

## **RM-CESU PROJECT FINAL REPORT, January 2010**

*Cooperative Agreement H1200040001*

*Task Agreement J2120070118*

*Project number MSU-143, MSU 159 and MSU 174*

### **Project Title:**

Operational & Technical Support for Vital Signs Monitoring in the Greater Yellowstone Network Inventory and Monitoring Program

**Date of Project Initiation:** 09/01/2007

**Date of Project Completion:** 09/30/2009

**Park/Unit:** Greater Yellowstone I&M Network

### **Funding Sources:**

Greater Yellowstone Network, Inventory and Monitoring Program

Federal Lands Recreation Enhancement Act

YELL ONPS Base Account

Water Resource Division (WASO) Watershed Condition Assessment Program

WASO Vegetation Mapping Program

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### **Project Description:**

This project is a collaborative effort between the Greater Yellowstone I&M Network and Big Sky Institute to develop, test and implement scientifically credible plan monitoring protocols for selected vital signs. Communication (e.g. reports and resource briefs) is an important element of our joint project activities.

### **Project Results:**

- Statistical analysis and report on our soil structure and stability monitoring protocol. Pilot data were collected at Bighorn Canyon NRA by NPS crews. BSI research associate Mike Tercek completed the initial statistical analysis and report for this project.
- Mapping willow in Yellowstone's Northern Range. The purpose of this project is to inventory and map willow communities in all 2<sup>nd</sup> order and larger streams in the Northern Range in Yellowstone NP. At the end of this phase of the project, 283 km had been completed.
- Climate Annual Report. An annual report describing the climate of 2007 was completed by Steve Gray former BSI post-doc. This report provides a proof-of-concept on how the Inventory & Monitoring program will summarize and report on climate data on an annual basis.
- Water Quality data verification and validations reports. In 2008 the water quality program increased the frequency of monitoring heavy metal on Soda Butte Creek to provide a baseline for documenting potential release of metal laden sediment into the stream during the removal of McLaren mine tailing. These reports are the basis of the NPS quality assurance/quality control procedures for water quality monitoring and are essential in proving credible data standards to the state Department of Environmental Quality.

#### Communication products –

- Web content was developed by BIS Research Associate for our climate vital sign and made available to the public through the Greater Yellowstone Science Learning Center.
- A 4-page brochure for the Greater Yellowstone Network was produced with the help of BSI subcontractor Scott Bischke.

### **Publications and other deliverables**

Tercek, M. 2009<sup>1</sup>. Analysis of Pilot Data: "Soil Structure and Stability" in Bighorn Canyon National Recreation Area. National Park Service, Bozeman, MT.

Tercek, M. 2009<sup>2</sup>. Yellowstone Northern Range Riparian Willow Survey (2008-2009). Walking Shadow Ecology, Gardiner MT.  
<http://yellowstoneecology.com/blog/?p=69>.

Gray, S., C. Nicholson, T. Dietrich, and S. Laursen. 2009. Greater Yellowstone Network: Climate of 2007. Natural Resource Technical Report NPS/GRYN/NRR–2009/076. National Park Service, Fort Collins, Colorado.  
<http://greateryellowstonescience.org/topics/physical/climate/projects/GYNmonitor/report>.

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<sup>1</sup> This report is a draft subject to revision. Please wait before posting on the WEB.

<sup>2</sup> This inventory report also includes work accomplished through a later MSU task agreement #J2120090011.

Arnold, J. 2009a. 2008 Yellowstone National Park water quality data validation report. May 2009. Greater Yellowstone Network, National Park Service, Bozeman, Montana.

Arnold, J. 2009b. 2008 Yellowstone National Park water quality data verification report. May 2009. Greater Yellowstone Network, National Park Service, Bozeman, Montana.

Tercek, M. 2009. 2008 Climate Resource Brief. National Park Service, Bozeman, MT. Greater Yellowstone Science Learning Center at:  
<http://greateryellowstonescience.org/topics/physical/climate>.

Tercek, M. 2009. Soils Resource Brief. National Park Service, Bozeman, MT. Greater Yellowstone Science Learning Center at:  
<http://www.greateryellowstonescience.org/topics/biological/soils>.

Brochure for the Greater Yellowstone Network  
<http://science.nature.nps.gov/im/units/gryn/>.