**UNIVERSITY OF WYOMING**
**Wyoming Reclamation and Restoration Center (WRRC)**
**From the College of Agriculture and Natural Resources**
**1 OCTOBER 2013**
[Pursuant to W.S. 21-16-1603(a)(v)]
To Governor Mead and Members of the Joint Appropriations Interim Committee
and Joint Education Interim Committee

**Background.** The Wyoming Reclamation and Restoration Center (WRRC) is an interdisciplinary program housed at the University of Wyoming that was initially established in the early 1980's. Its mission is to develop, collect, and disseminate impartial, scientifically-based information related to the reclamation, rehabilitation, and restoration of disturbed lands in high-altitude, arid regions of Wyoming and western U.S. Activities of the WRRC involve training students about reclamation ecology, research into best practices in reclamation of disturbed lands, and extension and outreach for practitioners of reclamation ecology in the energy industry, state, and other interested agencies and businesses. In 2009, Governor Dave Freudenthal and the Wyoming State Legislature approved $500,000 in Abandoned Mine Land (AML) funds to the University of Wyoming College of Agriculture for reclamation ecology purposes. In that same year, $1,500,000 in AML funds was also designated for the College of Agriculture and Natural Resources to provide the seed money for an endowment match. In 2010, an additional $666,000 in AML funds was allocated to the WRRC by the state. Effective July 1, 2011, the Legislature amended the appropriation for $1.5 million in matching funds to allow for matching of a strategic investment fund in which the corpus could be expended, in addition to endowments. Under the appropriations language, the AML operational funds must all be expended before July, 2012.

The existence of the Wyoming Reclamation and Restoration Center has increased the number of students seeking both undergraduate minors and graduate certificates in reclamation. Workshops have been conducted throughout the state with corporate, state, and agency partners. In addition, collaborative research about reclamation topics is underway and yielding outcomes that can be applied in the field.

E**xpenditures.** The Center has funded several new graduate research projects this year. The Center is currently staffed by 3 people - an office manager, a research scientist and the Director. .

**WRRC Expenditures August 2012 – August 2013 (2010 Award)**

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| Expenditures | | |
| Salaries (including benefits) | Staff/AP | 154,700.74 |
| | GA's | 140,432.65 |
| Tuition & Fees | | 41,583.57 |
| Supplies | | 28131.25 |
| Travel | | 22,060.01 |
| Equipment | | 1,268.04 |
| Other Contractual work (printing, analysis, etc | | 14,302.15 |
| Total Expenditures: | | $402,478.41 |

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| Special project Commitments: | $168,966.00 |

**Revenues:**

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| Commitments prior to 2013 | $400,000.00 |
| New Commitments FY 13 | $200,000.00 |
| Total Commitments | $600,000.00 |
| Donations paid by donors to date: | $525,000.00 |
| State match released to program to date: | $275,000.00 |
| State match requested this quarter: | $250,000.00 |

**OUTREACH**

- Organized and Hosted Joint Reclamation Conference in Laramie:
  2nd Wyoming Reclamation and Restoration Symposium and 30th Annual Meeting of the American Society of Mining and Reclamation
  (1-7 June, 2013 Hilton Garden Inn, 380 attendees)
- Completed the Summer Wyoming Regional Reclamation Schools with Wyoming Extension in Riverton (10-11 June), Gillette (19-20 June), and Rock Springs (24-25 June)
- Published a new Extension Bulletin: Reclamation Considerations for Oil and Gas Lease Contracts on Private Lands (University of Wyoming Extension Publication B-1242)

**RESEARCH**

- Expanding the number of Energy Companies participating in the Reclamation Database Project, one of the objectives of which is to provide industry reclamation data to the U.S. Fish and Wildlife Service for consideration in the decision whether or not to list the Greater Sage-Grouse. Companies participating now include BP, Anardarko Petroleum, EOG, Chesapeake Energy, and Noble Energy. (See additional information below)
- WRRC is funding four new graduate assistantships beginning this for graduate students to conduct research on reclamation issues at the University of Wyoming. This brings the total number of graduate students currently funded by WRRC to 8.
- Hosted a Visiting Research Scientist, Dr. E.F. Aboukila, from Damanhour University in Egypt who worked investigated reclamation of saline sodic soils using different amendments.

**EDUCATION**

- Two graduate students conducting Master's Degree research funded by the Wyoming Reclamation and Restoration Center, Zack Liesenfeld and Megan Taylor, completed their

degrees and graduated in May. Megan's Thesis was entitled: "Control of Halogeton Invasions in Reclamation Settings" and Zack's was on "Improving Sagebrush Reclamation Success on Bentonite minelands in the Bighorn Basin"

- Ten undergraduate students completed their program this past academic year while also earning a minor in Reclamation. There are currently more undergraduate students declaring Reclamation as a minor than ever before. The number of students having graduated with a minor in Reclamation Science is now 77.
- Twenty seven student presentations were made at the Second Wyoming Reclamation and Restoration Symposium this past June in Laramie; 10 of these papers were presented by students affiliated with the Wyoming Reclamation and Restoration Center.

**WYOMING ENERGY RECLAMATION DATABASE PROJECT**

One of the major research projects being conducted by the Wyoming Reclamation and Restoration Center involves collaboration with the energy industry and the U.S. Fish and Wildlife Service. In this project, WRRC is developing a reclamation database to document and provide data on amounts and stages of reclamation conducted in the Energy Developments in Wyoming. Other objectives of this project are: (1) to deliver an operational framework to analyze and isolate trends leading to reclamation success or failure, (2) to provide a strong decision management tool to guide reclamation practices under variable geographic and climatic conditions, and (3) to offer a flexible and sharable database allowing for additional data input from multiple sources, and (4) to quantify and verify reclamation efforts throughout the five-state habitat range of the greater sage-grouse. There are currently 13 Energy companies contributing data to thise project and several others considering participation.

**Other projects include:**

- Impacts of Soil Salvage and Stockpiling on Soil Fertility, Jay Norton, PI. Conducted in the Jonah Field, Pinedale Anticline and Wamsutter. Funded by BP, QEP, and Encana.

- Air Quality Studies in the Upper Green River Basin. Derek Montague and Rob Field, PIs, Dept of Atmospheric Sciences. Funded by WYDEQ and UW School of Energy Resources.

-Improving Sagebrush Reclamation Technologies in Bentonite Minelands of the Bighorn Basin, Pete Stahl and Lyle King, PIs. Funded by the Bureau of Land Management.

-Energy Development and Wildlife Habitat Database Organization. Peter Stahl and John Tanaka, PIs. Data collected all over Wyoming. Funded by Wyoming Game and Fish.

-Identification of Elk Disturbance Risk and Driving Mechanisms in a Natural Gas Development Field, Jeff Beck, PI. Conducted in the Fortification Creek area. Funded by Wyoming Reclamation and Restoration Center.

-Reclaiming Halogeton Invasions of Salt-Desert Shrublands in the Wyoming Basin, Ann Hild, PI. Funded by the Wyoming Reclamation and Restoration Center.

-Economics of Native Seed Production for Reclamation and Restoration Activities, Roger Coupal, Kristiana Hansen and Kristina Hufford, PIs. Funded by Wyoming Reclamation and Restoration Center.

-Improving Reclamation Methods in Southern Wyoming, Pete Stahl and Steve Williams, PIs. Funded by the Bureau of Land Management.

-Quantifying sagebrush structure on ecological sites in the Upper Green River Basin.
Ginger Paige, Matt Holloran, Ann Hild, Pis. Funded by T. Thorne Sage Grouse Cons Fund.

- Innovative Strategies for Radium Pond remediation. Pete Stahl and Lisa Cox, PIs. Funded by Wyoming Mining Association and UW School of Energy Resources.

**Status of Steering Committee.** The WRRC Steering Committee is in place and has met twice during FY 12-13. Members include those entities that have contributed to the operation of the center. A Technical Advisory Committee has also been formed to review research and other proposals that are requesting the center's support.