, the agency cannot ignore EPA standards designed, not to protect human health, but to protect wildlife. This is because FDA standards, adopted by DWQ, are not intended to and do not protect the health of the various biota such as avian life that depend upon mercury-laden brine shrimp. The FDA standard would have no relevance in terms of evaluating the risk of mercury contamination to wildlife.

In sum, then, alarming levels of methyl mercury mean that Great Salt Lake water quality is failing to support the lake's beneficial uses. In addition to threatening waterbirds, shorebirds and their food chain, these levels pose a significant risk to human health. As a result, DWQ is compelled to list Great Salt Lake as impaired and to take immediate steps to improve water quality in the lake.<sup>9</sup>

DWQ shares FRIEND's concerns about mercury contamination in the GSL. DWQ has formed a collaborative workgroup, consisting of numerous State and Federal agencies, specifically to address the problem, obtained outside funding to conduct research to fill key data gaps, and developed an assessment framework to determine whether mercury is impairing the aquatic life uses of the lake. The 2010 Integrated Report will provide an update of these activities and any conclusions that can be drawn from these ongoing investigations.

**Page 14, The Submitted Data Show that the Open Waters of Farmington Bay are not Supporting Waterbird,**

As detailed above, existing, credible data, **including DWQ's own monitoring data**, show that Great Salt Lake is impaired based on, *inter alia*, excessive nutrients, low dissolved oxygen and high levels of ammonia. As a result, DWQ must place the lake on the 303(d) list. In other words, in addition to failing to support primary and secondary contact recreation and in addition to failing to support waterbirds, shorebirds and their food chain due to mercury contamination, Great Salt Lake is failing to support its beneficial uses because of extremely high nutrient levels in its waters. These nutrient levels lead to low dissolved oxygen and high levels of ammonia in the presence of high pH.

That these indicators show a failure to support beneficial uses and impairment under the narrative standard is evident. Daily averages for dissolved oxygen levels are repeatedly measured at near zero, levels which cause organisms that make up the diet of waterbirds to die. Toxic levels of ammonia, as well as the presence of algae blooms, also prevent Great Salt Lake from supporting the organisms on which waterbirds and shorebirds rely. Moreover, waterbirds and shorebirds cannot flourish where there are blooms of algae, including toxic algae, as well as toxic levels of ammonia. Such poor water quality threatens the health of waterbirds and shorebirds, as is indicated by the 3D numeric water quality standards. Finally, as a general matter, conditions in Farmington Bay and elsewhere in the lake result in the propagation of undesirable aquatic life such as algae, and therefore violate the narrative standard.

Thus, all available data and information on Great Salt Lake shows that the lake is polluted by nutrients and that the resulting poor water quality is impairing the lake's beneficial uses and violating the narrative standard. Great Salt Lake is the most polluted water in the state and corrective action can no longer be delayed.<sup>10</sup> DWQ's failure to list the lake as impaired violates the Clean Water Act and constitutes an abrogation of the agency's obligation to protect the public and Great Salt Lake, its water quality and its beneficial uses.

As previously noted in this response, DWQ is actively pursuing research to determine whether eutrophication is degrading the uses of Great Salt Lake. A framework for addressing these concerns is included in the 2008 Integrated Report. However, as noted by FRIENDS there is no indication that these effects are currently adversely affecting bird population numbers. Nevertheless, DWQ will continue to address these concerns to obtain the data and information necessary to make a scientifically defensible assessment of aquatic life uses.

**Page 14, Paragraph 5, “The Wetlands of the Lower Jordan River, as Well As FBWMA, are Not Supporting Their Beneficial Uses.**

The wetlands of the lower Jordan River, as well the FBWMA are impaired. As a result, DWQ must take immediate action to restore water quality in these critical ecosystems. Initially, DWQ improperly segregates the wetlands of the Jordan River from the river itself. The lower reaches of the Jordan River are impaired based on, *inter alia*, insufficient dissolve oxygen levels, the presences of *e. coli*, and other pollutants. This means that the wetlands hydrologically connected to the Jordan River, including those of the Jordan River delta, are impaired. Therefore, DWQ must address this impairment with a TMDL, preferably in concert with on-going efforts to address impairment in the river itself.

Second, DWQ is wrong to state, as it did in an August 10, 2007 letter to Wayne Martinson of the National Audubon Society that the agency does “not currently have water quality criteria to support a listing downstream of the Burnham Dam.” DWQ’s own regulations specifically provide that FBWMA, which is downstream from the Burnham Dam, is protected by the numeric standards that apply to category 3D.<sup>11</sup> Utah Admin. Code R317-2-6.3(d) (use designations); Utah Admin. Code R317-2-13.11 (designating Farmington Bay Waterfowl Management Area); see also R317-2-13 (numeric standards for 3D). Therefore, DAQ does have criteria – the 3D wildlife criteria – that apply to FBWMA.

Finally, under the applicable 3D criteria, DWQ’s own monitoring data establish that numeric water quality standards are not being met in the wetlands of the Jordan River as well as in the various special management areas around Great Salt Lake. For example, DWQ’s own data confirms that, particularly in impounded wetlands, high nutrient levels are exceeding state water quality standards. As a result, these waters must be listed as impaired and/or incorporated into DWQ’s current efforts to address impairment in the lower reaches of the Jordan River.

DWQ acknowledges that DO and pH numeric standards are sometimes violated in the “impounded” wetlands around the GSL. However, these violations occur in sites with both very low and relatively high nutrient concentrations. DWQ revised the DO and pH water quality standards because they are not accurate indicators of wetland condition.

The data referenced in these comments were collected with outside funds obtained specifically to address water quality concerns that have been raised about GSL’s wetlands. To date, DWQ has received over \$1 million in EPA grants to better understand the condition of GSL wetlands, particularly with regard to the potential adverse effects of nutrients to wetland biota. DWQ will continue to refine our wetland assessment methods and was recently awarded another grant to test the recently developed MMI with an independent dataset. Any listing, either impaired or fully-support, will be based on sound science.

**Page 15, Paragraph 3, Proposed Changes in Beneficial Uses Requires Specified Procedures.**

***[FRIEND’s review of federal requirements for changes to beneficial uses was omitted from this response]***

DWQ follows appropriate procedures for any change to beneficial uses, as FRIENDS points out uses changes that result in a reduction in water quality require a Use

Attainability Analysis (UAA). In the process of developing the assessment framework for the GSL, it was recognized that the major bays of GSL (Class 5) have significant chemical and biological differences. As a result, assessing the condition of the GSL without consideration of these differences would be impossible. The categories are only included in the assessment framework to convey the need to consider distinct biological and chemical endpoints in each bay. Formal changes to Category 5 uses would require a change to our water quality standards, and will be subject to the State and Federal regulations involved with making changes to water quality standards including: public notification, public review, public hearings, adoption by Utah's Water Quality Board, and ultimate approval by EPA. The purpose of these formal processes is to provide many check and balances to ensure that legal procedures are followed.

### **Page 16, "Biological Assessment"**

We understand that DWQ's Biological Assessment program is a relatively new one and so we offer these comments for purposes of improving the program and conclusions that are drawn from the data. DWQ undertook biological assessment of 164 Assessment Units and found that 78 units were fully supporting and 46 were not supporting beneficial uses. More stream segments were found to be "fully supporting" if the data was combined with chemical assessment. There were 11 instances where the biological data indicated that uses were being fully supported, but the chemical data showed that uses were not being fully supported.

Under these circumstances, DWQ cannot, as it did, make a finding that uses are being fully supported. This is because, the Clean Water Act ensures the restoration and maintenance of "the **chemical, physical, and biological** integrity of the Nation's waters." 33 U.S.C. 1251(a). For this reason, DWQ cannot classify waters as "fully supportive" where the agency finds violations of numeric criteria. Thus, until such a time that these waters meet **both** biological and chemical standards, DWQ must list these segments as being impaired.

As previously stated noted, DWQ changed these assessments based on EPA's policy of Independent Applicability. It is important to realize that the goals of the CWA cited in FRIENDS comments have been interpreted through Federal Regulations. These regulations translated these goals into the concept of beneficial uses and associated numeric and narrative criteria. FRIENDS' comments suggest that these interpretation falls short of the stated goals of the CWA. Changing these policies at a federal level falls well outside DWQ's regulatory authority.

It appears from table 2.15.3 that DWQ only utilized the Biological Assessment program on streams and creeks within the state, and did not test other waterbodies such as lakes. As the program is evaluated and refined we would ask that future analysis include other waterbodies such as lakes and wetlands. This will enable the state to determine whether beneficial uses are being met in different types of waterbodies as additional biological and chemical data is gathered.

Ultimately DWQ hopes to apply biological assessments to all types of waterbodies. Methods for wetlands and lakes/reservoirs are currently being evaluated. However, it is important to realize that applying biological assessments to other waterbodies will require the development and testing of assessment tools that are waterbody-specific.

It appears that the biological assessment methodology is based on species analysis and not the number of individuals within that species. If for example, DWQ is relying on macroinvertebrates data typically the number of species is counted to assess biodiversity, but there does not appear to be any test to determine how many individuals exist within that species. There are various indices that can be used to determine the number of individuals so we would recommend that individuals be counted so that DWQ knows when that population is declining. This type of analysis would ensure that protective measures be taken when a population declines.

This decision was made because relative abundance data are highly variable both spatially and temporally. Spatial variability leads to a higher incidence of sampling error. Abundance numbers at a single location vary considerably from year-to-year and within a year due to macroinvertebrate life cycles. Finally, macroinvertebrates are nearly always subsampled when taxonomists enumerate and identify specimens, which leads to additional sample variability, particularly with regard to abundance data. These sources of sampling error can also affect presence or absence (P/A) data, but do so to a much lesser degree. Somewhat counter intuitively, when P/A vs. relative abundance assessment metrics have been evaluated in terms of sensitivity to human-caused stress, P/A metrics are almost always more sensitive to human-caused stress.

## Page 17, Paragraph 4, “Removal of Waterbodies from the 303(d) List”

Within table 3.3 of DWQ’s Assessment there is a listing of water segments that are proposed to be dropped from 303(d) list. Many stream segments were said to have met standards for TDS and that new site specific standards were being approved. Alternatively, new site specific standards were being developed for TDS while DWQ concedes that insufficient data exists. We oppose the establishment of site-specific numeric criteria for TDS for various water bodies at levels much higher than the typical standard for irrigation of 1200 mg/liter. Admittedly, the 1200 mg/liter standard is appropriate for irrigation (as opposed to stock watering), but there is nothing to suggest that water from these sources is not used for the irrigation of crops. As EPA regulations require, all water quality standards, including site-specific standards, must protect the designated uses and be based on sound scientific rationale. 40 C.F.R. § 131.11(a)(1). Moreover, “[f]or water with multiple use designations, the criteria shall support the most sensitive use.” *Id.*

Here, there is no adequate basis for the significant weakening of the standard for TDS and no determination that the designated use will be protected. In addition, EPA will approve site-specific criteria only if it is developed using appropriate procedures. Again, there is no evidence that appropriate procedures were followed.

By the same token, there is no indication that these high levels will not adversely affect designated uses for aquatic life. Several studies and EPA’s own analysis admits that high levels of TDS – levels less than those permitted by the proposed and current site-specific standards – will harm aquatic life. As a result, these standards do not protect beneficial uses. Where increases in the standard for TDS are upstream of the Green River, adverse impacts to listed species are likely to result. Prior to approving such a standard, EPA would be required to consult with the U.S. Fish and Wildlife Service. Finally, there is no indication that these site-specific TDS standards will be in keeping with the Colorado River Salinity Standards.

In terms of the removal of waterbodies that have a TMDL in place we would ask that continuous monitoring of these waters occur so that it can be determined whether beneficial uses will continue to be met.

DWQ reviewed all of the assessments referenced by FRIENDS and based all assessments on approved water quality criteria. DWQ acknowledges that site-specific standards are only appropriate for situations where: 1) they are needed to reflect natural or background conditions, 2) existing conditions are irreversible, or 3) that higher concentrations would ensure continued protection of the existing use. One of these justifications will accompany any site-specific standard change and all stakeholders will have the opportunity to comment on these changes and associated justifications through the standards rulemaking process.

DWQ agrees that monitoring should continue once a TMDL has been approved. In fact, we often increase the frequency or intensity of monitoring at TMDL sites to evaluate the efficacy of BMP implementation.

## Page 18, Paragraph 3, Data Submission

DWQ's Water Quality Assessment document outlines the requirements for data submission that must conform to certain field collection methods, quality assessment/ quality control standards, must be analyzed in a certified EPA/USGS/state approved laboratory, minimum number of data points (10), be no older than five years, be submitted in electronic format, and must contain temporal and spatial characteristics. WQ Assessment, p. 5. The restrictions on the type of data that you will accept is unnecessarily burdensome on those parties submitting data, and furthermore is not compliant with EPA regulations on the type of data that the state agency must accept and use.

That regulation states: in preparing its 303(d) list of impaired waters, “[e]ach State **shall** assemble and evaluate **all existing and readily available water quality-related data and information**. . . .” 40 C.F.R. § 130.7(b)(5) (emphasis added). “[A]t a minimum,” this provision requires the state to assemble and evaluate “**all** of the existing and readily available data and information” dealing with:

Waters for which water quality problems have been reported by . . . members of the public; or academic institutions. These organizations and groups should be actively solicited for research they may be conducting or reporting. For example, university researchers . . . are good sources of field data; . . .

40 C.F.R. § 130.7(b)(5)(iii). Importantly, DWQ must give an adequate rationale for any decision **not** to assemble and evaluate data and information the federal regulations consider highly germane to the 303(d) listing process. 40 C.F.R. § 130.7(b)(5)(iii) (Each State **shall** provide a “rationale for any decision to not use any existing and readily available data and information” listed in 40 C.F.R. § 130.7(b)(5)(iii)).

Initially, you seemingly fail to acknowledge that you are duty bound to solicit any readily available water-quality related data **and information**. *Id.* at 5. Your specifications suggest that the submission of information is not appropriate. Such an approach is not in keeping with EPA regulation.

Second, your characterization of data ignores that not all data are field data and laboratory analysis. For example, data on fish kills, algae blooms or skin rashes is of significant importance to determining impairment, yet seems to be precluded by your overly restrictive understanding of data and the format in which they are to be submitted.



Third, the restrictions you place on data that you will accept, id. at 5-7, are overly burdensome and are not in keeping with EPA's expansive directive that you actively **seek** data and information from all sources. Particularly onerous are the requirements that the data be in a EXCEL format and that, regardless of its source, or whether it has been published or peer reviewed, that it must be accompanied by certain quality assurances.

Fourth, your assumption is, falsely, that the only use of data is to serve as the sole basis for a determination of whether impairment exists. Id. This ignores the strong possibility that outside data and information could be **part** of a determination of impairment and that outside data and information could be combined with other data and information, including DWQ's own data, to establish impairment.

Fifth, you also ignore that Utah waters are protected by a narrative standard. This standard is **not** based on numeric criteria. Therefore, by seeking to restrict data and information you will accept to data that are in a format that parallels numeric criteria is to ignore the breath of Utah's own water quality standards.

Sixth, your own Beneficial Use Assessment Categories, Assessment at 16, recognize situations where data and information are necessarily incomplete. By your own analysis, then, data and information are acceptable and important even when they are not definitive. Thus, the restrictions you put on outside data sources are more restrictive than is envisioned by your own classification scheme.

Finally, in making these comments, we confirm our position that you must accept any and all data and information submitted by the public that is water quality related and must consider this information in making your determinations regarding water quality impaired waters in Utah. You are **not** free to ignore this data and information because it is not in keeping with your specifications. According to relevant regulation, you must provide a "rationale for any decision to not use any existing and readily available data and information" submitted to you. Moreover, data and information that is credible, but not necessarily in the format you desire, may indeed serve as the sole basis of a determination of impairment.

Please refer to DWQ's previous response.

## **Page 19, Comments to EPA**

Based on the public notice it appears that DWQ intends to send its 303(d) proposal to EPA without first consideration of the public's comments on the agency's analysis. The primary benefit of such comments is that they can be used by DWQ to improve the analysis and the list itself so that when the list/analysis is sent to EPA it will have included the public's input. To send the analysis without careful consideration of the public's comments will render the public process largely inconsequential or ceremonial in terms of aiding the agency in its analysis and thereby violating the Clean Water Act

It was never the intent of DWQ to not consider comments from the public. DWQ apologizes if this was not clear in our public notice.

## Page 20, Request for Notice

Finally, we request that you notify us when DWQ has finalized the 305(b)/303(d) Report and advise us of our appeal rights under the Utah Administrative Procedure Act relative to that action.

DWQ will be glad to notify you once the report has been finalized. DWQ intends to meet directly with representatives of FRIENDS to minimize miscommunication about our rationale for accepting or rejecting their recommendations.

### USEPA Region 8 June 11, 2008 Comments on the 2008 Draft Final Integrated Report and Utah Division of Water Quality Responses

Utah Division of Water Quality Responses are in *italic* font

**Note: The draft of the 2008 Integrated Report was extensively revised and some of the specific references in the comments may no longer be valid.**

#### **Utah's 2008 Integrated Report Part 1: Water Quality Assessment Guidance**

Led by Tom Toole and Harry Judd, Utah initiated and implemented substantive follow-up revisions to their integrated reporting process from the 2006 IR, as well as numerous modifications and additions to their assessment methodology for determining the attainment status for waters of Utah. This process was conducted in a timely manner by the Utah Division of Water Quality. Included here is a list of some of the changes resulting from this work.

Congratulations to the State for initiating and/or completing these efforts:

- a. **Category 5 Waters** - To improve clarification and understanding, at EPA's request, Utah removed all subcategories under Category 5: those waters where the water quality standard(s) are not attained as a result of impairment caused by a pollutant(s). A Total Maximum Daily Load (TMDL) is required for all Category 5 waters.
- b. **Mercury Health Advisories** – During the process that took place in 2006/2007 Utah made its first more substantive effort at further quantifying and documenting their beneficial use assessment based on mercury health advisories.
- c. **Segmentation of Great Salt Lake (GSL) for Assessment** - Section 9.2 is a new section of the assessment methodology that addresses segmentation of the GSL for assessment purposes. This much-needed segmentation scheme is one of the outcomes of the collaborative effort between the Utah Division of Water Quality and EPA on GSL assessment.

- d. **Use of narrative standard to assess GSL/Farmington Bay** - Section 9.2 also includes the statement that “Until such time numeric standards are developed, the Great Salt Lake and Farmington Bay will be assessed using the narrative standard in the water quality standards.” This may represent a potential for a transition to a new narrative for biological condition and away from a narrative standard originally developed as more specific to industrial/municipal dischargers and currently open to significant differences of interpretation.
- e. **Contact Recreation Use Support Determination (Class 2A and 2B)** - Utah continues to develop, implement and refine their *E. coli* field method and assessment criteria as well as recommending recreation classification changes in the state’s water quality standards for adoption during the next triennial review. These continuing modifications will serve to strengthen the state’s contact recreation use support determinations.
- f. **Tiered Lake and Reservoir Assessment Methodology Development** – EPA notes the State’s significant re-working of Chapter 9: “Lake and Reservoir Assessment Methodology for Determining Beneficial Use Support” with the addition of a tiered assessment approach for lakes and reservoirs.

*DWQ Response:*

*Thank you for the noting the efforts that the Division of Water Quality has made in improving its assessment methods and for your suggestions when the Assessment Manual was being developed.*

**Comments:**

- 1. Page 16, first paragraph: Delete the last sentence in the paragraph referring to category 5 subcategories

*DWQ Response:*

*Reference to subcategories was deleted.*

- 2. Page 16 and Page 53 – Category 3B rationale and “Cyclic Nature of the Data”: During the assessment methodology (A.M.) review process Utah’s Category 3B rationale was discussed at the June 2007 meeting. It was decided that the state would attempt to further clarify their reasoning for requiring two consecutive assessment cycles to either place a water in or remove it from category 5. Essentially this rationale is based on wet /dry season hydrology and its impact on assessments. Many reservoirs in the state experience significant seasonal drawdown for agricultural purposes that can give the appearance of an exacerbated problem.

We recommend Utah add some additional clarifying language on both pages 16 and 53.

*DWQ Response:*

*The tiered approach to lake assessment clarifies the need for two cycles under the current methodology. DWQ is transitioning to a probabilistic approach and anticipates that either a statistical basis for requiring two cycles can be provided or the assessment methods will be revised.*

3. Page 22 – Table 5.2: During the A.M. review process in 2007, it was agreed that a reference for this table would be included. Please provide this in the final IR.

*DWQ Response:*

*The examples in Table 5.2 are examples and no citation is necessary.*

4. Page 28 – “At least five samples should be collected as equally spaced as possible over a 30 day period.” Does the state make any allowance for when < 5 samples are collected and if so, is this adequately covered in Utah’s draft standards revisions?

*DWQ Response:*

*DWQ followed EPA’s method of assessing bacteriological data. However, a new method of monitoring and assessing is being developed for assessing bacteriological data in 2010 and it will address the concerns about the 10% rule.*

5. A chief remaining concern with Utah’s Assessment Methodology is the continued use of the 10% rule language in places throughout the document. EPA reminds the State that use of this rule is appropriate when addressing conventional pollutants, such as pH if its application is consistent with the manner in which applicable water quality criteria are expressed in the State’s standards. As an example, Utah’s standard for pH is expressed as a range from 6.5 to 9.0. The fact that no further expression beyond this range is included represents a vulnerability to the State in that the assessment/listing methodology appears to be changing the standard. Utah should address this in rulemaking before using the approach in their A.M.

*DWQ Response:*

*DWQ has added the 10% assessment method to its standards and is using it for assessments. The use of 5 samples over a 30-day period has been established for years. Bacteriological data are highly variable which can lead to listing an assessment unit based on one sample, so the above method was developed to prevent possible errors in assessing waters as impaired. The standard has not been changed, but the method listed above is the best approach to determine impairment. The 10% assessment method in the standards addresses the concerns list below. E. coli method of assessment is being changed for use in future 305(b) assessments.*

EPA recommends the State examine the following 10% rule expressions in the A.M. for consistency and revise any remaining inconsistencies in accordance with the statement In the “Notice of Public Comment for Assessment Guidance for the 2008 Integrated Report”: “This document does not set or change water quality standards.”

- a. Section 6.3.3, pps. 28 - 29 – *Contact Recreation Use Support Determination (Class 2A and 2B) - Conventional Parameters (pH)*. Also Figure 6.2 on page 31.
- b. Section 7.2.1, pps. 33-34 – *Aquatic Life Use Support Determination (Class 3): Field and Water Chemistry Data*. Also Figure 7.1 on page 36.

- c. Section 8.2, p. 39 – *Agricultural Beneficial Use Support Determination (Class 4) Assessment Procedure – Conventional Data*. Also Figure 8.1 on page 41.
- d. Section 9.5.1, p. 45 – *Lake and Reservoir Assessment Methodology for Determining Beneficial Use Support - Using pH Data*.
- e. Section 9.5.2, p. 47 – *Tier I Assessment Based on pH, Temperature and Dissolved - Using Temperature Data*. Also Figure 9.10, p. 55.
- f. Section 12.2, p. 65 – *Total Phosphorus Evaluations (for stream and river AUs ) for Aquatic Life - Total Phosphorus Assessment*. Also Figure 12.1 on page 66.

*DWQ Response:*

*The use of the 10% rule for assessment purposes has been adopted in Utah’s Water Quality Standards.*

- 6. Page 30, Figure 6.1: This Figure needs a “No” pathway included as part of the flow diagram to complete it; i.e., how does the process proceed if no bacteriological or closure data are available but a health concern has been raised concerning an AU?

We recommend adding “during recreation season” to the “5 samples” diamond in the flow diagram.

*DWQ Response:*

*Assessment methods for evaluating bacteriological data are being extensively revised but were not complete in time for the 2008 IR. These methods will be presented in 2010.*

- 7. Page 32 is blank. We recommend the state use the following language on all blank pages to avoid confusing the reader: “This page left intentionally blank.”

*DWQ Response:*

*Comment acknowledged.*

- 8. Page 34, last paragraph: The following language in the assessment methodology for *Aquatic Life Beneficial Use Support Assessment Procedure for Toxic Parameters (Dissolved Metals and Ammonia)* appears to change the chronic standard: “If less than ten samples are collected, the following assessment is used to determine beneficial use support. The chronic standard is multiplied by 1.75 to determine the listing value and it cannot exceed the acute standard.” This information is not expressed in the standards and so represents a vulnerability to the state.

*DWQ Response:*

*The 1.75 multiplier has been removed. The assessment method based on chronic data has been changed to match that of the acute assessment method.*

- 9. Page 35, Section 7.2.2: *Beneficial Use Assessment Based on Mercury Health Advisories*. EPA recommends that Utah provide additional clarification in this section of the A.M. prior to release of the final 2008 Integrated Report.

- a. The distinction should be made between impairment determinations and health advisories with the clarification that health advisories do not automatically trigger mercury listings.

*DWQ Response:*

*Language was added to clarify that health advisories do not automatically trigger mercury listings.*

EPA recommends, where there is clear observational information showing the use, itself, is impaired even where the predictive criteria are met or there are no specific numeric criteria for the pollutant of interest, the waterbody should be listed. Clear observational information should be given significant weight in determining whether or not a use is supported. Further evaluation of methods for listing is encouraged, but it is not a persuasive argument for postponing a listing decision in 2008 where the State has issued consumption advisories. Issuance of the consumption advisory is an acknowledgement that one of the assigned uses, protection of human health through consumption of aquatic organisms has not been met. (Dave Moon, Water Quality Standards Unit, Utah 2008 Assessment Methodology Conference Call, 6/29/07 – Failure to List Where There Are Health Advisories).

*DWQ Response:*

*Significant uncertainty exists regarding the methyl mercury tissue concentration consumption advisory of 0.3 mg/kg. However, to be health-protective, Utah issues fish consumption advisories at 0.3 mg/kg methyl mercury. For assessment purposes, DWQ uses the United States Food and Drug Administration (FDA) value of 1.0 mg/kg for listing purposes. The FDA set the consumption concentration at 1.0 mg/kg, which correlates to the water column mercury concentration of 0.012 ug/l in previous studies by EPA. (EPA, 1985). This method ties mercury in tissue backed to a water quality standard.*

- b. EPA contends that Utah still needs to look now at a methodology/rationale for tissue levels falling between both thresholds described on page 35. If both thresholds are being exceeded, listing is recommended. Even where one threshold is being exceeded and the other is not, there should still be the expectation that the data will be examined carefully to determine whether to list. We would like to see this addressed in the final 2008 IR, as it was discussed during the A.M. review process in 2007.

*DWQ Response:*

*For the reasons given in the previous responses, Utah will continue using the method it has developed pending adoption of a methyl mercury criterion. The sampling design for mercury in fish tissue will be explained in more detail in 2010.*

10. Page 33 and 47 – Section 7.2.1 and Section 9.5.3: Please check these two sections for consistency. EPA is concerned that the State is applying the 30-day and the one day acute standard for DO inconsistently in these two

*DWQ Response:*

*The 30-day DO standard for streams was selected and was approved previously by EPA because DO can be elevated by algae and plant growth during the day and it was selected as the measure because DWQ monitors during the day for DO. This value was selected to make it more reliable to assess oxygen during the day because of diurnal variation. If exceeded in 10% of the samples it is listed. The TMDL section is then notified to initiate a diurnal DO study. The 4.0 mg/l DO is used for lakes because they are sampled in the summer. This allows the assessment to be based on the temperature and the dissolved oxygen when the lakes have a thermocline.*

11. Page 37 – Figure 7.2. – During the 2007 A.M. review process, the need for an “acute” toxicant diagram was discussed but it has not been included in the draft final. EPA would like to see this diagram included

*DWQ Response:*

*Acute is now included in Figure 9.*

12. Page 43, Section 9.2 - *Great Salt Lake*: The last sentence should refer to Appendix B rather than 3 to avoid confusion on the reader’s part.

*DWQ Response:*

*Comment acknowledged.*

13. Page 52, Section 9.8.1 – *Tier II Assessment Using Carlson’s Trophic State Index*: EPA recommends that the State re-examine and update this section on Carlson’s TSI to ensure the accuracy of the information and the use of the index. One approach is to revisit Carlson’s paper on the index (Carlson, 1977), or look at another state example, such as North Dakota for clues as to how to improve this section. North Dakota’s A.M. can be found at [http://www.health.state.nd.us/WQ/SW/A\\_Publications.htm](http://www.health.state.nd.us/WQ/SW/A_Publications.htm), Appendix A. For example, according to Carlson, when conducting an aquatic life and recreation use assessment for a lake or reservoir, the average trophic status index score should be calculated for *each* indicator. When the trophic status index scores for each indicator (chlorophyll-a, Secchi disk transparency, and phosphorus concentration) each result in a different trophic status assessment then the assessment should be based first on chlorophyll-a, followed by Secchi disk transparency. Only when there are not adequate chlorophyll-a and/or Secchi disk transparency data available to make an assessment should phosphorus concentration data be used.

*DWQ Response:*

*DWQ agrees and will transition for 2010.*

14. Best Professional Judgement (BPJ): Utah refers to the use of BPJ throughout the A.M. The existence and use of BPJ implies the state actually has a specific approach and/or process for how, why and when they employ it to make beneficial use determinations.

EPA would like to see the state identify and include this approach in the A.M., as well as increasingly moving away from BPJ and toward quantifiable, measurable, demonstrable approaches.

*DWQ Response:*

*DWQ agrees that objective approaches are the most defensible. When professional judgment is applied, DWQ will clearly explain the rationale and data that were used.*

15. Page 62, Section 10.4: Natural Hydrological Condition – This section points up the need for standards revisions based on natural conditions, especially where the State is looking to de-list waters on this basis. Such provisions must be in place in the standards before such de-listings can occur.

*DWQ Response:*

*DWQ concurs.*

### **Utah's 2008 Integrated Report Part 2: 305(b) Water Quality Assessment**

It appears the state may have attempted essentially to superimpose 2008 information over the 2006 305(b) assessment in many places, resulting in numerous errors and probable significant confusion on the part of the reader

*DWQ Response:*

*DWQ corrected these errors.*

EPA agrees with the State's intentions (and would like to participate) expressed in an email dated 5/5/08 from Leah Ann Lamb to Karen Hamilton: "... we are going to evaluate our internal process to establish a new timeline with an actual description of who does what by when, along with development of consistent format and content for each section. We are also establishing a Listserv so we can notify interested parties."

*DWQ Response:*

*Comment acknowledged.*

#### **Comments:**

1. EPA recommends removing the two obsolete columns titled "Sized Fully Supporting but Threatened" and "Size Not Supporting", respectively, from the *Individual Use Support Summary* tables located throughout the 305(b) document.

*DWQ Response:*

*Tables in the report were changed to this format.*

2. Page 2.1.5: Please delete duplicative text located beneath Table 2.1.4.

*DWQ Response:*

*While we were unable to find this specific text, the document was edited and several corrections made.*



3. Please fix page numbering in Section 2.2 and Section 2.15

*DWQ Response:*

*Pages were renumbered.*

4. Page 2.3.3: Correct table number reference in first sentence in section 2.3.2.1

*DWQ Response:*

*Table reference was corrected.*

5. Section 2.3.2.1: *Assessment for Mercury in Fish Tissue*: EPA must repeat here and emphasize what was said in the comments on the A.M., comment #9.

EPA recommends, where there is clear observational information showing the use, itself, is impaired even where the predictive criteria are met or there are no specific numeric criteria for the pollutant of interest, the waterbody should be listed. Clear observational information should be given significant weight in determining whether or not a use is supported. Further evaluation of methods for listing is encouraged, but it is not a persuasive argument for postponing a listing decision in 2008 where the State has issued consumption advisories.

Issuance of the consumption advisory is an acknowledgement that one of the assigned uses, protection of human health through consumption of aquatic organisms has not been met. (Dave Moon, Water Quality Standards Unit, Utah 2008 Assessment Methodology Conference Call, 6/29/07 – Failure to List Where There Are Health Advisories).

*DWQ Response:*

*DWQ believes our listing methodology for mercury in fish tissue is consistent with regulatory requirements and Utah Water Quality Standards.*

6. Page 2.3.3, Section 2.3.2.2: Correct Figure numbers and Appendix designation.

*DWQ Response:*

*Corrections were made.*

7. As mentioned in the cover letter electronic .pdf files will follow this letter in approximately one week with editorial comments that are too voluminous to include here, but that should be addressed for the submission of the final integrated report

*DWQ Response:*

*DWQ has reviewed and addressed these editorial comments.*

8. The state should correct all pagination errors in this part.

*DWQ Response:*

*The pagination was corrected.*

## **Utah's 2008 Integrated Report Part 2: Appendix A**

Several parts of this appendix appear to be missing and so could not be reviewed

*DWQ Response:*

*The appendix is complete now.*

## **Part 2: Appendix B Great Salt Lake (GSL) Assessment Plan**

EPA is happy to see the inclusion of the GSL assessment plan with the 2008 Integrated Report. We consider this to be one of several important steps forward in assessing the beneficial uses of the Great Salt Lake.

We think it would be beneficial for the state to add some information to the plan on work that is going on right now on GSL. Some of this work ties into the assessment plan and should be highlighted.

There were some things Utah planned to add to the GSL assessment plan but simply was unable to follow-through on due to staffing losses. EPA still believes these pieces would improve the readability of the document. They include a more in-depth introduction to the assessment plan, some maps and visuals and an expanded narrative section on Utah Department of Environmental Quality's tentative approach to wetlands as they pertain to the GSL. The narrative would also include language acknowledging ongoing 3D work because of the hydrological linkages between 3D and 5E wetlands.

On page 2.B.6 of the appendix Utah references the discussion of the proposed GSL segmentation in the last sentence in the last paragraph on that page. EPA recommends that the State include that discussion as a separate section in the GSL assessment plan.

The last paragraph on page 2.B.13 references Phase II studies. EPA would like to see the State expand this description to provide readers with a better understanding of the role of Phase II studies in GSL assessment planning.

*DWQ Response:*

*DWQ concurs and anticipates that the 2010 IR will have significantly more detail.*

### **Mercury Assessment Comments:**

1. EPA comments provided on 1/29/08 (as attached below) do not appear to have been incorporated into the document. Therefore, the Hg information included originally as Table SS-1 is not complete and needs to be updated per those comments.

*DWQ Response:*

*The appendix was revised and corrected.*

2. The state is asked to ensure that all comments or issues raised in the 1/29/08 draft have been addressed in the final document.

*DWQ Response:*

*Comment acknowledged.*

3. The contents of original table SS-1 have been combined with original table TL-1 and some items have been lost. It is suggested that the original table SS-1 as updated on 1/29/08 be incorporated as a separate table again as the combined table is both incomplete and confusing. Original tables SS-1 and TL-1 can be re-sent to the State if necessary.

*DWQ Response:*

*The appendix was revised and corrected.*

4. The second page of Figure 2.B.1 (on page 2.B.15) is missing and this figure is incomplete. This was noted in comments on 1/29/08 and this figure is incorrect in 1/29/08 version as well. The complete Figure 2.B.1 can be re-sent as a separate Microsoft publisher document so that it may be incorporated correctly into the appendix. Please note that this document has two pages that are on separate worksheets; so, each must be opened and incorporated into the appendix.

*DWQ Response:*

*The appendix was revised and corrected.*

5. Pages 2.B.16 and 2.B.17 are duplicate pages that appear later in the appendix. These pages should be deleted.

*DWQ Response:*

*The appendix was revised and corrected.*

6. Figure and table numbers are inconsistent. Updated figure and table numbers as well as editorial comments are provided in a PDF that will be sent with the PDF of editorial comments on the 305(b) assessment for the state's consideration.

*DWQ Response:*

*Figure and Table numbers were checked.*

### **Utah's 2008 Integrated Report Part 3: 303(d) List of Impaired Waters**

Tom Toole and Harry Judd participated on two conference calls to discuss follow-up revisions to their 2006 IR specifically to discuss and implement mutually agreed upon revisions to listing tables, de-listing issues, the inclusion of Atlas information and Assessment Database (ADB) reconciliation concerns. Notably, Utah was urged to remove and/or combine most of their delisting tables. This has not yet occurred and we would like to see follow through for the final 2008 submittal

*DWQ Response:*

*DWQ revised the 303(d) list Table and will transition towards combining tables when appropriate.*

For the 2008 303(d) list, EPA's state TMDL coordinator Sandra Spence, and Julie Kinsey reconciled the 2006 and 2008 lists with the following comments:

1. Page 4 (should be page 3.4), Section 3.4.2: Please correct the dates in this section so they align with the information in the Notice of Public Comment.

*DWQ Response:*

*Dates are now aligned with the Public Comment information.*

2. Page 3.5, Section 3.5.1: Awkward sentence; please revise to clarify meaning.

*DWQ Response:*

*Sentence was rewritten to for clarification.*

3. Page 3.5, Section 3.5.6, last sentence: Please revise this sentence to read "Assessment Units ...are listed in Category 5 (Table 3.1 and 3.2.)

*DWQ Response:*

*Sentence was revised.*

4. Page 6 (should be page 3.6), Section 3.5.7. Delete the last sentence in this section

*DWQ Response:*

*Sentence deleted.*

5. Page 6 (should be page 3.6), Section 3.6 – *Utah's 303(d) List for 2008*: Second sentence – replace **in** with **it**. Third sentence should read "Table 3.1 is ...that need TMDLs, **while Table 3.2 contains the lake and reservoir AUs needing TMDLs.**" [new sentence] "Figures 3.1 through 3.8 are maps....for the 2008 cycle." Delete the next sentence

*DWQ Response:*

*Sentence deleted.*

6. Page 3.7: Delete the last two sentences on this page

*DWQ Response:*

*Sentences deleted.*

7. Please correct even-page numbering in Part 3, pages 2 – 6.

*DWQ Response:*

*Numbering has been corrected.*

8. Page 3.23, Table 3.1 – *Category 5 – Stream Assessment Units Needing Total Maximum Daily Load Analysis – 2008 303(d) List*: For 2008 the information for Bear River - 4 in columns 4, 8 and 9 differs from that in 2006.

*DWQ Response:*

*Dissolved oxygen is meeting the standard for 2008 and the Bear River has an approved TMDL for dissolved oxygen.*

9. Page 3.23, Table 3.1 – *Category 5 – Stream Assessment Units Needing Total Maximum Daily Load Analysis – 2008 303(d) List:* The pollutant of interest for Saleratus Creek varies from the 2006 list to the 2008 list. Please clarify.

*DWQ Response:*

*Saleratus Creek is impaired for dissolved oxygen only.*

10. Page 3.23, Table 3.1 – *Category 5 – Stream Assessment Units Needing Total Maximum Daily Load Analysis – 2008 303(d) List:* There is some indication from Julie Kinsey's 2006 and 2008 list reconciliation that both listings for Spring Creek may have been listed in the Jordan River Basin in ADB in 2006.

*DWQ Response:*

*One Spring Creek, UT16020202-026, is found in the Jordan River and the other is in the Bear River drainage.*

11. Page 3.24, Table 3.1 - *Category 5 – Stream Assessment Units Needing Total Maximum Daily Load Analysis – 2008 303(d) List:* Please provide clarification or reconciliation for Huntington Creek – 2 between the 2006 and 2008 lists for columns 5 and 8

*DWQ Response:*

*Huntington Creek-2 was incorrectly listed for selenium.*

12. Page 3.24, Table 3.1 - *Category 5 – Stream Assessment Units Needing Total Maximum Daily Load Analysis – 2008 303(d) List:*  
Please verify whether Calf Creek is a new listing in 2008. Julie Kinsey's 2006/2008 list reconciliation does not recognize it as a new listing. Does it appear in ADB for 2006?

*DWQ Response:*

*Calf Creek is in Category 3 for 2008. Temperature is listed as a cause in ADB but the data was inadequate to conclude an impairment.*

13. Page 3.24, Table 3.1 - *Category 5 – Stream Assessment Units Needing Total Maximum Daily Load Analysis – 2008 303(d) List:* Jordan River - 8 shows a difference in AU ID # between the 2006 and lists.

*DWQ Response:*

*The previous HUC was incorrect so the Assessment Unit ID changed.*

14. Page 3.24, Table 3.1 - *Category 5 – Stream Assessment Units Needing Total Maximum Daily Load Analysis – 2008 303(d) List:* Jordan River – 1 shows discrepancies in beneficial use classes (column 5) between the 2006 and 2008 lists.

*DWQ Response:*

*The Jordan River Beneficial Uses were verified with the Water Quality Standards.*

15. Page 3.25, Table 3.1 - *Category 5 – Stream Assessment Units Needing Total Maximum Daily Load Analysis – 2008 303(d) List*: Please verify whether Emigration Creek is a new listing in 2008. Julie Kinsey’s 2006/2008 list reconciliation does not recognize it as a new listing. Does it appear in ADB for 2006?

*DWQ Response:*

*This AU was listed in 2006 under pathogens and then changed to E. coli for 2008.*

16. Page 3.26, Table 3.1 - *Category 5 – Stream Assessment Units Needing Total Maximum Daily Load Analysis – 2008 303(d) List*: Please verify whether the beneficial use class designations have been switched for Virgin River – 1 from 2006 to 2008.

*DWQ Response:*

*They have not been changed. A new site specific total dissolved solids standard was met in 2008 and boron and temperature are new listings.*

17. Page 3.28, Table 3.1 - *Category 5 – Stream Assessment Units Needing Total Maximum Daily Load Analysis – 2008 303(d) List*: Column 5 for Pariette Draw Creek is listed as beneficial use class 3A in 2006 and 3B in 2008.

*DWQ Response:*

*Pariette Draw Creek was incorrectly entered as a Class 3A stream. Per the Water Quality Standards, it is classified as a 3B and 3D stream.*

18. EPA understands from the State that they are aware of the duplication that occurred in Table 3.2 on page 3.31 and will revise it prior to the final submittal. EPA and Utah also discussed combining the contents of this table with the rest of the Category 5 waters contained in Table 3.1. We would also like to see this revision made prior to the final 2008 submittal.

*DWQ Response:*

*DWQ concurs.*

19. Page 3.36, Table 3.3 – *Request for Removal of Stream and River Assessment Units From the 303(d) List*: The State should add the following waterbodies that were on the 2006 303(d) Category 5 list to this table (3.3), as they have approved TMDLs:

*DWQ Response:*

*The following AUs listed below were added to Table 3.3.*

- a. *Duchesne River – 2: UT14060003-002*
- b. *Lake Fork – 1: UT14060003-008*
- c. *Strawberry Reservoir: UT – L – 14060004-001 Phosphorus/DO*

20. Page 3.36, Table 3.3 - *Request for Removal of Stream and River Assessment Units From the 303(d) List*: EPA has no record of a TMDL approval for Dissolved Oxygen for Mill Creek – 1, UT14030005-005 in the National TMDL Tracking System (NTTS), on documentation of TMDL's by the previous TMDL Coordinator, Kathryn Hernandez or in the hardcopy files. However, there is a letter from Don Ostler, Utah's Division of Water Quality Director at the time, requesting delisting for Mill Creek, although no parameter is specified.

Does the State have documentation it can provide to verify the approval? If so, please provide EPA with a copy for our records.

*DWQ Response:*

*Mill Creek-1 was removed from the Request for Removal table. Mill Creek-1 is impaired for temperature and has a TMDL complete.*

21. Page 3.37, Table 3.4 – *Request for Removal of Lakes and Reservoirs from the 303(d) List Since the 2006 IR Report*: Please correct the format/entry errors for Newton Reservoir, columns 5,6,7, and 8 and Otter Creek Reservoir, columns 7 and 8.

*DWQ Response:*

*Table was corrected.*

22. Page 3.37, Table 3.5 – *Status of Total Maximum Daily Load Analysis of Streams Targeted for Completion In 2006 Integrated Report*: Please add the missing word in the table title.

*DWQ Response:*

*Table was revised.*

23. Page 3.39, Table 3.6 – *Status of Lake and Reservoir Total Maximum Daily Loads Identified for Completion between April 1, 2006 and March 31, 2008*: Please clarify the comment for Lower Gooseberry Reservoir which states “Delisting report and request submitted in 2006.” EPA has received a “Limnological Assessment of Water Quality” for Lower Gooseberry Reservoir dated March 2008.

*DWQ Response:*

*DWQ concurs.*

24. Page 3.39, Table 3.6 – *Status of Lake and Reservoir Total Maximum Daily Loads Identified for Completion between April 1, 2006 and March 31, 2008*: Please complete data entries in columns 7 and 8 for Otter Creek Reservoir.

*DWQ Response:*

*The Table was revised and is complete.*

25. Page 3.39, Table 3.6 – *Status of Lake and Reservoir Total Maximum Daily Loads Identified for Completion between April 1, 2006 and March 31, 2008*: Please specify Lower Box Creek Reservoir in column 4 to avoid confusion, i.e., in NTTTS, the TMDL is listed under Lower Box Creek Reservoir.

*DWQ Response:*

*DWQ has corrected several naming inconsistencies and will continue to do so as they are encountered..*

26. Pages 3.41 – 3.43, Table 3.7 – *Request for Removal of UPDES Total Maximum Daily Load Analyses From the 303(d) List*: EPA has requested and Utah has agreed that they will discontinue the listing of waste load allocations prepared for permit renewals.

EPA respectfully requests that Utah delete table 3.7 from the 2008 Integrated Report prior to the final submission and revise the first sentence in paragraph 3 on page 3.1 to read: “The Division of Water Quality (DWQ) discontinued the listing of .....as a 303(d) TMDL in the 2006 IR.”

*DWQ Response:*

*DWQ concurs.*

27. Page 3.44, Table 3.8 – *Status of Total Maximum Daily Loads Identified for Completion in the 2006 Cycle and Others Completed*: EPA has no record of a TMDL for total dissolved solids for Castle Creek in the National TMDL Tracking System (NTTS), nor in documentation of TMDL’s maintained by the previous TMDL Coordinator, Kathryn Hernandez, nor in the hardcopy files. There is a letter in the file from Utah with this submittal listed. There is no actual submittal in the file. Can the State provide EPA with a copy for our records?

*DWQ Response:*

*State Water Quality Board set a site specific standard of 1,800 mg/l for Castle Creek and there is no an approved TMDL.*

28. Page 3.44, Table 3.8 – *Status of Total Maximum Daily Loads Identified for Completion in the 2006 Cycle and Others Completed*: Please correct all data entry errors in columns 9 and 10 for Bear River – 4, Soldier Creek – 1, and Santa Clara – 1. EPA records show Bear River – 4 TMDL approved 8/4/06; Soldier Creek – 1 TMDL approved 8/4/06; and Santa Clara -1 TMDLs approved 9/20/04

*DWQ Response:*

*All requested edits were made.*

29. Page 3.45, Table 3.8 - *Status of Total Maximum Daily Loads Identified for Completion in the 2006 Cycle and Others Completed*: Please correct data entry errors in columns 9 and 10 for East Fork Sevier – 4

*DWQ Response:*

*The data entry errors corrected.*



30. Page 3.45, Table 3.8 - *Status of Total Maximum Daily Loads Identified for Completion in the 2006 Cycle and Others Completed*: EPA has no record of a TMDL approval for sediment for Sevier River - 3 either in NTTs or on the list of TMDL's maintained by the previous TMDL Coordinator for Utah, Kathryn Hernandez. Can the State provide EPA with a copy of it's documentation for our records?

*DWQ Response:*

*The TMDL for sedimentation is complete. "It is not recommended that TMDLs be based on TSS data for waters in this basin. TSS doesn't actually reflect the overall sediment load present in the stream and therefore, TMDL endpoints related to TSS will not be established in this study." [Upper Sevier River Total Maximum Daily Load and Water Quality Management Plan](#).*

*A more appropriate delisting rationale may be that these reaches were incorrectly listed. Total suspended solids used to be an indicator in DWQ standards. This indicator was coupled with an indicator of biological condition from the Bear River, an inappropriate comparison site. The original listing methodology was incorrect.*

31. Page 3.45, Table 3.8 - *Status of Total Maximum Daily Loads Identified for completion in the 2006 Cycle and Others Completed*: EPA has no record of a TMDL approval for sediment for Sevier River - 2 either in NTTs or on the list of TMDL's maintained by the previous TMDL Coordinator for Utah, Kathryn Hernandez. Can the State provide EPA with a copy of it's documentation for our records?

*DWQ Response:*

*The TMDL for sedimentation is complete. "It is not recommended that TMDLs be based on TSS data for waters in this basin. TSS doesn't actually reflect the overall sediment load present in the stream and therefore, TMDL endpoints related to TSS will not be established in this study." [Upper Sevier River Total Maximum Daily Load and Water Quality Management Plan](#).*

*A more appropriate delisting rationale may be that these reaches were incorrectly listed. Total suspended solids used to be an indicator in DWQ standards. This indicator was coupled with an indicator of biological condition from the Bear River, an inappropriate comparison site. The original listing methodology was incorrect.*

32. Page 3.45, Table 3.8 - *Status of Total Maximum Daily Loads Identified for Completion in the 2006 Cycle and Others Completed*: EPA shows the approval date for the total phosphorus TMDL for Sevier River – 1 to be 8/4/04 rather than 8/24/04.

*DWQ Response:*

*Date was edited.*

33. Page 3.45, Table 3.8 - *Status of Total Maximum Daily Loads Identified for Completion in the 2006 Cycle and Others Completed*: EPA shows the approval date for the sediment TMDL for Sevier River – 1 to be 8/17/04 rather than 8/24/04.

*DWQ Response:*

*Date was changed.*

34. Page 3.45, Table 3.8 - *Status of Total Maximum Daily Loads Identified for Completion in the 2006 Cycle and Others Completed*: EPA has no record of a TMDL approval for total dissolved solids for Lost Creek – 1 either in NTTS or on the list of TMDL’s maintained by the previous TMDL Coordinator for Utah, Kathryn Hernandez, or in the hardcopy files. Can the State provide EPA with a copy of it’s documentation.

*DWQ Response:*

*Lost Creek-1 is fully supporting for TDS with a site-specific standard of 4,600 mg/l (June 1, 2005).*

35. Page 3.45, Table 3.8 - *Status of Total Maximum Daily Loads Identified for Completion in the 2006 Cycle and Others Completed*: EPA has no record of a TMDL approval for total dissolved solids for Peterson Creek either in NTTS or on the list of TMDL’s maintained by the previous TMDL Coordinator for Utah, Kathryn Hernandez, or in the hardcopy files. Can the State provide EPA with a copy of it’s documentation for our records?

*DWQ Response:*

*New Site Specific Standard 9,700 mg/l June 1, 2005 and, insufficient data to assess against new standard (Category 3B).*

36. Page 3.46, Table 3.8 - *Status of Total Maximum Daily Loads Identified for Completion in the 2006 Cycle and Others Completed*: EPA has approved two TMDL’s (sediment and total dissolved solids) for the first two AU’s on the list under the Assessment Unit Name Sevier River - 23 rather than Sevier River - 22. EPA is requesting that the State check their records and make the necessary revisions

*DWQ Response:*

*Sevier River-22 is the correct AU.*

37. Page 3.46, Table 3.8 - *Status of Total Maximum Daily Loads Identified for Completion in the 2006 Cycle and Others Completed*: For Sevier River – 24, EPA has record of a TMDL approval for Total Phosphorus but none for Sediment. Can the State provide EPA with a copy of it’s documentation for our records?

*DWQ Response:*

*The TMDL for sedimentation is complete. “It is not recommended that TMDLs be based on TSS data for waters in this basin. TSS doesn’t actually reflect the overall sediment load present in the stream and therefore, TMDL endpoints related to TSS will not be established in this study.” [Upper Sevier River Total Maximum Daily Load and Water Quality Management Plan](#).*

*A more appropriate delisting rationale may be that these reaches were incorrectly listed. Total suspended solids used to be an indicator in DWQ standards. This indicator was coupled with an indicator of biological condition from the Bear River, an inappropriate comparison site. The original listing methodology was incorrect.*

38. EPA notes two conflicting listings regarding Sevier River 25; one on page 3.35 for total dissolved solids that specifies the reason for delisting as “new site-specific standard” and the other on page 3.46 specifying a TMDL was approved for total dissolved standards on May 31, 2005. Can the State provide EPA with a copy of it’s documentation for our records?

*DWQ Response:*

*The site specific standard is the correct reason.*

39. Page 3.46, Table 3.8 - *Status of Total Maximum Daily Loads Identified for Completion in the 2006 Cycle and Others Completed*: EPA has no record of a TMDL approval for total dissolved solids for Willow Creek either in NTTS or on the list of TMDL’s maintained by the previous TMDL Coordinator for Utah, Kathryn Hernandez, or in the hardcopy files. Can the State provide EPA with a copy of it’s documentation for our records?

*DWQ Response:*

*Removed Willow Creek from list of approved TMDLs.*

40. Page 3.46, Table 3.8 - *Status of Total Maximum Daily Loads Identified for Completion in the 2006 Cycle and Others Completed*: EPA has no record of a TMDL approval for arsenic for Silver Creek. Approved TMDLs are found in NTTS for zinc and cadmium, but not arsenic. In addition, Arsenic is not included in the TMDL approval letter and it indicates the Utah submittal for approval includes only zinc and cadmium. Can the State provide EPA with a copy of it’s documentation for our records? Does the State have documentation to provide clarification on this and can it provide EPA with a copy for our records?

*DWQ Response:*

*Arsenic is a cause of impairment and a TMDL is required.*