

Submitted to: UTAH DIVISION OF WATER QUALITY

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Applicant Name: Jennifer Rains Jones
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Project Title: Enhancing Condition Assessment Tools for Great Salt Lake Wetlands

1. Estimated Project Costs:

Personnel = \$41,915.36

Materials = NA

Equipment = NA

Administration = \$16,950.67

Miscellaneous (Travel and Per Diem) = \$2774.00

TOTAL = \$61,640.03

2. Description of Project Purpose and Need:

The Wetland Section of the Utah Geological Survey (UGS) has partnered with the Utah Division of Water Quality as leaders in an effort to develop and implement a strategy for state wetland program planning (Hooker and Jones, 2013). Our joint strategy has targeted the creation of monitoring and assessment methods and the development of water quality standards for wetlands. The UGS has been focused on developing a rapid condition assessment method for wetland resources at the state scale. The draft method will be presented for comments in coming months. Though metrics have been meticulously investigated and are being tested in wetlands across the state, collaboration with partner agencies is necessary to provide a product that fulfills the needs of a wide range of state stakeholders.

Rapid condition assessment is one of the methods suggested by the EPA as part of their tiered framework for implementing a wetland monitoring and assessment program (Stein and others, 2009; U.S. Environmental Protection Agency, 2006). This framework suggests a combination of landscape scale (GIS-based), rapid (qualitative and semi-quantitative), and intensive (quantitative) condition assessments to best support monitoring and assessment objectives at varying scales. Validation of these methods and their component metrics requires comparison with data collected at a more intensive scale, e.g. rapid assessment methods can be validated using independently collected intensive-scale data (Fennessy and others, 2007). Additionally, data on landscape stressors obtained during site visits or from GIS-based analysis can be used to better calibrate rapid assessment metrics and provide suggestions to managers about mitigating for expected impacts from specific stressors.

While the UGS has been focused on rapid assessment methods, the UDWQ Wetland Program has been focused on intensive condition assessment methods and developing water quality standards. UDWQ work includes data on a large number of soil chemistry and water quality parameters at sites

around Great Salt Lake (GSL). Because neither of our agencies have the time or resources both to develop rapid protocols and to implement intensive sampling, we need to work together to validate and calibrate our methods by sampling independently at the same set of sites. The UGS and UDWQ have been working together to determine the best approach for utilizing data collected from independent projects to validate metrics and determine the relationship between stressors and measured indicators. This project will support a direct collaborative effort between our agencies to determine needs and collect supporting data to advance both rapid and intensive condition assessment methods.

This project will be an extension of a past project completed for GSL wetlands and an addition to ongoing projects related to wetland program development. We recently completed a survey of GSL wetlands which evaluated three (two regional and one national) rapid wetland condition assessment methods to test the efficacy of component metrics in this unique wetland ecosystem (Menuz and others, 2014). We found that though many of the metrics commonly used in current rapid assessment methods appropriately captured the range of variability in condition, some, specifically hydrologic metrics, were difficult to interpret and apply in GSL wetlands. A protocol based on these findings is being drafted and will be administered in the Upper and Lower Weber Watersheds this coming summer. Though this area includes a component of GSL wetlands, it will be conducted using a random sample and will not allow for sampling at Willard Bay or UDWQ target sites. The requested funds for this project will allow UGS Wetland Section staff to sample at UDWQ intensive assessment sites.

3. Estimated time frame of the project with significant milestones:

This project will be executed in a multi-year timeframe to allow for two seasons of sampling which will provide for evaluation of inter-annual variability (Table 1).

Table 1. Approximate schedule for project tasks

Project / Task	2014		2015				2016				2017	
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q3	Q4
Task 1: Coordinate Sampling with UDWQ												
1) Meet with UDWQ Wetland Section leaders		X										
2) Determine samples sites			X									
Task 2: Conduct Field Sampling												
1) Preparation and logistics for field work				X	X			X	X			
2) Sample during summer season					X				X			
Task 3: Analysis and final reporting												
1) Enter and QAQC Field Data						X						
2) Analysis and Reporting									X	X		
4) Complete Project and Submit Final Report										X	X	

4. Project Location:

The project will be implemented in wetlands around the area impacted by the 2013 Willard Bay Diesel Release event (Figure 1). Additional sampling will be performed in areas outside of the impact area, preferably at UDWQ intensive sample sites to provide reference sites with independent data for comparison and assistance with method development (Figure 2).

5. Describe how the project will specifically enhance and protect waterways affected by the Willard Bay diesel release and improve the conditions of one or more of the following: wildlife, habitat, natural vegetation, water quality or emergency response:

A rapid wetland assessment tool that has been validated with independent data could be an important component of emergency response because it is designed to quickly determine the condition of wetlands in an area. The tool could be deployed following an emergency to prioritize response efforts based on wetland condition. It could also be used to collect data at sites not yet affected, but likely to be affected, by the emergency in order to obtain baseline information for comparison post-restoration. The tool will also more broadly be useful to provide the information managers need to evaluate status and trends in wetland condition and to successfully and efficiently direct conservation initiatives. Management resources are generally scarce, so it is critical to have tools to focus where management action should be taken. Improved ability to target management dollars is important for improving all important functions carried out by wetlands, including providing habitat and filtering water quality stressors.

6. Describe project's connectivity to other natural areas or projects that further enhance wildlife, habitat, natural vegetation, water quality or emergency response:

This project, while focused on Willard Bay wetlands, will also enhance our ability to provide information on status and trends in wetland resources across the state by supporting efforts to create condition assessment methods. More specifically, this project will help ensure that assessment methods are relevant for the very important and very unique GSL wetlands. Developing methods that are used across the state for both ambient/baseline monitoring as well as regulated projects will increase the abundance of standardized information resources about wetlands and allow for better understanding of stressors to wetland resources at a variety of scales.

7. Describe any additional social benefits of implementing this project:

The social benefit of this project will stem from the increased ability of state agencies and stakeholders in GSL wetlands and wetlands statewide to have easily administered tools to quickly assess wetland condition. We are currently working with the Army Corps of Engineers to incorporate components of our rapid condition assessment method for use in regulatory and mitigation projects. By standardizing methods used for baseline and regulatory projects, we will affectively increase the information available to evaluate wetland condition, promoting the better use of conservation and restoration funds across the state.

8. Project plans and details, including rights to work on specified piece of land:

This project will entail meeting with DWQ staff to determine where and when sampling will be most appropriate. We will sample in and outside of the target area around the Willard Bay diesel release site and in UDWQ intensive condition sampling sites. We will sample approximately 30 sites during the 2015 and 2016 summer field seasons. Sampling will include collection of rapid condition assessment data, local and landscape scale stressor data, and quantitative vegetation/habitat data. Protocols to be used for sampling will be available by June of 2014.

Outreach related to this project will include presenting at local meetings and engaging partners in the wetland program development process. The resulting report will be published on the [Utah Wetland Information Center](#) website. We will meet with UDWQ Wetland Program staff to determine additional venues and ways to distribute information and bring attention to methods we hope to be used by the broader wetland community in the state.

Over the past few years working in GSL wetlands, the UGS Wetland Section has developed a strong relationship with both public land managers and private property owners. We sampled in the majority of the public lands along the eastern shore of GSL during the 2013 summer field season and have continued a working relationship with all of our contacts. We conducted extensive sampling in Bear River Migratory Bird Refuge, Public Shooting Grounds WMA, Salt Creek WMA, Ogden Bay WMA, and Harold Crane WMA. We feel confident that continuing our method development through this project will be supported and that access will be granted on all public lands in the study area.

9. Describe your experience in implementing projects of similar scope and magnitude:

The UGS has had a continuous relationship with the EPA in developing our state wetland program since 2003. Links to additional information about these grants can be found on the [Wetland Grants Database](#).

2005 CD-98870604 Farmington Bay wetlands water supply assessment, \$76,346 (\$ 52,468 EPA)

- This project was successfully completed, all project reporting requirements were met, and a final report is available (<http://geology.utah.gov/online/ri/ri-264.pdf>)
- Results from this project contributed to the 2012 Great Salt Lake Comprehensive Management Plan

2006 CD-97816001 Salt Lake Valley wetlands water supply assessment, \$97,703 (\$ 66,291 EPA)

- This project was successfully completed, all project reporting requirements were met, and a final report is available (<http://geology.utah.gov/online/ri/ri-268.pdf>)
- Results from this project contributed to the 2012 Great Salt Lake Comprehensive Management Plan

2009 CD-97847201 Applying Utah's Wetland Ambient Assessment Method to At-Risk Wetlands in Western Utah, \$197,611 (\$ 118,535 EPA)

- This project increased the visibility of wetlands in Snake Valley, established a long-term wetland hydrologic monitoring network, with data publicly available over the internet (http://geology.utah.gov/databases/groundwater/map.php?proj_id=1), and increased data exchange between UGS and Utah Division of Wildlife Resources project managers focused on sensitive species habitat

2010 CD-96811101 Developing Scientifically Valid Tools to Assess Condition of Utah's Wetlands, \$271,533 (\$ 179,221 EPA)

- This project has further expanding efforts to develop a rapid condition assessment method for Utah wetlands and has increased understanding of condition and stressor gradients in GSL wetlands, supplied a valuable spatial dataset (LiDAR) that is being applied in ongoing projects, and supported development of the [Utah Wetland Information Center](#) hosted by the UGS

2011 CD-96811901 Developing tools to assess and improve condition of GSL and West Desert wetlands, \$287,149 (\$ 202,414 EPA) (End date June 2014, on schedule)

- This project advances the use of LiDAR imagery acquired with previous projects, supported the successful [2013 Wetland Program Development Workshop](#) in Salt Lake City, advanced rapid assessment tool development, expanded condition assessment sampling in valuable wetland resources in the West Desert, and initiated a partnership with the Utah State University to address water management issues around GSL

2012 CD – 96812601 Evaluation of Tools to Assess Wetland Condition in Montane and Managed Wetlands, \$288,737 (EPA 216,533) (End date June 2015, on schedule)

- This project will constitute UGS’s first watershed-scale assessment and expand development of assessment tools into montane and urbanized areas of the state, compare leading condition and functional assessments in the state, advance understanding of water management issues around GSL, and provide outreach materials on unique and vulnerable wetland resources in the state

2012 CD – 96811801 Prioritization of Wetlands in a Managed Agricultural Landscape - Upper Bear River Watershed, Utah, \$166,028 (EPA 124,521) (End date June 2015, on schedule)

- This project will develop tools for updating spatial wetland data, provide a model for a comprehensive statewide mapping initiative, and identify target conservation areas in the study area

10. Describe how ongoing maintenance of the project will be funded and carried out:

This project will support multiple, ongoing projects being executed by the UGS and UDWQ funded by EPA Wetland Program Development Grants in support of developing monitoring and assessment tools, 401 certification, and water quality standards for wetland resources related to GSL. The project will provide support for much needed collaboration between the two agencies to calibrate and validate methods for wetland condition assessment. Method development will be supported by each of these programs as the wetland program plan in the state progresses.

11. List consultants or agency partners that have participated in project development (below):

Toby Hooker
 Environmental Scientist
 Water Quality Management Section
 Utah Division of Water Quality

Signature _____ Date _____

Applicant

- Fennessy, M.S., Jacobs, A.D., and Kentula, M.E., 2007, An evaluation of rapid methods for assessing the ecological condition of wetlands: *Wetlands*, v. 27, p. 543–560.
- Hooker, T., and Jones, J., 2013, Utah’s Wetland Program Plan 2011-2016, Version 3: p. 17.
- Menuz, D., Sempler, R., and Jones, J., 2014, Great Salt Lake Wetland Condition Assessment: p. 62.
- Stein, E.D., Fetscher, A.E., Clark, R.P., Wiskind, A., Grenier, J.L., Sutula, M., Collins, J.N., and Grosso, C., 2009, Validation of a wetland Rapid Assessment Method: Use of EPA’s level 1-2-3 framework for method testing and refinement: *Wetlands*, v. 29, no. 2, p. 648–665.
- U.S. Environmental Protection Agency, 2006, Application of elements of a state water monitoring and assessment program for wetlands: Office of Wetlands, Oceans, and Watersheds, EPA 841-B-03-003, 12 p.

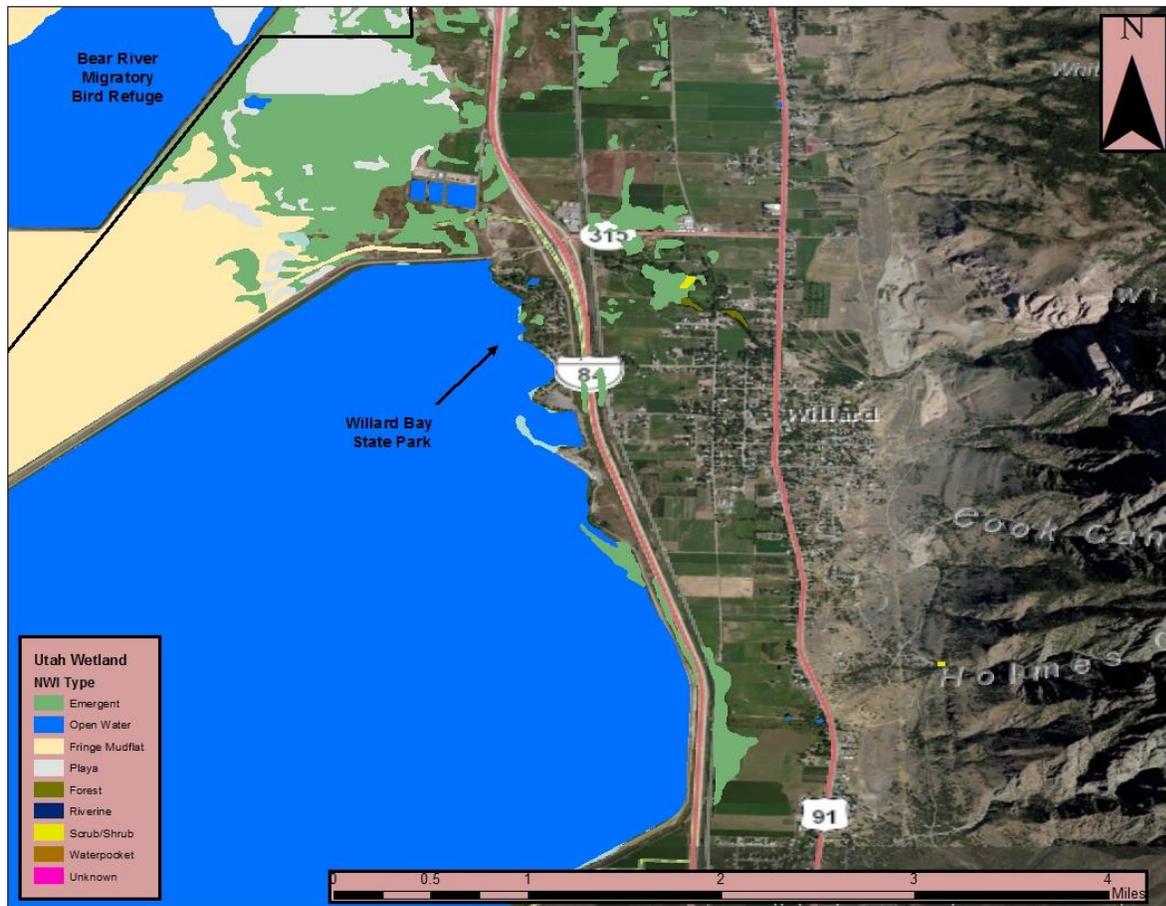


Figure 1. Wetlands in proximity to the 2013 Chevron Diesel Release site.

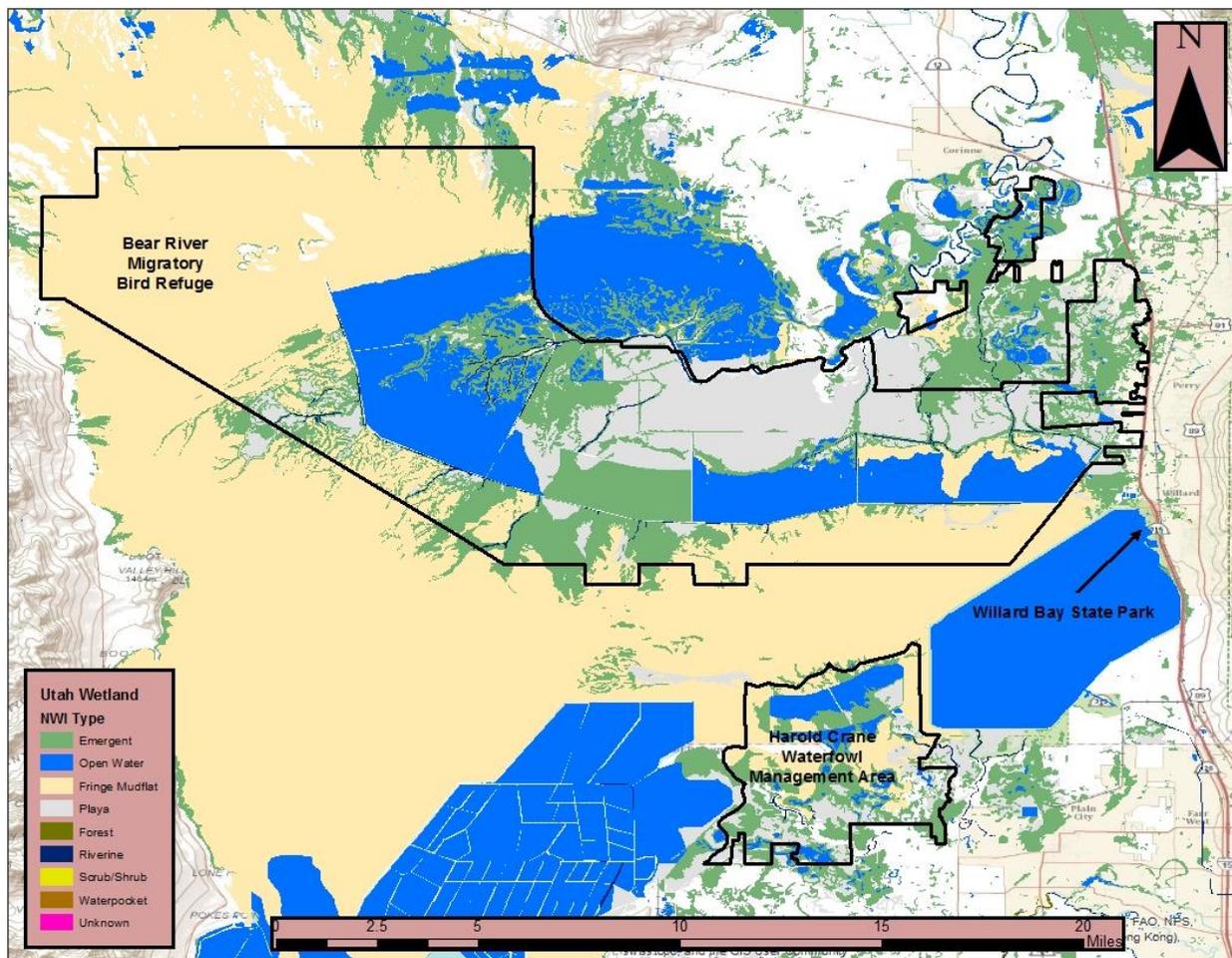


Figure 2. Wetlands in proximity to the 2013 Chevron Diesel Release site.