Clemson University
Clemson, South Carolina

OMB Circular A-133 Reports

For the year ended June 30, 2013
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## Clemson University, South Carolina
### Schedule of Expenditures of Federal Awards
#### For the year ending June 30, 2013

<table>
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<tr>
<th>Federal Grantor/Pass-Through Grantor/Program Title</th>
<th>Federal CFDA Number</th>
<th>Grantor's/Pass-Through Grantor's Number</th>
<th>Expenditures</th>
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<td><strong>RESEARCH AND DEVELOPMENT CLUSTER</strong></td>
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<td>Department of Agriculture</td>
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<td>Acquisition of Goods and Services (Coastal Plain Soil, Water and Plant Conservation Research)</td>
<td>10.RD 58-6657-2-201</td>
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<td>An International Collaboration to Understand Molecular Mechanisms of Vegetative/Reproductive Transition in Gymnosperms</td>
<td>10.RD 2009-51160-05478</td>
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<td>Analysis of Beef Samples of the “Pasture Based Beef Systems for Appalachia”</td>
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<td>Animal Health</td>
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<td>Application of Biotechnology to Control the Soybean Cyst Nematode</td>
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<td>Children, Youth and Families at Risk (CYFAR) Liaison</td>
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<td>Clemson University Sustainable Community Project (CYFAR Sustainability)</td>
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<td>Clemson University Veterinary Institute, SC</td>
<td>10.RD 2010-38942-20745</td>
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<td>Comparative Trapping Investigations of Small Hive Beetles Inside Honey Bee Colonies</td>
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<td>Containment, Remediation, and Recycling of Irrigation Water for Sustainable Ornamental Crop Production</td>
<td>10.RD 2011-51381-30633</td>
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<td>Culicoides Sonorensis Transcriptome Project</td>
<td>10.RD 58-5430-2-313</td>
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<td>Data Collection to Support International Regulatory Approvals for “Honeysweet” Plums</td>
<td>10.RD 58-1931-9-950</td>
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<td>Data Sources and Food Demand Estimation: A Comparison of Homescan and Consumer Expenditure Data</td>
<td>10.RD 2011-67023-30058</td>
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<td>Demonstration of Innovative Sensor-Based Nitrogen Management and Interseeding Technology to Reduce Nutrient Inputs and Weed Populations While Enhancing Farm Profitability in South Carolina</td>
<td>10.RD 69-4639-12-0010</td>
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<td>Detection and Mitigation of Phytophthora ramorum and other Species of Phytophthora in Forest Streams</td>
<td>10.RD 09-JV-11272138-014</td>
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<td>Developing Canola Varieties with Durable and Robust Blackleg Resistance by Pyramidimg Race-Specific Resistant Genes</td>
<td>10.RD 2010-38624-21823</td>
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<td>Developing Dynamic Mist Control Strategies for the Propagation of Vegetable Cuttings</td>
<td>10.RD 58-3607-8-722</td>
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<td>Developing Fundamental Knowledge of Plant-Insect Interactions and Application of Sensor-Based Technology for Management of Stink Bugs in Cotton</td>
<td>10.RD 2011-67012-30752</td>
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<td>Development of Plant Materials Native to Longleaf Ecosystems Within the Atlantic Coastal Plain of North and South Carolina</td>
<td>10.RD 09-CS-11081209-002</td>
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<td>Documenting and Predicting Impacts of Global Climate Change Using Historical Sea Eagle Monitoring Data</td>
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<td><strong>Department of Agriculture, continued</strong></td>
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<td>Drought Effects on Forest Regeneration in the Southeast- Regional Analysis Based on FHM/FIA Data</td>
<td>10.RD 10-DG-11083150-013</td>
<td>34,151</td>
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<td>Enhancing Expertise in Identification of Plant-Parasitic Nematodes of Regulatory Significance</td>
<td>10.RD 11-8130-0040-CA</td>
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<td>Enhancing the Sustainability of Livestock Production Systems on the Southeastern US</td>
<td>10.RD 2010-51160-21072</td>
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<td>Environmental Risk Assessment of Perennial Grasses Genetically Engineered for Abiotic Stress Tolerance</td>
<td>10.RD 2010-33522-21656</td>
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<td>Genetic Engineering for Septoria Disease Resistance in Hybrid Poplar</td>
<td>10.RD 2011-67010-30197</td>
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<td>Genetics and Genomics of Chestnut Blight Resistance</td>
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<td>75,417</td>
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<td>Hand Hygiene Promotion: An Essential Strategy for Preventing Foodborne Illness in Elementary Schools</td>
<td>10.RD 2011-51110-31020</td>
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<td>Hatch</td>
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<td>Improving Food Handling, Hygiene, and Sanitation in the Child Care Environment in North Carolina and South Carolina</td>
<td>10.RD 2008-51110-04335</td>
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<td>Innovative Nematode Management Strategies to Reduce Pesticide Usage While Enhancing Farm Profit and Environmental Quality</td>
<td>10.RD 2010-51101-21785</td>
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<td>Integrating Management of Soft Scales in the Southern Landscape</td>
<td>10.RD 2010-34103-21144</td>
<td>68,957</td>
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<td>Dissemination of Information in the American Planning Association</td>
<td>10.RD 12-CA-11330136-036</td>
<td>15,138</td>
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<td>Land Use Planning for Future Forest Disturbances: An Analysis of the Usefulness of Conservation Planning Tools and Technology</td>
<td>10.RD 10-DG-11330136-141</td>
<td>4,542</td>
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<td>Landscape-Scale Thresholds of Early Successional Habitat: Reconciling Biodiversity, Public Perception, and Timber Yield in Managed Forests</td>
<td>10.RD 12-CA-11330134-092</td>
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<td>Long-Term Changes in Bird Community Composition with Forest Maturation in Southern Appalachian Hardwood Forests</td>
<td>10.RD SRS 07-CA-11330134-089</td>
<td>9,521</td>
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<td>Managing Declining Pine Stands for the Restoration of Red-cockaded Woodpecker Habitat (Resample Supplement)</td>
<td>10.RD 12-JV-11330123-046</td>
<td>46,032</td>
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<td>M-cells in the Bovine Mammary Gland</td>
<td>10.RD 2011-67016-30140</td>
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<td>McIntire Stennis</td>
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<td>Mechanisms, Ecological Impacts, and Restoration Strategies for Invasion of Agricultural Fields by the Clonal Plant Polysorum Cuspidatum</td>
<td>10.RD 2009-35320-05042</td>
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<td>Mitigation of Phytophthora Species in Water With Algaeaides</td>
<td>10.RD 11-8130-0999-CA</td>
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<td>Multi-Scale Biogeochemical Assessment of Soil Denitrification Process impacted by Nanosilver</td>
<td>10.RD 2012-67022-30158</td>
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<td>Myoepithelial Ontogeny in Prepubertal Heifers</td>
<td>10.RD 2009-35208-05778</td>
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<td>National Visitor Use Monitoring</td>
<td>10.RD AG-4670-C-12-0115</td>
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<td>Nutrition and Food Safety Education Targeting Rural Older Adults: Using a Volunteer-based, Train-the-Team Approach</td>
<td>10.RD 2010-46100-21801</td>
<td>92,459</td>
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<td>Pilot Study to Determine the Effect of a Nutritional Food Safety Curriculum Targeting Older Adults Who Participate in the South Carolina Congregate Nutrition Program</td>
<td>10.RD 2009-46100-05957</td>
<td>(836)</td>
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<td>Prescribed Fire vs. Wildfire: Impacts of Repeated Fires on Vegetative Community Development in the Southern Appalachian Mountains</td>
<td>10.RD 11-DG-11330136-004</td>
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Department of Agriculture, continued

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<th>Federal CFDA Number</th>
<th>Grantor's/Pass-Through Grantor's Number</th>
<th>Expenditures</th>
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<tr>
<td>Presentation of Students and Young Scientists at the 2013 32nd Southern Forest Tree Improvement Conference</td>
<td>10.RD 2013-67013-20874</td>
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<td>Producing Biological Control Agents for Use in Hemlock Woolly Adelgid Management in the Southern Appalachians</td>
<td>10.RD 10-DG-11083150-031</td>
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<td>Producing Biological Control Agents for Use in Hemlock Woolly Adelgid Management</td>
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<td>Rapid Detection and Mitigation of Phytophthora ramorum in Water</td>
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<td>Rapid Detection of Phytophthora ramorum in Water: Year 2</td>
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<td>Repeated and Prescribed Fires and Mechanical Fuel Treatments May Promote Multiple Management Objectives in the Southern Appalachian Mountains</td>
<td>10.RD 12-CA-11330136-041</td>
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<td>Repeated Prescribed Fires and Mechanical Fuel Treatments for Restoration in the Southern Appalachian Mountains</td>
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<td>Research Synthesis: Impacts of Fire on Fauna in the Appalachian Region</td>
<td>10.RD 12-CA-11330136-008</td>
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<td>Screening and Cloning of Resistance Related Genes by RNA-SEQ in Huanglongbing (HLB) Resistant and Susceptible Citrus Breeding Lines</td>
<td>10.RD 59-6618-2-095</td>
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<td>Statistical Research Analysis</td>
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<td>Technology for Irrigated Vegetable Production, SC</td>
<td>10.RD 2010-38508-20653</td>
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<td>Temporal and Spatial Patterns of Pine Mortality in the Southeastern United States</td>
<td>10.RD 5RSJ-09-JV-11330123-095</td>
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<td>The Supplemental Nutrition Assistance Program and Household Spending: A Flexible Demand</td>
<td>10.RD 58-5000-1-0028</td>
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<td>Tracking and Managing Diseases of Floriculture Crops caused by Oomycetes and Fungi</td>
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<td>Translational Genomics Approaches to Control of Peach Tree Short Life in the Southeastern US</td>
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<td>Understanding How a Lipokine, Palmitoleic Acid (C16:1) and Stearyl-CoA Desaturase (SCD) Influence Fat Synthesis</td>
<td>10.RD 2012-67012-19907</td>
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<td>Use of Wetland Systems to Treat Nursery Runoff</td>
<td>10.RD 58-6618-2-105</td>
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<td>Use of Wetland Systems to Treat Nursery Runoff</td>
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<td>Georgia Forestry Commission</td>
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<td>Laboratory Analysis of Leaf Bait Samples from Streams in Georgia: 2012</td>
<td>10.RD 62140-10084</td>
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<td>Michigan State University</td>
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<td>RosBREED: Enabling Marker Assisted Breeding in Rosaceae</td>
<td>10.RD 61-4296E</td>
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<td>North Carolina State University</td>
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<td>Building Capacity to Control Viral Foodborne Disease: A Translational, Multidisciplinary Approach</td>
<td>10.RD 2011-0494-01</td>
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## RESEARCH AND DEVELOPMENT CLUSTER, Continued

### Department of Agriculture, continued

- **Pennsylvania State University**
  - Innovative Technologies of Thinning of Fruit
    - Federal Grantor: Pennsylvania State University
    - Pass-through Grantor: USDA
    - CFDA Number: 3818-CU-USDA-9561
    - Expenditures: $20,107

- **South Carolina Department of Agriculture**
  - Creating Profitable Strategies for Transitional and Organic Growers for Multi-Vegetable Cropping Through Unique Cover Cropping, Plasticulture and Alternative Fertilizer Technology Development of Peach Varieties with Superior Qualities for Enhanced Production, Increased Consumption and Competitive Advantage of the South Carolina Peach
    - Federal Grantor: South Carolina Department of Agriculture
    - Pass-through Grantor: USDA
    - CFDA Number: None
    - Expenditures: $10,197

- **South Carolina Forestry Commission**
  - Impact of Laurel Wilt Disease on Redbay (Persea borbonia) Ecosystems
    - Federal Grantor: South Carolina Forestry Commission
    - Pass-through Grantor: USDA
    - CFDA Number: None
    - Expenditures: $17,635

**Texas A&M University**

- Improving Soil Quality to Increase Yield and Reduce Diseases in Organic Rice Production
  - Federal Grantor: Texas A&M University
  - Pass-through Grantor: USDA
  - CFDA Number: 06-5130621
  - Expenditures: $3,040

**University of Arkansas**

- The Evolutionary Dynamics and Management of Weedy Rice in the U.S.
  - Federal Grantor: University of Arkansas
  - Pass-through Grantor: USDA
  - CFDA Number: UA AES 900957-01
  - Expenditures: $9,942
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<td>Efficacy of Experimental Products Against the Cottony Cushion Scale</td>
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<td>Integrated Grafting Technology to Improve Disease Resistance and Fruit Yield in Specialty Melon Production</td>
<td>10.RD</td>
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<td>Occurrence and Distribution of Resistance to Elevate and Switch in Populations of Botrytis cinerea from Strawberries in California</td>
<td>10.RD</td>
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<td>Occurrence and Distribution of Resistance to Elevate and Switch in Populations of Botrytis cinerea from Strawberries in the Carolinas</td>
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<td>Precision Disease Management for Sustainable Strawberry Production in the Eastern United States</td>
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<td>A Reduced Risk Management System for Managing Thrips and Tomato Spotted Wilt Virus in Tomato and Pepper in the Southeastern USA</td>
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<td>A Systems Approach to Minimize Escherichia Coli O157:H7 Food Safety Hazards Associated with Fresh and Fresh-cut Leafy Greens</td>
<td>10.RD</td>
<td>RD319-243/3504758</td>
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<td>Carbon Dynamics in Management Intensive Grazing Dairy Systems</td>
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<td>RC284-551/4895306</td>
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<td>Ecologically Driven Stink Bug Management in Commercial Farmscape</td>
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<td>RF330-451/4893146</td>
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<td>Evaluation of Somatic Seedlings of American Chestnut for Resistance to Phytophthora Root Rot-Forest Health Initiative</td>
<td>10.RD</td>
<td>RR272-333/4784886</td>
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<td>Implement Plan of Work for the Southern Region Sustainable Agriculture Research &amp; Education (SARE) Program</td>
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<td>RD309-109/4786416</td>
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<td>Implement Plan of Work for the Southern Region Sustainable Agriculture Research and Education Professional Development (PDP) Program</td>
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<td>Improvement of the Safety of Food Handling Practices on Small Farms</td>
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<td>University of Kentucky</td>
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<td>University of North Carolina Asheville</td>
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<td>Keeping the Value with the Farm: Expanding Market Opportunities Through Regional Branding</td>
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<td>University of South Carolina</td>
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<td>Genomic and Breeding Foundations for Cellulosic Sorghum Bioenergy Hybrids</td>
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<td>Botanical Product Analysis by HPLC-Particle Beam Mass Spectrometers</td>
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<td>Fatigue, Shiftwork and Human Performance</td>
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<td>Understanding the Dynamics of Invasion: A Test Using the Titan Acorn Barnacle (Megabalanus Coccoporne) and the Striped Barnacle Amphibalanus Amphitrite</td>
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<td>Examining Capacity for a Cooperative Seafood Tourism Trail as a Value-Added Marine Resource-Based Recreation and Tourism Product on the South Carolina Coast</td>
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<td>Perceptions of Marine Aquaculture in Tourist Destinations on the Southeastern United States Coast - Year 1</td>
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<td>Understanding Demand for Value-Added Products and Services Associated with For-Hire Boat Trips on the South Carolina Coast</td>
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<td>Total Department of Commerce</td>
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**Department of Defense**

- 2012 Clemson Mini-Conference on Discrete Mathematics | 12.RD          | H98230-12-1-0253             | 5,668        |
- Accounting for Hydrologic State in Ground Penetrating Radar Classification Systems | 12.RD          | W911NF-10-1-0292            | 64,160       |
- Anthropomorphic Interfaces on Automation Trust, Dependence, and Performance in Younger and Older Adults | 12.RD          | FA9550-12-1-0385            | 71,334       |
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<td><strong>RESEARCH AND DEVELOPMENT CLUSTER, Continued</strong></td>
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<td>Atomic Molecular Simulation Methods to Predict CBW A-Surface Interactions</td>
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<td>Carbon Fibers Derived from Sustainable Precursors</td>
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<td>Combined Biological and Chemical Mechanisms for Degradation of Insensitive Munitions in the Presence of Alternate Explosives</td>
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<td>Concept Validation and Optimization for a Vent-based Mine-blast Mitigation System</td>
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<td>Cooperative Red-Cockaded Woodpecker Translocation Support</td>
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<td>Designing Better Virtual Environments for Training</td>
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<td>Detecting Hidden Communication Protocol</td>
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<td>Development of Marine Anti-fouling Coatings Utilizing a Fouling Deterrence Strategy</td>
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<td>DURIP: Instrumentation for Simultaneous Two-Dimensional Quantitative Imaging of Mixing Fraction, Temperature, and Velocity in Turbulent Nonpremixed/Partially Premixed Flames</td>
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<td>Engineering Chronic Spinal Cord Injury Lesion Cavity for Enhanced Regeneration</td>
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<td>Facilitating Soldier Receipt of Needed Mental Health Treatment</td>
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<td>Garment Modification and Production Support - Task Orders</td>
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<td>High-Temperature Interfacial Thermodynamics for Mechanism-Informed Materials Design: A Case Study of Sintered Mo-Si-B Based Alloys</td>
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<td>Iterative Decoding of q-ary Parity-check Codes and Related Problems</td>
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<td>Jet Disposal of Dredge Spoil: Transport, Entrainment and Deposition of Fluid Mud</td>
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<td>Laboratory of Excellence for Characterization of Electromagnetic Properties of Nanocomposite Materials</td>
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<td>Magnetic Field Assisted Assembly of Ordered Multifunctional Ceramic Nanocomposites for Extreme Environments</td>
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<td>Manufacturing Science of Improved Molded Optics</td>
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<td>Multicharged Ion Promoted Desorption (MIPD) of Reaction Co-Products</td>
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<td>Multidimensional 2-Photon Imaging System for the Investigation of Biofouling Mechanisms and Biominalization Mechanisms</td>
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<td>Multi-length Scale Material Model Development for Armor-grade Composites</td>
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<td>New Protein Modification under Nitrosative Stress</td>
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<td>On-Chip Coherent Combing of Angled-Grating-Confined Broad-Area Semiconductor Lasers Through a Folded Supercavity for High Power, High Brightness Applications</td>
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<td>Palmetto Number Theory Series/SouthEast Regional Meeting on Numbers</td>
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## RESEARCH AND DEVELOPMENT CLUSTER, Continued

### Department of Defense, continued

- **Polarization-Maintaining Large-Core All-Solid Photonic Bandgap Fibers for Power Scaling of High Power Fiber Lasers**
  - Federal Grantor: Department of Defense, 12.RD
  - CFDA Number: HQ0147-11-C-6010
  - Expenditures: $296,963

- **Production and Characterization of Cut Resistant, Dyeable Fibers via Acrylic/Copolyaramid Bi-Component Wet Spinning**
  - Federal Grantor: Department of Defense, 12.RD
  - CFDA Number: W911QY-10-C-0107
  - Expenditures: $12,545

- **Research and Development on EM Responsive Coatings**
  - Federal Grantor: Department of Defense, 12.RD
  - CFDA Number: FA8650-09-D-5900/0002
  - Expenditures: $88,718

- **Subsurface Thermal Energy Storage (STES) for Improved Heating and Air-Conditioning Efficiency**
  - Federal Grantor: Department of Defense, 12.RD
  - CFDA Number: W912HQ-10-C-0027
  - Expenditures: $203,836

- **Technologies and Methodologies in Prevention of ASR in Concrete Pavements**
  - Federal Grantor: Department of Defense, 12.RD
  - CFDA Number: N6283-09-C-0024
  - Expenditures: $39,593

- **The Arithmetic of Siegel Modular Forms**
  - Federal Grantor: Department of Defense, 12.RD
  - CFDA Number: H98230-11-1-0137
  - Expenditures: $9,963

- **Tools for Enhanced F-22 Maintenance Visibility**
  - Federal Grantor: Department of Defense, 12.RD
  - CFDA Number: FA8601-13-P-0101
  - Expenditures: $46,463

- **Topologically Protected Quantum Information Processing in Spin-orbit Coupled Semiconductors**
  - Federal Grantor: Department of Defense, 12.RD
  - CFDA Number: FA9550-10-1-0497
  - Expenditures: $175,125

- **Ultra-Trace Level Quantification of Alpha- and Beta-Emitting Radionuclides with Extractive Scintillating Resin**
  - Federal Grantor: Department of Defense, 12.RD
  - CFDA Number: HDTRA1-12-1-0012
  - Expenditures: $198,879

### Pass-through programs from:

- **Applied Research Associates, Incorporated**
  - 3D Meta-Optics for High Energy Lasers
  - Federal Grantor: 12.RD
  - CFDA Number: 20100669-04-CRF
  - Expenditures: $193,881

- **Advanced Optical Fibers for High Power Fiber Lasers**
  - Federal Grantor: 12.RD
  - CFDA Number: W911NF-10-1-0423
  - Expenditures: $245,925

- **Engineered Laser Filaments in Air for Defense Stand-Off Sensing and Interaction Applications**
  - Federal Grantor: 12.RD
  - CFDA Number: 238975
  - Expenditures: $30,500

- **Eye-Safe Polycrystalline Lasers**
  - Federal Grantor: 12.RD
  - CFDA Number: FA9550-07-1-0566
  - Expenditures: $51,601

- **Innovative Design and Manufacturing of Gradient-Index-based Transformation Optics**
  - Federal Grantor: 12.RD
  - CFDA Number: 4622-CU-AFRL-7225
  - Expenditures: $118,236

- **Investigation of the Accumulative Roll Bonding ARB of Thick Titanium Sheets**
  - Federal Grantor: 12.RD
  - CFDA Number: W911NF-10-1-0413
  - Expenditures: $2,300

- **Light Filamentation Science**
  - Federal Grantor: 12.RD
  - CFDA Number: 232897
  - Expenditures: $23,272

- **Luminescence Materials as Nanoparticle Thermal Sensors**
  - Federal Grantor: 12.RD
  - CFDA Number: AA-5-33690
  - Expenditures: $30,809

- **Multi-KW 2 M Emission by Spectrally combining Many Tm Fiber Lasers Year 2**
  - Federal Grantor: 12.RD
  - CFDA Number: 233280
  - Expenditures: $8,115

- **NanoEnergetics-Fundamental Exploration and Technological Development**
  - Federal Grantor: 12.RD
  - CFDA Number: RSC10010
  - Expenditures: $148,381

- **Novel FEL Cavity Optic Phase II**
  - Federal Grantor: 12.RD
  - CFDA Number: N00014-12-1-0099
  - Expenditures: $65,777

- **Novel Fiber Concepts for High Power Single Mode Fiber Lasers**
  - Federal Grantor: 12.RD
  - CFDA Number: W911NF-12-1-0332
  - Expenditures: $266,575

- **Novel High Energy Fiber Lasers**
  - Federal Grantor: 12.RD
  - CFDA Number: HQ0147-08-C-0028
  - Expenditures: $12,321

- **Novel Materials and Components for All-fiber Faraday Isolators**
  - Federal Grantor: 12.RD
  - CFDA Number: FA8650-09-C-5405
  - Expenditures: $75,828

### FlexTech Alliance, Incorporated

- **Translating Printed Electronics Process Technology from Laboratory to Commercial Scale**
  - Federal Grantor: 12.RD
  - CFDA Number: RFP12-158_Clemson
  - Expenditures: $252,927

### Lehigh University

- **Tailoring of Atomic-Scale Interphase ComPLEXions for Mechanism-Infomed Material Design**
  - Federal Grantor: 12.RD
  - CFDA Number: S42549-78002
  - Expenditures: $61,569

### Massachusetts Institute of Technology

- **Evaluation of Radiation-induced Photonic Defects in Si, Ge, Chalcogenides and Polymers**
  - Federal Grantor: 12.RD
  - CFDA Number: 5710003309
  - Expenditures: $66,396

### MIT Lincoln Laboratory

- **Lincoln Laboratory Graduate Student Research Support**
  - Federal Grantor: 12.RD
  - CFDA Number: PO 7000014944/3077723
  - Expenditures: $32

### Mote Marine Laboratory

- **Novel Compounds from Shark and Stingray Epidermal Mucus with Antimicrobial Activity Against Wound Infection Pathogens**
  - Federal Grantor: 12.RD
  - CFDA Number: MML-107-547
  - Expenditures: $13,548
## Clemson University, South Carolina

### Schedule of Expenditures of Federal Awards

For the year ending June 30, 2013

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<td>ARRA - Creating World Class Healthcare Facilities for the Military Health System</td>
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<td>Development and Use of Genetic Methods for Assessing Aquatic Environmental Condition and Recruitment Dynamics of Native Stream Fishes on Pacific Islands</td>
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<td>11,424</td>
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<tr>
<td>Photovoltaic Fabrics</td>
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<td>University of Michigan</td>
<td>12.RD</td>
<td>3002307587 (formally F011680)</td>
<td>118,029</td>
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<tr>
<td>ARC Phase III: An Army Automotive Research Center of Excellence for Modeling and Simulation of Ground Vehicles</td>
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<tr>
<td>- Fault Tolerant Hydraulic Hybrid System</td>
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<tr>
<td>ARC Research at Clemson University</td>
<td>12.RD</td>
<td>3002307587 (formally F011680)</td>
<td>134,551</td>
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<td>Computational Support to Develop a Verification and Validation Plan to Reduce Engineering Change Propagation in Vehicle Configuration Design</td>
<td>12.RD</td>
<td>3002307587 (formally F011680)</td>
<td>58,792</td>
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<tr>
<td>Enhanced Fluid Properties and Minimization of Radiator Fan Power Consumption in Military Ground Vehicle Cooling Systems</td>
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<tr>
<td>Modeling &amp; Optimization of Electrified Propulsion Systems</td>
<td>12.RD</td>
<td>3002307587 (formally F011680)</td>
<td>41,130</td>
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<td>Ultracapacitor Energy Storage for Improving Fuel Economy and Extending Battery Life in Heavy Vehicles</td>
<td>12.RD</td>
<td>3002307587 (formally F011680)</td>
<td>93,190</td>
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<td>University of Missouri - Rolla</td>
<td>12.RD</td>
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<tr>
<td>The Intelligent All Electric Ship Power System</td>
<td>12.RD</td>
<td>00015569-1</td>
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## Schedule of Expenditures of Federal Awards

**For the year ending June 30, 2013**

<table>
<thead>
<tr>
<th>Federal Grantor/Pass-Through Grantor/Program Title</th>
<th>Federal CFDA Number</th>
<th>Grantor's/Pass-Through Grantor's Number</th>
<th>Expenditures</th>
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<tbody>
<tr>
<td><strong>RESEARCH AND DEVELOPMENT CLUSTER, Continued</strong></td>
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<tr>
<td><strong>Department of Defense, continued</strong></td>
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<td>Pass-through programs, continued:</td>
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<tr>
<td>University of Texas at Dallas</td>
<td>12.RD</td>
<td>P1196</td>
<td>39,029</td>
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<tr>
<td>Synthesis and Raman Characterization of Boron Doped Carbon Nanotubes</td>
<td>12.RD</td>
<td>P1196</td>
<td>39,029</td>
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<tr>
<td>Washington &amp; Jefferson College</td>
<td>12.RD</td>
<td>CSIP</td>
<td>11,874</td>
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<td>Research Analysis Agreement between CSIP at Washington &amp; Jefferson College and SOP at Clemson University</td>
<td>12.RD</td>
<td>None</td>
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<td><strong>Department of the Interior</strong></td>
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<tr>
<td>CESU: Building the Capacity to Monitor Coastal Marine Ecosystem Health: Reagent Development and Technical Applications of Novel Antibody and Molecular Tools</td>
<td>15.RD</td>
<td>P12AC11053</td>
<td>3,405</td>
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<td>Climate Change and Tidally Influenced Freshwater Forested Wetlands of the Southeast: Understanding Functional Ecological Attributes of Forest Transitions to Marsh</td>
<td>15.RD</td>
<td>G09AC00153</td>
<td>45,209</td>
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<td>Conservation Corridors for Desert Tortoises</td>
<td>15.RD</td>
<td>G13AC00019</td>
<td>29,213</td>
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<tr>
<td>Determining the Movement Patterns and Habitat Use of Seabirds to Support Marine Spatial Planning Along the Atlantic Coast</td>
<td>15.RD</td>
<td>F11AC01380 (formerly</td>
<td>35,961</td>
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<td>Dissolved and Particulate Anthropogenic Organic Pollutants in the Coastal Environments of the Southeastern US</td>
<td>15.RD</td>
<td>P12AC11162</td>
<td>1,949</td>
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<td>Eastern Brown Pelicans: Dispersal, Seasonal Movements and Monitoring of PAH's and Other Contaminants in the Northern Gulf of Mexico</td>
<td>15.RD</td>
<td>G12AC20367</td>
<td>183,662</td>
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<td>Evaluating the Effects of FERC License Actions for Consumers Energy Projects on Bald Eagles Nesting Along the Au Sable, Manistee and Muskegon Rivers</td>
<td>15.RD</td>
<td>G10AC00604 (05HQRU1569)</td>
<td>17,249</td>
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<tr>
<td>Habitat Restoration for Bobwhite Quail and Early-Successional Wildlife Species-Kings Mountain National Military Park</td>
<td>15.RD</td>
<td>P11AC91086 (formerly</td>
<td>5,866</td>
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<td>Implement Assessment Protocol for the Rare Carolina Bogmiant Population at Congaree National Park</td>
<td>15.RD</td>
<td>P12AC11253</td>
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<td>Needs Assessment for Interpretation and Education</td>
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<td>NPS Southeast Region Marine Science Support Center</td>
<td>15.RD</td>
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<td>Program Management for the SC Water Resources Center</td>
<td>15.RD</td>
<td>G11AP20105</td>
<td>96,297</td>
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<tr>
<td>Real Time Monitoring to Support Environmental Impact Management Strategies for Road Construction Activities on Foothills Parkway: Wears Valley, Bridge Number 2</td>
<td>15.RD</td>
<td>P10AC00544 (formerly</td>
<td>13,851</td>
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<td>Southern Appalachian Cooperative Ecosystems Studies</td>
<td>15.RD</td>
<td>J5471100020)</td>
<td>1,539</td>
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<td>Structural Prognosis for the Effective Management of Nation’s Cultural Heritage</td>
<td>15.RD</td>
<td>H5000085050 / J5460080183</td>
<td>6,653</td>
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<tr>
<td>Towards Simpler, Cheaper and Greener Iron Conservation Treatment of Museum Collection Objects from Fort Sumter and Fort Moultrie National Monuments</td>
<td>15.RD</td>
<td>P11AP60979 (formerly MT-2210-11-NC-02)</td>
<td>8,245</td>
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<td>Understanding Relationships Between Sediment and Carbon Deposition and Floodplain Forest Functions in the Congaree National Park, SC</td>
<td>15.RD</td>
<td>P12AC11169 (H5000085050)</td>
<td>99,581</td>
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<td>Application of the Visitor Experience and Resource Protection (VERP) Program in Pinnacles National Monument</td>
<td>15.RD</td>
<td>G10AC00157</td>
<td>34,773</td>
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<td>Cannon Stabilization and Architectural Coatings Treatment at Fort Moultrie - CESU</td>
<td>15.RD</td>
<td>P11AC91070 (formerly</td>
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<td>J845010020)</td>
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<td>P08AC00212 (formerly</td>
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<td>J5430080027)</td>
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<td>Grantor’s/Pass-Through Grantor’s Number</td>
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<tr>
<td><strong>RESEARCH AND DEVELOPMENT CLUSTER, Continued</strong></td>
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<td><strong>Department of the Interior, continued</strong></td>
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<tr>
<td>Characterization of the Moth (Lepidoptera) Diversity of Congaree National Park (CESU)</td>
<td>15.RD P10AC00543</td>
<td>(formerly J543090058)</td>
<td>5,760</td>
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<tr>
<td>Evaluate Dormant Season Herbicide Treatment Methods for Chinese Privet at Congaree National Park</td>
<td>15.RD P10AC00532</td>
<td>(formerly J5240100017)</td>
<td>9,501</td>
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<td>Front-End Development for the Biodiversity Database of Great Smoky Mountains National Park</td>
<td>15.RD P11AC91091</td>
<td>(formerly P11AT51069)</td>
<td>28,672</td>
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<td>Internship Program for Fire and Fuels Management</td>
<td>15.RD P08AC00215</td>
<td>(formerly P11AC91099)</td>
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<td>Scion and Seed Collection and Processing at Carl Sandburg Home National Historic Site</td>
<td>15.RD P11AT50774</td>
<td>(formerly P11AC91078)</td>
<td>551</td>
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<tr>
<td>Structural Integrity Assessments at Fort Sumter National Monument (FSNM)- CESU</td>
<td>15.RD P11AT50423</td>
<td>(formerly P11AT50423 )</td>
<td>80,028</td>
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<td>Tourism as a Tool for Conservation of Mountain Gorillas in the Albertine Rift: The Case of Volcanos National Park, Rwanda</td>
<td>15.RD F12AP01112</td>
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<td>14,520</td>
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<td>Pass-through programs from:</td>
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<td>North Carolina Wildlife Resources Commission</td>
<td>15.RD WM-0230/PO NC10010345</td>
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<td>Effects of Intensive Pine Management on Aquatic Herptiles with Special Emphasis on Spotted Turtles, North Carolina, USA</td>
<td>15.RD WM-0257 // PO# NC10055455</td>
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<td>Effects of Stand Age, Wetland Type, and Landscape Matrix on Patterns of Amphibian Occupancy in Managed Coastal Pine Forests</td>
<td>15.RD SCDNR FY2012-004/P24019481612</td>
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<td>South Carolina Department of Natural Resources</td>
<td>15.RD SCDNR FY2013-002/P24019497209</td>
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<tr>
<td>Assessing Nest Success and Habitat Use of Wilson’s Plovers #1</td>
<td>15.RD None</td>
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<td>Assessing Nest Success and Habitat Use of Wilson’s Plovers #3</td>
<td>15.RD T-54-R-1, P24014406011</td>
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<td>Web Based GIS Decision Support System</td>
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<td>University of Minnesota</td>
<td>15.RD F11AC00459</td>
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<tr>
<td>Virginia Polytechnic Institute</td>
<td>15.RD NALCC-2011-16</td>
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<td>6,832</td>
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<tr>
<td>Assessing Quality Indicators for Interpretive Programs in the National Park Service</td>
<td>15.RD 432766-19244</td>
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<td>3,447</td>
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<td>National Education Council Interpretation and Education Program Assessment Tool</td>
<td>15.RD ALCC 2013-01</td>
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<tr>
<td>Wildlands Network</td>
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<td>Assisting Wildlands Network to Identify and Prioritize Key Habitat Connectivity Areas for the South Atlantic Region</td>
<td>15.RD ALCC 2013-01</td>
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<td>Wildlife Management Institute</td>
<td>15.RD NALCC-2011-16</td>
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<tr>
<td>Assessing Priority Amphibian &amp; Reptile Conservation Areas (PARCAs) and Vulnerability to Climate change in the North Atlantic Landscape Conservation Cooperative</td>
<td>15.RD ALCC 2013-01</td>
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<td>Data Needs Assessment to Support Conservation Planning for the Appalachian LCC</td>
<td>15.RD NALCC-2011-16</td>
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<td><strong>Total Department of the Interior</strong></td>
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</table>
Clemson University, South Carolina  
Schedule of Expenditures of Federal Awards  
For the year ending June 30, 2013

<table>
<thead>
<tr>
<th>Federal Grantor/Pass-Through Grantor/Program Title</th>
<th>Federal CFDA Number</th>
<th>Grantor’s/Pass-Through Grantor’s Number</th>
<th>Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RESEARCH AND DEVELOPMENT CLUSTER, Continued</strong></td>
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<tr>
<td><strong>Department of Justice</strong></td>
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<tr>
<td>Pass-through programs from:</td>
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<tr>
<td>West Virginia Research Corporation</td>
<td>16.RD</td>
<td>09-0970-CU</td>
<td>265,012</td>
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<tr>
<td>Use of Periocular Features for Biometric Recognition</td>
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<td><strong>Total Department of Justice</strong></td>
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<td><strong>Department of Labor</strong></td>
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<tr>
<td>Pass-through programs from:</td>
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<tr>
<td>Florence-Darlington Technical College</td>
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<td>Accessible Support Services and Instruction for Sustainable Transition (ASSIST) to Work</td>
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<tr>
<td>Greenville Technical College</td>
<td>17.RD</td>
<td>TC-23765-12-60-A-45</td>
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<td>SC ACCELERATE - SC Adult College Completion Through E-Learning Resources and Academic Tracks to Employment</td>
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<td><strong>Total Department of Labor</strong></td>
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<td><strong>Department of State</strong></td>
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<tr>
<td>Capacity Building for Study Abroad: Cooperative Bachelor’s Degree Programs</td>
<td>19.RD</td>
<td>S-ECAAS-09-GR-158 (EB)</td>
<td>25,189</td>
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<tr>
<td>Internet Democracy Support for West Africa</td>
<td>19.RD</td>
<td>S-LMAQM-12-GR-1033</td>
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<tr>
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<td><strong>Department of Transportation</strong></td>
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<tr>
<td>2012 Dwight David Eisenhower Transportation Fellowship</td>
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<td>DTFH64-12-G-00017</td>
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<tr>
<td>Innovative Pavement Research Foundation</td>
<td>20.RD</td>
<td>FAA-01-G-002-05-7</td>
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<td>Performance of Concrete in the Presence of Airfield Pavement Deicers and Identification of Induced Distress Mechanisms</td>
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<td>Intelligent Automation Incorporated</td>
<td>20.RD</td>
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<tr>
<td>A Novel Detection and Warning System to Mitigate Dilemma Zone (DZ) Issues</td>
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<td>Professional Service Industries, Incorporated</td>
<td>20.RD</td>
<td>None</td>
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<tr>
<td>Fundamental Investigations into ASR - Mechanisms, Mitigation and Testing</td>
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<tr>
<td>South Carolina Department of Transportation (SCDOT)</td>
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<tr>
<td>Impact of Coarse Aggregate Gradation on PCC Performance Properties</td>
<td>20.RD</td>
<td>1361; Proj No. 689</td>
<td>37,023</td>
</tr>
<tr>
<td>Improvements to Acceleration Design Response Spectra for Seismic Design of Transportation Structures in South Carolina Integration of the Incident Command System (ICS) Protocol for Effective Coordination of Multi-Agency Response to Traffic Incidents</td>
<td>20.RD</td>
<td>1318; Proj No. 686</td>
<td>81,512</td>
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<td>Operational and Safety Characteristics of Lane Widths</td>
<td>20.RD</td>
<td>1543; Proj No. 699</td>
<td>182,484</td>
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<td>Professional Services Contract Manager Development and Certification Strategy</td>
<td>20.RD</td>
<td>1507; Project No. 696</td>
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<tr>
<td>Ranking of Pavement Preservation Methods and Practices</td>
<td>20.RD</td>
<td>1456; Proj No. 695</td>
<td>105,684</td>
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<td>Real Time Measurement of Scour Depths Around Bridge Piers and Abutments</td>
<td>20.RD</td>
<td>1417; Proj No. 692</td>
<td>87,025</td>
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<td>Study of the Rate of Deterioration of Bridges and Pavements as Affected by Trucks</td>
<td>20.RD</td>
<td>1463; Project No. 694</td>
<td>96,921</td>
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<td>Accelerated Bridge Construction - Precast Alternate for Flat Slab Spans</td>
<td>20.RD</td>
<td>1297/1449, Proj No. 682</td>
<td>76,885</td>
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12
## RESEARCH AND DEVELOPMENT CLUSTER, Continued

**Department of Transportation, continued**

Pass-through programs from SCDOT, continued:

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<tr>
<th>Federal Grantor/Pass-Through Grantor/Program Title</th>
<th>CFDA Number</th>
<th>Grantor's/Pass-Through Grantor's Number</th>
<th>Expenditures</th>
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<tr>
<td>Accelerated Bridge Construction - Precast Alternate for Flat Slab Spans</td>
<td>20.RD</td>
<td>1582, Proj No. 682</td>
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<td>Compliance with the United State Environmental Protection Agency (USEPA) Effluent Limitation Guidelines-Turbidity Control and Surface Outlets</td>
<td>20.RD</td>
<td>SPR No. 702</td>
<td>94,083</td>
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<td>Ranking of Pavement Preservation Methods and Practices Support for the Development and Implementation of an Access Management Program through Research and Analysis of Collision Data</td>
<td>20.RD</td>
<td>1574; Proj No. 695</td>
<td>283</td>
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<td>Validation of Contractor HMA Testing Data in the Materials Acceptance Process - Phase II</td>
<td>20.RD</td>
<td>1508; Project No. 697</td>
<td>119,333</td>
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<tr>
<td>TransAnalytics, LLC The Effects of Medical Conditions on Driving Performance</td>
<td>20.RD</td>
<td>DTNH22-09-D-00135, Task Order</td>
<td>18,974</td>
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<td>University of North Carolina - Chapel Hill Older Drivers’ Pedal Behavior</td>
<td>20.RD</td>
<td>5-55002</td>
<td>51,304</td>
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<td>Pedal Application Errors</td>
<td>20.RD</td>
<td>5-36366</td>
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<td>University of Tennessee Production of Biohydrogen and Succinic Acid</td>
<td>20.RD</td>
<td>B5000022313</td>
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<td>TransAnalytics, LLC HFCV Mobile Device Vehicle Integration Assessment</td>
<td>20.RD</td>
<td>8928-S-001 // Task Order No. 8</td>
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<td>Total Department of Transportation</td>
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**Appalachian Regional Commission**

| AppState STEM Leadership Inclusion (iSTEM)                                                                          | 23.RD       | SC17376                               | 12,233       |

**Total Appalachian Regional Commission**

|                                         | 23.RD   | SC17376                               | 12,233       |

**National Aeronautics and Space Administration**

<table>
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<tr>
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<tr>
<td>NRI-Small: Long, Thin Continuum Robots for Space Applications</td>
<td>43.RD</td>
<td>NNX12AM01G</td>
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<td>A Multi-Instrument Study of Electron-Positron Annihilation in the Milky Way</td>
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<td>Broad Band Observations using INTEGRAL and Fermi</td>
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<td>Chemical Evolution of the Neutron-Rich Iron-Group Isotopes and Implications for the Formation of FUN CAIs</td>
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<td>Equatorial Vortex Experiment (EVEX): A Study of the Ionospheric Plasma Circulation and the Sunset Layer from Kwajalein (Clemson Co-I Proposal)</td>
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<td>Geospace Response to Lower Atmospheric Wave Variability Due to the El Nino - Southern Oscillation</td>
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<td>Investigation of Anomalous Transport in the Lower Thermosphere</td>
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<td>Mesosphere-Lower Thermosphere Turbulence Experiment (MTEX) (Co-I Proposal Clemson University)</td>
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<td>Neutral-Ion Coupling and Wind Shear Effects in the Daytime Lower Ionosphere</td>
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<td>Nucleosynthesis and Galactic Chemical Evolution of Cosmochemically Significant Isotopes</td>
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<td>The Role of Field Aligned Ion-drag in Driving Vertical Winds and Mass Density Enhancements Observed in the Cusp Region of Earth’s Upper Thermosphere</td>
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Pass-through programs from:

<p>| College of Charleston Developing Optical Strain Gauges for Passive Remote Strain Sensing | 43.RD       | 20-SG-Clemson_Ansley-PA               | 9,860        |</p>
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<td>Enabling Public Participation in Astronomy: Installation of the 29th Dixon Lomax Telescope at the Taylor Creek Observatory Graduate Research Assistantship for Brittany McGowan - Effects of Hydrostatic Pressure on the Differentiation of Bone Marrow Cells into Osteoblasts in 3D Culture</td>
<td>43.RD 20-SG-Clemson Mount-RFI</td>
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<td>Graduate Research Assistantship for James Mathieson - Dynamic Tracking of Design Project Complexity for Project Performance Prediction</td>
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<td>Graduate Research Assistantship for Timothy Reeves - Discrete Element Methods: Realistic Modeling of Interactions Between Wheels and Sandy Soils</td>
<td>43.RD S20589 Timothy Reeves</td>
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<td>Graduate Research Assistantship: Toward a Career on Advanced Materials Research for Space Applications</td>
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<td>Initiating Ionic Radiation Effects Testing at CUBIT</td>
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<td>Light-Weight Nanocomposites of Superior Thermal and Electrical Properties for Space Applications</td>
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<td>Palmetto Academy 2012: Understanding the Effect of Ionizing Radiation on Articular Cartilage Biomechanics</td>
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<td>Portable Hardware for Sensorimotor Adaptation</td>
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<td>Refining NASA’s Space-Based GPS Technology for Applications in Site-Specific Irrigation and Watershed Management</td>
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<td>South Carolina Space Grant Consortium Campus Director Funds</td>
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<td>Analysis of Short-Term Tidal Perturbations</td>
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<td>Georgia Institute of Technology Design of Resilient Silicon Anodes</td>
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<td>Jet Propulsion Laboratory Gas in Protoplanetary Systems - HERSCHEL Cycle-0 Identification of Forming Gas Giant Planets in the Transition Object HD141569</td>
<td>43.RD 1369554</td>
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<td>NASA Keck 2010A Proposal #56 Observation of Re-Vibrational OH and H2O Emission in Disks Around Young Stars</td>
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<td>Observation of OH Emission from the Transition Disk HD141569 Outflows from Evolved Class II Sources: an Herschel/HIFI Insight into the Kinematical/Physical Properties of the Atomic and Molecular Component, PI:OT1_Ipodio_1</td>
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<td>A National EPSCoR Cyberinfrastructure Student Engagement Program</td>
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<td>Arabidopsis 2010: Collaborative Research: Evolution of Gene Position and Function in Arabidopsis Using Outgroup Genomes</td>
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<td>Autonomous Distributed Local Computing Models Using Self-Stabilization</td>
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<td>BPC-AE: Collaborative Research: The Alliance for the Advancement of African-American Researcher in Computing (AARC)</td>
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<td>Broadband Dielectric Spectrometers with 1-10 nm Planar Nanofluidic Channels</td>
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<td>Capillary-Channeled Polymer (C-CP) Fiber Stationary Phases for High Speed and Preparative Protein Separation</td>
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<td>CAREER: Advancing the Mechanistic Understanding of Field-Scale Preferential Flow and Transport Processes in Soils Using Geophysics</td>
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<td>CAREER: Changing the Landscape: Towards the Development of a Physics Identity in High School</td>
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<td>CAREER: Determining the Role of Metal Coordination in Selenium Antioxidant Activity. An Interdisciplinary Approach to Chemical Biology Education and Research</td>
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<td>CAREER: Energy and Charge Transfer Dynamics in Hypothermal Energy Ion-Surface Impacts</td>
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<td>Collaborative Research: Processing and Properties of Cellulose Films for MEMS Applications</td>
<td>47.RD CMMI-1130825</td>
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<td>Collaborative Research: Reformulation-Linearization Technique for Discrete and Continuous Nonconvex Optimization with Applications</td>
<td>47.RD CMMI-0968909</td>
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<td>Collaborative Research: Research Initiation Grant: Influence of Motivation on Learning Outcomes in an Engineering Service Course</td>
<td>47.RD EEC-1240327</td>
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<td>Collaborative Research: REU Site: Computational Algebra Geometry, Combinatorics, and Number Theory</td>
<td>47.RD DMS-1156761</td>
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<td>Collaborative Research: Topological States and Quantum Information in Semiconductors and Cold Atom Superfluids</td>
<td>47.RD PHY-1104527</td>
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<td>Collaborative Research: G-SESAME Cloud: A Dynamically Scalable Collaboration Community for Biological Knowledge Discovery</td>
<td>47.RD DBI-0960586</td>
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<td>Collaborative Research: REU Site: Computational Algebra Geometry, Combinatorics, and Number Theory</td>
<td>47.RD DMS-1156761</td>
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<td>Complete Reductive Dechlorination of Trichloroethylene (TCE) by non-Dehalococcoides Microorganisms</td>
<td>47.RD CBET-1102889</td>
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<td>Complexity and Algorithms of Decoding Algebraic Codes</td>
<td>47.RD CCF-0830581</td>
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<td>Conference Support for Student Participation at the 2012 International Symposium on Flexible Automation; St. Louis, Missouri; June 18-20, 2012</td>
<td>47.RD CMMI-1141536</td>
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<td>Conjugated Polymer Nanoparticles for Nanoscale Chemical Microscopy</td>
<td>47.RD CHE-1058885</td>
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<td>Controlling and Enhancing Optical Gradient Forces in Integrated Optomechanical Devices</td>
<td>47.RD ECCS-1101845</td>
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<td>Coupling Small-Particle Adsorbents with Membranes for Trace-Containment Removal in Water Treatment</td>
<td>47.RD CBET-1236070</td>
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<td>CPA-SEL: Collaborative Research-Continuing Progress Toward Verified Software</td>
<td>47.RD</td>
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<td>Critical Raindrop Characteristics: Fall Speed, Shape, and Size Distributions</td>
<td>47.RD</td>
<td>AGS-1144846</td>
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<td>CSR: Small: Collaborative Research: An Architecture for the Emergency Retasking of Wireless Sensors Networks (ALERT)</td>
<td>47.RD</td>
<td>CNS-1116976</td>
<td>19,931</td>
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<td>CSR: Small: Efficient and Reciprocal File Replication and Consistency Maintenance in Pervasive Distributed Computing</td>
<td>47.RD</td>
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<td>CU Thinking: Research to Practice</td>
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<td>EEC-1048325</td>
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<td>CU-STEP: Enhancing the Undergraduate Experience Through Research and Curriculum Development</td>
<td>47.RD</td>
<td>DUE-0525474</td>
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<td>Development of Performance-Based Design Guidelines for Integrating Phase Change Materials in Buildings</td>
<td>47.RD</td>
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<td>EAGER: A Study of the National Software Cyberinfrastructure Environment</td>
<td>47.RD</td>
<td>OCI-1129017</td>
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<td>EAGER: Development of a Framework for a Cyber-Infrastructure General Practitioner Program</td>
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<td>OCI-1251544</td>
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<td>EAGER: GENI Experiments on Pervasive Data Sharing Over Heterogeneous Networks</td>
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<td>EAGER: Prototype Tool for Visualizing Online Polarization</td>
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<td>IIS-3247198</td>
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<td>EAGER: PXFS - A Persistent Storage Model for Extreme Scale</td>
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<td>CCF-1142905</td>
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<td>EAGER: Report on International Data Exchange Requirements (RIDER)</td>
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<td>EAGER: TIGER-Tight Integration of Grid Enabled Researchers</td>
<td>47.RD</td>
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<td>EAGER: Transcriptome Analysis of CHO Cells to Improve Productivity and Control Protein Aggregation</td>
<td>47.RD</td>
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<td>EFRI-BSBA: Multifunctional Materials and Devices for Distributed Actuation and Sensing</td>
<td>47.RD</td>
<td>EFRI-0937985</td>
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<td>EFRI-CBE: Emerging Frontiers in 3-D Breast Cancer Tissue Test System</td>
<td>47.RD</td>
<td>EFRI-0736007</td>
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<td>EFRI-COPN: Neuroscience and Neural Networks for Engineering the Future Intelligent Electric Power</td>
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<td>Electromagnetic Scattering From 3-D Objects Buried in Layered Lossy Earth with Multiple Rough Interfaces</td>
<td>47.RD</td>
<td>ECCS-0821918</td>
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<td>Emphasizing Core Calculus Concepts Using Biomedical Applications to Engage, Mentor and Retain STEM Students</td>
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<td>ERC-Small Business: Micropatterning of Film Extrusion Die Surfaces</td>
<td>47.RD</td>
<td>EEC-1128481</td>
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<td>Establishing Clemson University as a Research Site for CELDI</td>
<td>47.RD</td>
<td>IIP-0641414</td>
<td>78,640</td>
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<td>Evaluation of Nanoparticle Behavior During Transitions from Engineered to Natural Systems</td>
<td>47.RD</td>
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<td>Expanding the Clemson Calculus Challenge into Southeastern Regional Calculus Contest</td>
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<td>Experimental and Modeling Study of Risk from Ember Storms</td>
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<td>Exploratory Synthesis of New Classes of Inorganic Salt-inclusion Solids</td>
<td>47.RD</td>
<td>DMR-0706426</td>
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<td>Extrapolating the Concept of Protein Corona for Understanding Nanoparticles at Large</td>
<td>47.RD</td>
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<td>Fabrication of Double Layer Cellular Spheroid Using Acoustic Excitation-Assisted Compound Jetting</td>
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<td>Fabry-Perot Studies of Equatorial Thermospheric Dynamics and Composition: Part II</td>
<td>47.RD</td>
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<td>National Science Foundation, continued</td>
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<td>Formation of Halonitromethanes and Nitrosamines During Ozonation in Drinking Water Treatment</td>
<td>47.RD</td>
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<td>Fundamental Study of Carbon Dots for Fluorescence Bio-imaging/sensing</td>
<td>47.RD</td>
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<td>Gene Flow and Divergence Across the Equatorial Tropical Marine Barrier: Past, Present and Future</td>
<td>47.RD</td>
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<td>GOALI: Low-Ash Lignin Biofuel from Black-Liquor Streams</td>
<td>47.RD</td>
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<td>GOALI: Understanding Plasticization and Compaction Mechanisms in Perfluorocyclobutyl Polymer Thin Films and Membranes</td>
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<td>Graduate Research Fellowship Program</td>
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<td>Graduate Research Fellowship Program</td>
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<td>Growth Rates of Bacterial Taxa in Coastal Marine Ecosystems</td>
<td>47.RD</td>
<td>OCE-1261359</td>
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<td>GSE/RES: Impact of Single-Sex Public Educational Environments on Mathematics and Science Classroom Environment, Student Academic Performance, and Student Self-Concept</td>
<td>47.RD</td>
<td>HRD-1136248</td>
<td>130,381</td>
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<td>GSE/RES: Sustainability Topics as a Route to Female Recruitment in Engineering</td>
<td>47.RD</td>
<td>HRD-1036617</td>
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<td>HCC: Small Eye Movement in Stereoscopic Displays, Implications for Visualization</td>
<td>47.RD</td>
<td>IIS-0915085</td>
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<td>HCC: Small: Conversational Agents in Web Based Consumer Environments Designed for Older Users</td>
<td>47.RD</td>
<td>IIS-0955763</td>
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<td>High Temperature Hydro Thermal Synthesis and Crystal Growth of Inorganic Oxides</td>
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<td>Hilbert Spaces of Analytic Functions and Their Applications</td>
<td>47.RD</td>
<td>DMS-1304208</td>
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<td>How Does the Plant Say-No More?: A Molecular Genetic Approach to Nodule Number Regulation</td>
<td>47.RD</td>
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<td>Human-Centered Computing Scholars: Fostering a New Generation of Underrepresented and Financially Disadvantaged Researchers</td>
<td>47.RD</td>
<td>DUE-1060545</td>
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<td>I/UCRC CGI: I/UCRC for the Ceramic, Composite and Optical Materials Center</td>
<td>47.RD</td>
<td>IIP-1034979</td>
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<td>I/UCRC: Collaborative Research: Center for Excellence in Logistics and Distribution, Phase II</td>
<td>47.RD</td>
<td>IIP-1266013</td>
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<td>I-Corps: A Novel Functional Shoulder Brace to Limit Dislocation</td>
<td>47.RD</td>
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<td>I-Corps: A Novel Surgical Simulator for Eventuating and Training Force-based Laparoscopic Skills</td>
<td>47.RD</td>
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<td>I-Corps: Drug-eluting Sutures</td>
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<td>Image Reconstruction In Diffuse Optical Tomography With Sparsity Constraints</td>
<td>47.RD</td>
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<td>Impact of Nonmigrating Tides on the Thermospheric Energy Budget and Constituents</td>
<td>47.RD</td>
<td>AGS-1112704</td>
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<td>Improved Methods for Incompressible Viscous Flow Simulation</td>
<td>47.RD</td>
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<td>Individual Nomination (PAESMEM)</td>
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<td>INSPIRE: Evaluating the Effect of Cyberinfrastructure on Universities Production Process</td>
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<td>Integrative Situated Design: Linking Functions and Affordances Through Form</td>
<td>47.RD</td>
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<td>International Collaboration in Chemistry: Preparation and Utilization of SFS-Containing Building Blocks</td>
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<td>Inverted Colloidal Crystal Membranes</td>
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<td>Investigations of the Size Effects on the Relaxation Rates of Polymer Coated Magnetic Nanoparticles for Hyperthermia</td>
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<td>Materials World Network: Switchable Polymer Interfaces for Bottom-Up Stimulation of Mammalian Cells</td>
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<td>Materials World Network: US-China Collaborative Partnership on Eco-Friendly High Performance (Si, Sn)-Based Thermoelectric Nanocomposite Materials</td>
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<td>Mathematics Partnering With Computer Science to Improve Calculus Instruction and Learning</td>
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<td>Molecular Physics of the Electrical Double Layer in Ionic Liquids</td>
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<td>MRI: Acquisition of a Nano-to-Micro-Scale 3D Live-Cell Imaging System for Biomedical Research and Education</td>
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<td>MRI: Acquisition of High Performance Computing Instrument for Collaborative Data-Enabled Science</td>
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<td>MRI: Acquisition of Nikon A1R-MP Confocal/Multiphoton Microscope With Widefield HyperSpectral Imaging System for the Jordan Hall Imaging Facility</td>
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<td>MRI: Development of a Laser Microbioparticle Separator</td>
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<td>MRI: Development of the Intelligent River (R), A Basin-Scale Monitoring Instrument</td>
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<td>Multimodal Membranes for High-Throughput Bioseparations</td>
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<td>Nanoscale Surface Adsorption and Disordering in Battery Materials</td>
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<td>NEDG: Mechanisms for Efficient and Reliable Routing in Hybrid Wireless Networks</td>
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<td>Network Target Coordination for Complex System Optimization</td>
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<td>NSF BPC-A: Institute for African-American Mentoring in Computing Sciences (IAMCS)</td>
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<td>NSF IPA</td>
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<td>Numerical Approximations of Non-Newtonian Fluid Flows With Applications</td>
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<td>OrganicPad: A Tablet PC-Based Interactivity Tool for Organic Chemistry</td>
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<td>Palmetto Number Theory Series/SouthEast Regional Meeting on Numbers</td>
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<td>Particle Electrophoresis in Curved Microchannels: Fundamentals and Applications</td>
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<td>Quantitative Structure-Adsorbability Relationships for the Adsorption of Organic Chemicals by Carbon Nanotubes</td>
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<td>RAPID: Impact of Earthquakes on the Electricity Infrastructure Technology</td>
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<td>REU Site: Advanced Functional Membranes</td>
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<td>REU Site: Interfaces and Surfaces: Exploring and Experiencing Science (I SEE Science)</td>
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<td>REU Site: Solid-State Devices for Electronics, Photonics, and Magnetics Technology</td>
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<td>REU Site: Data-Intensive Computing</td>
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<td>REU Site: Summer Program in Applied Psychology</td>
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<td>RI: Medium: Collaborative Research: Real-Time Continuum Manipulation</td>
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<td>RI: Small: Interactive Perception for Manipulating Non-Rigid Objects</td>
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<td>Selenium Antioxidant Mechanisms: Metal Binding vs. Reactive Oxygen Species Scavenging</td>
<td>47.RD</td>
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<td>Semi Fluorinated Polymers: Forming Energy Controlled Responsive Interfaces</td>
<td>47.RD</td>
<td>DMR-0907390</td>
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<td>SHB: Small: An Assistive, Robotic Table [ART] Promoting Independent Living</td>
<td>47.RD</td>
<td>IIS-1116075</td>
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<td>SHB: Type II (INT): Collaborative Research: Creating Learning Systems with Mobile Technology to Improve Perioperative Services</td>
<td>47.RD</td>
<td>IIS-1237077</td>
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<td>SHF: Medium: Collaborative Research: Specification and Mathematics Engineering for the Verified Software End-Game</td>
<td>47.RD</td>
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<td>SHF: Small: RUI: Collaborative Research: Accelerators to Applications - Supercharging the Undergraduate Computer Science Curriculum</td>
<td>47.RD</td>
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<td>SNM: Defect-Engineered Nanocarbons for Electrochemical Energy Storage</td>
<td>47.RD</td>
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<td>The Changing Face of Andean Urbanism: Sociopolitical Change at El Purgataorio, Canas Valley, Peru</td>
<td>47.RD</td>
<td>BCS-0814338</td>
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<td>The Geography of Proliferating Conservation Easements</td>
<td>47.RD</td>
<td>BCS-1068906</td>
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<td>Tigers Teach Noyce Scholarship</td>
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<td>Topics on Computational Algebra</td>
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<td>DMS-1005369</td>
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<tr>
<td>Transforming Robust Design Concept into a Novel Geotechnical Design Tool</td>
<td>47.RD</td>
<td>CMMI-1200117</td>
<td>76,552</td>
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<tr>
<td>Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics [TUES]</td>
<td>47.RD</td>
<td>DUE-1043707</td>
<td>86,720</td>
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<tr>
<td>Understanding the Macroscopic Dynamics of Ultrasonic Consolidation</td>
<td>47.RD</td>
<td>CMMI-1068977</td>
<td>120,437</td>
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<tr>
<td>Use of Chiral Tracers to Determine Cycling of POPs in Stream Ecosystems</td>
<td>47.RD</td>
<td>CBET-0828699</td>
<td>8,158</td>
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<tr>
<td>Vehicle-Infrastructure Integration Enabled Plug-In Hybrid Electric Vehicles for Energy Management</td>
<td>47.RD</td>
<td>CMMI-0928744</td>
<td>68,714</td>
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<tr>
<td>ARRA - Collaborative Research: Fiber-Optic Strain Monitoring of Rock Masses in Large Underground Facilities</td>
<td>47.RD</td>
<td>CMMI-0900163</td>
<td>24,665</td>
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<tr>
<td>ARRA - CU Thinking</td>
<td>47.RD</td>
<td>EEC-0935163</td>
<td>84,712</td>
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<tr>
<td>ARRA - Discovery and Predication of Hidden Biodiversity in Black Flies (Diptera: Simuliidae)</td>
<td>47.RD</td>
<td>DEB-0841636</td>
<td>117,677</td>
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<tr>
<td>ARRA - Enabling Long-Time Accuracy in Turbulent Flow Simulations</td>
<td>47.RD</td>
<td>DMS-0914478</td>
<td>6,208</td>
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<tr>
<td>ARRA - MRI-R2: Acquisition of a Highly Charged Ion Beamline for Interdisciplinary Materials Research and Education at Clemson University</td>
<td>47.RD</td>
<td>DMR-0960100</td>
<td>1,409,404</td>
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<tr>
<td>ARRA - Organized Materials for Plastic Electronics: Divided Pi-Ways and Platinum Energy Canopies</td>
<td>47.RD</td>
<td>CHE-0847132</td>
<td>132,240</td>
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<tr>
<td>ARRA - Predictive Energy Management in Smart Vehicles: Exploiting Traffic and Terrain Preview for Fuel Savings</td>
<td>47.RD</td>
<td>CMMI-0928533</td>
<td>73,342</td>
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<tr>
<td>ARRA - REU Site: Undergraduate Research in Human-Centered Computing</td>
<td>47.RD</td>
<td>CNS-0850695</td>
<td>6,383</td>
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<tr>
<td>ARRA - Science Master's Program: Sustainable and Resilient Infrastructure</td>
<td>47.RD</td>
<td>DGE-1011478</td>
<td>148,022</td>
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# Clemson University, South Carolina
## Schedule of Expenditures of Federal Awards
### For the year ending June 30, 2013

<table>
<thead>
<tr>
<th>Federal Grantor/Pass-Through Grantor/Program Title</th>
<th>Federal CFDA Number</th>
<th>Grantor's/Pass-Through Grantor's Number</th>
<th>Expenditures</th>
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<tbody>
<tr>
<td><strong>RESEARCH AND DEVELOPMENT CLUSTER, Continued</strong></td>
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</tr>
<tr>
<td><strong>National Science Foundation, continued</strong></td>
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<tr>
<td>ARRA - Spectroscopy of Solar-Type Stars: Fundamental Problems in Stellar Astrophysics</td>
<td>47.RD</td>
<td>AST-0908342</td>
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<td>Pass-through programs from:</td>
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<tr>
<td>3F, LLC</td>
<td>47.RD</td>
<td>IIP-0956907</td>
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<tr>
<td>Biocomponent Fiber Spinning and Characterization of Spun Fibers/Heat Treatment of Multi Component Nanofibers</td>
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<td>Advanced Photonic Crystals, LLC</td>
<td>47.RD</td>
<td>IIP-1058055 Prime # NSF</td>
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<tr>
<td>Hydrothermal Growth of Potassium Beryllium Fluoroborate (KBBF) for Deep UV Nonlinear Optical Applications</td>
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<td>Advanced Thermal Technologies, LLC</td>
<td>47.RD</td>
<td>IIP-1038760</td>
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<tr>
<td>Rheological Characterization and Melt-Spinning of Industrial Mesophase Pitch Precursors</td>
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<tr>
<td>BBN Technologies</td>
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<tr>
<td>ARRA - Clemson Campus Trials of Enterprise GENI: Enabling Measurement and Control of Network Traffic over Campus Ethernet, Wireless Mesh, and Vehicular Networks</td>
<td>47.RD</td>
<td>9500010146 1833A</td>
<td>69,471</td>
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<td>Campus Trials of Enterprise GENI</td>
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<td>9500010314 1833A-REU</td>
<td>7,727</td>
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<tr>
<td>GENI WiMAX at Clemson</td>
<td>47.RD</td>
<td>1843A/PO# 9500011083</td>
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<tr>
<td>GENI WiMAX at Clemson - REU Supplement</td>
<td>47.RD</td>
<td>1843/PO#9500011083</td>
<td>5,289</td>
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<tr>
<td>Clemson University Research Foundation</td>
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<tr>
<td>ARRA - South Carolina Inter- and Intra- Campus Cyber Connectivity (C2)</td>
<td>47.RD</td>
<td>2011-703</td>
<td>113,822</td>
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<tr>
<td>CAREER: Control of Processes Actuated with Mobile Radiant Sources</td>
<td>47.RD</td>
<td>CMMI-1055254</td>
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<tr>
<td>CAREER: Model-Based Control of Machining Processes and Scalability for Manufacturing System Control</td>
<td>47.RD</td>
<td>CMMI-0954318</td>
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<tr>
<td>Center for Electromagnetic Compatibility</td>
<td>47.RD</td>
<td>IIP-0934299</td>
<td>46,823</td>
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<tr>
<td>Collaborative Research: I/UCRC in Painting/Coating application and Surface Inspection Systems</td>
<td>47.RD</td>
<td>IIP-1067995</td>
<td>223</td>
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<tr>
<td>Collaborative Research: Pattern Transfer Nanomanufacturing with Magnetically-Recorded Nanotemplates</td>
<td>47.RD</td>
<td>CMMI-1130819</td>
<td>77,722</td>
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<tr>
<td>GOALI: Model-Based System Fault Diagnosis and Prognosis: Passive Robustness and Aging Prediction</td>
<td>47.RD</td>
<td>PO#RF01145992 - 60016267</td>
<td>3,454</td>
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<tr>
<td>Student Participation Grant for National Manufacturing Conferences: 2012 ASME MSEC and SME NAMRC 40; University of Notre Dame, South Bend, Indiana; June 4-8, 2012.</td>
<td>47.RD</td>
<td>CMMI-1156247</td>
<td>296</td>
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<tr>
<td>Synthesis-Microstructure-Performance Relations in Oxide Ceramic Scintillators</td>
<td>47.RD</td>
<td>DMR-1207080</td>
<td>34,227</td>
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<td>Travel Scholarships for Frontiers in BioMagnetic Particles 2013</td>
<td>47.RD</td>
<td>DMR-1248199</td>
<td>4,000</td>
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<tr>
<td><strong>Colorado State University</strong></td>
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<tr>
<td><strong>Fayetteville State University</strong></td>
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<tr>
<td>Examining the Impact of Online Distance Education on Student Learning and Student Engagement in STEM Disciplines at Historically Black Colleges and Universities</td>
<td>47.RD</td>
<td>NSF HBCU-UP 211210-01</td>
<td>2,532</td>
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<tr>
<td><strong>Georgia Institute of Technology</strong></td>
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<tr>
<td>Goal: Neural Networks and Adaptive Critic Designs for Energy Security &amp; Sustainability</td>
<td>47.RD</td>
<td>R9360-G2</td>
<td>35,210</td>
</tr>
</tbody>
</table>
### Clemson University, South Carolina

**Schedule of Expenditures of Federal Awards**  
**For the year ending June 30, 2013**

<table>
<thead>
<tr>
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<th>Grantor’s/Pass-Through Grantor’s Number</th>
<th>Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RESEARCH AND DEVELOPMENT CLUSTER, Continued</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>National Science Foundation, continued</strong></td>
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</tr>
<tr>
<td>Pass-through programs, continued:</td>
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<tr>
<td>Medical University of South Carolina</td>
<td>47.RD</td>
<td>MUSC11-106</td>
<td>56,865</td>
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<tr>
<td>Structure and Dynamics of the Spider Dragline Silk Assembly Process</td>
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<tr>
<td>Pennsylvania State University</td>
<td>47.RD</td>
<td>4730-CU-NSF-5974</td>
<td>884</td>
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<tr>
<td>REU: Participant Support</td>
<td>47.RD</td>
<td>4375-CU-NSF-5974</td>
<td>227,340</td>
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<tr>
<td>TRPGR: Comparative Genomics of Environmental Stress Responses in North American Hardwoods</td>
<td>47.RD</td>
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<tr>
<td>Purdue University</td>
<td>47.RD</td>
<td>4101-38563</td>
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<tr>
<td>Characterizing and Modeling the Experience of Transfer Students in Engineering</td>
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<td>South Carolina Research Authority</td>
<td>47.RD</td>
<td>2002-593 TO#0061</td>
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<tr>
<td>2009 Research Infrastructure Improvement Grant (Rii)</td>
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<td>2002-593 TO#0062 (EPS-0919440)</td>
<td>247,195</td>
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<tr>
<td>South Carolina State University</td>
<td>47.RD</td>
<td>08-586009-BAPS-CU-SC</td>
<td>57,411</td>
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<tr>
<td>A Partnership in Observational and Computational Astronomy (POCA)</td>
<td>47.RD</td>
<td>11-581004-SCAMP-CU-SC/PO#1202173</td>
<td>60,987</td>
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<tr>
<td>Louis Stokes Alliance for Minority Participation (SCAMP) - Year 5</td>
<td>47.RD</td>
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<td>University of Alabama</td>
<td>47.RD</td>
<td>10-075</td>
<td>994</td>
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<tr>
<td>NEEESR-CR: NEEsSoft-Seismic Risk Reduction for Soft-Story, Wood Frame Buildings</td>
<td>47.RD</td>
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<td>University of Central Florida</td>
<td>47.RD</td>
<td>176726</td>
<td>6,289</td>
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<tr>
<td>REU Site: International Program on Optics, Lasers, Photonics and Optical Materials</td>
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<td>University of Florida</td>
<td>47.RD</td>
<td>2009-46</td>
<td>3,054</td>
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<tr>
<td>EXTENCI: Extending Science Through Enhanced National Cyberinfrastructure</td>
<td>47.RD</td>
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<tr>
<td>The South East Alliance for Graduate Education and Professoriate</td>
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<tr>
<td>University of Massachusetts Amherst</td>
<td>47.RD</td>
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<tr>
<td>Collaborative Research: Ecohydrology of Deep Crystalline Rocks at Dusel Homestake</td>
<td>47.RD</td>
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<tr>
<td>University of North Carolina Wilmington</td>
<td>47.RD</td>
<td>571480-11-01</td>
<td>162</td>
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<tr>
<td>iPhone/iPod Touch/iPad as Interactive Personal Response System</td>
<td>47.RD</td>
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<tr>
<td>University of Oklahoma</td>
<td>47.RD</td>
<td>2009-46</td>
<td>3,054</td>
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<tr>
<td>NEEESR-SG: Understanding and Improving the Seismic Behavior of Pile Foundations in Soft Clays</td>
<td>47.RD</td>
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<tr>
<td>University of South Carolina</td>
<td>47.RD</td>
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<tr>
<td>The South Carolina Project for Organ Biofabrication - Research Infrastructure Improvement (Rii) Track Grant</td>
<td>47.RD</td>
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<tr>
<td>The South Carolina Project for Organ Biofabrication (Controlled Assembly and Maturation of Small Linear Blood Vessels Using Magnetic Force)</td>
<td>47.RD</td>
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<tr>
<td>The South Carolina Project for Organ Biofabrication (Increasing Underrepresented Minority Intellectual Capital and Scientific Networking in the Biological Sciences at Clemson University)</td>
<td>47.RD</td>
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</tr>
</tbody>
</table>

23
<table>
<thead>
<tr>
<th>Federal Grantor/Pass-Through Grantor/Program Title</th>
<th>Federal CFDA Number</th>
<th>Grantor's/Pass-Through Grantor's Number</th>
<th>Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RESEARCH AND DEVELOPMENT CLUSTER, Continued</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>National Science Foundation, continued</td>
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<tr>
<td>Pass-through programs from University of South Carolina, continued:</td>
<td>47.RD</td>
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<tr>
<td>The South Carolina Project for Organ Biofabrication (Scaffold-Free Fabrication of Vascular Constructs Using Inkjetting)</td>
<td>13-2299 PO#51893L/22410-Z105</td>
<td>32,987</td>
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<td>The South Carolina Project for Organ Biofabrication (Supporting in Vitro Vascular Structure Maturation by Enhancing Elastic Fiber Assembly)</td>
<td>13-2279 PO#51894/22410-Z106</td>
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<td>University of Texas Austin Campus Bridging for Stampede</td>
<td>UTA13-000068</td>
<td>15,999</td>
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<tr>
<td>University of Washington CREATIV: Tools, Models and Innovation Platforms for Research on Social Media</td>
<td>7425278</td>
<td>16,649</td>
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<tr>
<td>Washington University Gordon Research Conference on Visualization in Science and Education</td>
<td>WU-12-243 PO# 2917766T</td>
<td>3,202</td>
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<tr>
<td>Winston Salem State University Mixed Methods Study of the Factors Influencing Recruitment, Retention, and Academic Achievement of African American Undergraduate Females and Males in Math, Science, and Engineering Disciplines</td>
<td>210271 A</td>
<td>24,778</td>
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<tr>
<td><strong>Total National Science Foundation</strong></td>
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<tr>
<td>Small Business Administration</td>
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<tr>
<td>An Innovation Center at the Clemson University Advanced Materials Center</td>
<td>SBAHQ-10-I-0278</td>
<td>7,343</td>
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<tr>
<td><strong>Total Small Business Administration</strong></td>
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<tr>
<td>Department of Veterans Affairs</td>
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<tr>
<td>Nanoparticle Coupled Antioxidants for Respiratory Illness in Veterans</td>
<td>VA 247-P-1705 PO#534-D37103</td>
<td>37,585</td>
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<tr>
<td><strong>Total Department of Veterans Affairs</strong></td>
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<td>37,585</td>
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<td>Environmental Protection Agency</td>
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<tr>
<td>Behavior of Carbon Nanomaterials in Aqueous Suspensions of Natural Organic Matter</td>
<td>RD-83388601-0</td>
<td>51,619</td>
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<tr>
<td>Ben Sharp - Modeling Switchgrass Production in South Carolina Based on Farmer's Decisions: A Stochastic and Spatial Analysis</td>
<td>FP-91717201</td>
<td>11,594</td>
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<tr>
<td>Defining Significant Nexus with Navigable Waters for Small, Relatively Isolated Wetlands in the Piedmont Ecoregion</td>
<td>CD95488711</td>
<td>154,791</td>
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<td>Dentritic Polymers as Biocompatible Dispersants for Oil Spill Remediation</td>
<td>RD-83518201</td>
<td>114,964</td>
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<td>Influence of Water Quality on the Bioavailability and Food Chain Transport of Carbon Nanoparticles</td>
<td>RD-83409201-0</td>
<td>33,304</td>
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<tr>
<td>STAR Fellowship</td>
<td>FP-91713301</td>
<td>13,557</td>
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<tr>
<td>Understanding and Managing Risks Posed by Brines Containing Dissolved Carbon Dioxide</td>
<td>RD-83438301</td>
<td>249,444</td>
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<tr>
<td>Pass-through programs from:</td>
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<tr>
<td>North Carolina State University Less Rain Down the Drain: Disconnecting Stormwater Systems to Restore Black Creek</td>
<td>2010-0838-01</td>
<td>8,288</td>
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<tr>
<td>Upstate Forever Market-Based Mechanisms for Promoting Low-Impact Development, Mitigating Legacy Stormwater Discharges and Restoring Urban Floodplains in Saluda-Reedy Watershed</td>
<td>None</td>
<td>965</td>
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### RESEARCH AND DEVELOPMENT CLUSTER, Continued

#### Environmental Protection Agency, continued

Pass-through programs, continued:
- **William Marsh Rice University**
  - **EPA/STAR - Environmental Impact of Nanox**
    - CFDA Number: 66.RD
    - Grantor’s/Pass-Through Grantor’s Number: R16992
    - Expenditures: $28,286

**Total Environmental Protection Agency**
- Expenditures: $666,812

#### Nuclear Regulatory Commission

- **Junior Nuclear Environmental Engineering and Science Faculty Support**
  - CFDA Number: 77.RD
  - Grantor’s/Pass-Through Grantor’s Number: NRC-38-10-921
  - Expenditures: $95,870

- **US NRC Nuclear Education Program Scholarship and Fellowship**
  - CFDA Number: 77.RD
  - Grantor’s/Pass-Through Grantor’s Number: NRC-38-08-956
  - Expenditures: $108,769

**Total Nuclear Regulatory Commission**
- Expenditures: $204,639

#### Department of Energy

- **ARRA - Fundamentals & Advanced Power Systems Certificate Programs for Training the Power Industry Sector**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: DE-OE0000466
  - Expenditures: $164,275

- **Asymmetric Hybrid Nanoparticles (AHNs)**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: DE-FG02-06ER46342
  - Expenditures: $78,949

- **Alternative Sample Loading Preparation for Thermal Ionization Mass Spectrometry**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: DE-NA0001735
  - Expenditures: $74,838

- **BioEthanol Collaborative**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: DE-FG36-08GO88071
  - Expenditures: $26,232

- **Clemson University CyberInstitute**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: DE-SC0001984
  - Expenditures: $648,714

- **First-Principles Calculation of Vibrational Mode in Complex Materials**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: DE-SC0008487
  - Expenditures: $115,988

- **From Interfaces to Bulk: Experimental-Computational Studies Across Time and Length Scales of Multi Functional Ionic Polymer**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: DE-SC0007908
  - Expenditures: $118,546

- **Grain Boundary Complexions and Transitions in Doped Silicon**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: DE-FG02-08ER46511
  - Expenditures: $122

- **Innovative Water Management Technology to Reduce Environmental Impacts of Produced Water**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: DE-NT0005682
  - Expenditures: $57,109

- **Multiscale Modeling of Grain Boundary Segregation and Emrilltement in Tungsten for Mechanistic Design of Alloy for Coal Fired Plants**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: DE-FE0003892
  - Expenditures: $118,570

- **Proof of Feasibility of Using Well Bore Deformation As A Diagnostic Tool To Improve Co2 Sequestration**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: DE-FE0004542
  - Expenditures: $68,946

- **Quantifying Microbe-mineral Interactions Leading to Remotely Detectable Induced Polarization Signals: Implications for Monitoring Bioremediation**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: DE-SC0002280
  - Expenditures: $22,382

Pass-through programs from:
- **Battelle Energy Alliance, LLC**
  - **Predictive Maturity of Multi-Scale Simulation Models for Fuel Performance**
    - CFDA Number: 81.RD
    - Grantor’s/Pass-Through Grantor’s Number: 00101999
    - Expenditures: $115,749

- **Center for Transportation and the Environment**
  - **Southeast Regional Electric Vehicles Planning Program**
    - CFDA Number: 81.RD
    - Grantor’s/Pass-Through Grantor’s Number: Prime award # DE-EE0005579
    - Expenditures: $18,835

- **Clemson University Research Foundation**
  - **ARRA - Electroalcoholgenesis: Bioelectrochemical Reduction of CO2 to Butanol**
    - CFDA Number: 81.RD
    - Grantor’s/Pass-Through Grantor’s Number: MUSC10-063
    - Expenditures: $174,018

- **Beyond the Lambertian Limit--Novel Low-Symmetry Gratings for Ultimate Light Trapping Enhancement in Next-Generation Photovoltaics**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: 27773 (Prime#DE-EE0005327)
  - Expenditures: $54,045

- **Compact, Highly Sensitive and Specific Mid-Infrared (MIR) Chemical Sensors**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: DE-NA0000421
  - Expenditures: $210,980

- **Decommission of Transportation of glove box mockup at CETL**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: BOA-10888-04914 CU06
  - Expenditures: $6,688

- **Development of a Self-Consistent Model of Plutonium Sorption: Quantification of Sorption Enthalpy and Ligand-Promoted Dissolution**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: DE-SC0004883
  - Expenditures: $228,187

- **Fluoropolymers, Electrolytes, Composites and Electrodes**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: DE-FG02-05ER15718
  - Expenditures: $78,733

- **GATE Center of Excellence in Sustainable Vehicle Systems**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: DE-EE000571
  - Expenditures: $169,021

- **Integrating Light-Weight Automotive Materials**
  - CFDA Number: 81.RD
  - Grantor’s/Pass-Through Grantor’s Number: 200929-130171
  - Expenditures: $1,740
### RESEARCH AND DEVELOPMENT CLUSTER, Continued

#### Department of Energy, continued

Pass-through programs from Clemson University Research Foundation, continued:

- **Lignin Recovery and Purification**
  - Federal Grantor/Pass-Through Grantor/Program Title: Lignin Recovery and Purification
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: None
  - Expenditures: 10,642

- **Nuclear Forensics Junior Faculty Award Program-DHS**
  - Federal Grantor/Pass-Through Grantor/Program Title: Nuclear Forensics Junior Faculty Award Program-DHS
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: 12.2147
  - Expenditures: 75,097

- **Quantification of Cation Sorption to Engineered Barrier Materials Under Extreme Conditions**
  - Federal Grantor/Pass-Through Grantor/Program Title: Quantification of Cation Sorption to Engineered Barrier Materials Under Extreme Conditions
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: 120716
  - Expenditures: 46,586

- **Research Support to Build and Test Components of the Pit Disassembly Conversion Facility Design, Collect Data, Write Reports, Make Design Observations**
  - Federal Grantor/Pass-Through Grantor/Program Title: Research Support to Build and Test Components of the Pit Disassembly Conversion Facility Design, Collect Data, Write Reports, Make Design Observations
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: DE-EM0000901
  - Expenditures: 373,975

- **Stabilization of Pu Surface Complexes on Mineral Colloids by Natural Organic Matter**
  - Federal Grantor/Pass-Through Grantor/Program Title: Stabilization of Pu Surface Complexes on Mineral Colloids by Natural Organic Matter
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: B597372
  - Expenditures: 64,213

- **Technetium Sorption to Cementitious Materials**
  - Federal Grantor/Pass-Through Grantor/Program Title: Technetium Sorption to Cementitious Materials
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: WEST197 SC0277
  - Expenditures: 53,527

**Louisiana State University**

- **Computational Catalysis and Atomic-level Synthesis of Materials: Building Effective Catalysts from First Principles**
  - Federal Grantor/Pass-Through Grantor/Program Title: Computational Catalysis and Atomic-level Synthesis of Materials: Building Effective Catalysts from First Principles
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: 41924
  - Expenditures: 217,565

**Medical University of South Carolina**

- **Nuclear Forensics Education Award Program**
  - Federal Grantor/Pass-Through Grantor/Program Title: Nuclear Forensics Education Award Program
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: MUSC10-114/IDNE012A
  - Expenditures: 2,829

**MWH Americas, Incorporated**

- **Laboratory Evaluation of Biostimulation to Treat Chlorinated Ethenes in the Chatsworth Formation, Santa Susana Field Laboratory, Ventura Co., CA**
  - Federal Grantor/Pass-Through Grantor/Program Title: Laboratory Evaluation of Biostimulation to Treat Chlorinated Ethenes in the Chatsworth Formation, Santa Susana Field Laboratory, Ventura Co., CA
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: S1010919-96944-OF
  - Expenditures: 57,399

**Nanosonic, Incorporated**

- **Nanoscale Approach to High Performance Thermoelectric Composites**
  - Federal Grantor/Pass-Through Grantor/Program Title: Nanoscale Approach to High Performance Thermoelectric Composites
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: E-4317
  - Expenditures: 103,081

**South Carolina Universities Research and Education Foundation**

- **Access to Clemson Imaging instrumentation**
  - Federal Grantor/Pass-Through Grantor/Program Title: Access to Clemson Imaging instrumentation
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: WEST201
  - Expenditures: 2,510

- **Alternative Sintering of Ceramic Waste Forms**
  - Federal Grantor/Pass-Through Grantor/Program Title: Alternative Sintering of Ceramic Waste Forms
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: SRNS009
  - Expenditures: 1,232

- **ARML Imaging Instrument Access**
  - Federal Grantor/Pass-Through Grantor/Program Title: ARML Imaging Instrument Access
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: SRNS006
  - Expenditures: 3,188

- **Electron Microscope Center Imaging Instrument Access**
  - Federal Grantor/Pass-Through Grantor/Program Title: Electron Microscope Center Imaging Instrument Access
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: WEST199
  - Expenditures: 3,102

- **Examination of the Electrical Properties of Micro- and Nano-Scale Properties in Weak Electrostatic Fields**
  - Federal Grantor/Pass-Through Grantor/Program Title: Examination of the Electrical Properties of Micro- and Nano-Scale Properties in Weak Electrostatic Fields
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: SRNS004
  - Expenditures: 34,364

- **Fabrication of Nanostructured Rheium Films**
  - Federal Grantor/Pass-Through Grantor/Program Title: Fabrication of Nanostructured Rheium Films
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: SRNS010
  - Expenditures: 8,859

- **Harmonic Detection of Resonance for the Study of Fluoride Attack of Surfaces**
  - Federal Grantor/Pass-Through Grantor/Program Title: Harmonic Detection of Resonance for the Study of Fluoride Attack of Surfaces
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: WEST172
  - Expenditures: 7,616

- **Phase II- Examination of the Electrical Properties of Conductive Polymers and OLEDs In Weak Electrostatic Fields**
  - Federal Grantor/Pass-Through Grantor/Program Title: Phase II- Examination of the Electrical Properties of Conductive Polymers and OLEDs In Weak Electrostatic Fields
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: WEST166
  - Expenditures: 23,067

- **SCM Inventory/Warehouse Analysis Study Project**
  - Federal Grantor/Pass-Through Grantor/Program Title: SCM Inventory/Warehouse Analysis Study Project
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: SRNS003
  - Expenditures: 69,772

- **SRR Technical Support Provided by Clemson University**
  - Federal Grantor/Pass-Through Grantor/Program Title: SRR Technical Support Provided by Clemson University
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: SRRA001
  - Expenditures: 74,044

- **Uranium Particle Characterization**
  - Federal Grantor/Pass-Through Grantor/Program Title: Uranium Particle Characterization
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: SRNS007
  - Expenditures: 26,606

**South Dakota State University**

- **Regional Biomass Feedstock Partnership - Biomass Residue Removal**
  - Federal Grantor/Pass-Through Grantor/Program Title: Regional Biomass Feedstock Partnership - Biomass Residue Removal
  - Federal CFDA Number: 81.RD
  - Grantor's/Pass-Through Grantor's Number: 3TG146
  - Expenditures: 37,574

**Southern States Energy Board**

- **ARRA - Southeast C02 Sequestration Technology Training Program (SECARB-ED)**
  - Federal Grantor/Pass-Through Grantor/Program Title: AARRA - Southeast C02 Sequestration Technology Training Program (SECARB-ED)
  - Federal CFDA Number: SSEB-SECARB_ED-920-CLEM-2009-001
  - Expenditures: 17,648

**TECHFISH**

- **ARRA - Lignin Recovery and Purification**
  - Federal Grantor/Pass-Through Grantor/Program Title: AARRA - Lignin Recovery and Purification
  - Federal CFDA Number: Prime # DE-SC0003312
  - Expenditures: 69,235

- **The Consortium for Plant Biotechnology Research, Incorporated Development of Environmentally Friendly Transgenic Turfgrass with Enhanced Drought and Salt Tolerance**
  - Federal Grantor/Pass-Through Grantor/Program Title: The Consortium for Plant Biotechnology Research, Incorporated Development of Environmentally Friendly Transgenic Turfgrass with Enhanced Drought and Salt Tolerance
  - Federal CFDA Number: GO12026-316
  - Expenditures: 44,926
## Clemson University, South Carolina

### Schedule of Expenditures of Federal Awards

**For the year ending June 30, 2013**

<table>
<thead>
<tr>
<th>Federal Grantor/Pass-Through Grantor/Program Title</th>
<th>Federal CFDA Number</th>
<th>Grantor's/Pass-Through Grantor's Number</th>
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#### RESEARCH AND DEVELOPMENT CLUSTER, Continued

**Department of Energy, continued**

Pass-through programs, continued:

- United States Automotive Materials Partnership LLC
  - Development of Advanced Steel for Lightweight Vehicles
  Federal CFDA Number: 81.RD 13-2825-AMP
  Expenditures: 21,354

- University of Georgia
  - Environmental Protection of DOE Lands: Studies in Long-Term Stewardship
  Federal CFDA Number: 81.RD RR267-420/4893886
  Expenditures: 4,700

- University of Illinois
  - Characterizing the Combined Roles of Iron and Transverse Mixing on Uranium Bioremediation in Groundwater Using Microfluidic Pore Networks
  Federal CFDA Number: 81.RD A3018 2008-04979-01
  Expenditures: 57,138

- UT-Battelle, LLC
  - Novel Software Storage Architecture-Southeast Region Research Initiative (SERRI)
  Federal CFDA Number: 81.RD 4000111689
  Expenditures: 197,010

  - R&D Building Reliable Data Transfer Tool
  Federal CFDA Number: 81.RD 4000108178
  Expenditures: 27,479

  - Wireless Power Transfer (WPT) and Charging of Plug-In Electric Vehicles
  Federal CFDA Number: 81.RD 4000119528
  Expenditures: 251,181

  - Resilient Home Program Support - Southeast Region Research Initiative (SERRI)
  Federal CFDA Number: 81.RD 4000087337
  Expenditures: 172,899

**Total Department of Energy**

5,107,629

#### Department of Education

**Graduate Fellowships in Electrical and Computer Engineering**

Federal CFDA Number: 84.RD P200A120224-13
Expenditures: 42,034

**Graduate Training in Engineering and Managing Resilient and Sustainable Civil Infrastructure**

Federal CFDA Number: 84.RD P200A120222-13
Expenditures: 22,469

Pass-through programs from:

- Greg Mathis Charter High School
  - Greg Mathis Charter High School - Turnaround Project
  Federal CFDA Number: 84.RD H63010010411
  Expenditures: 33,667

- Iowa State University
  - Professional Development for Algebra Progress Monitoring
  Federal CFDA Number: 84.RD 432-28-07
  Expenditures: 90,602

- South Carolina Commission on Higher Education
  - Improving Middle Grades Teacher Quality through the Clemson Mathematics Institute and Video Club
  Federal CFDA Number: 84.RD ITQ.FY2012-13
  Expenditures: 59,806

- University of Central Florida
  - MILMI - International Masters in Laser Materials and Interactions
  Federal CFDA Number: 84.RD 166253
  Expenditures: 21,328

- University of Louisville
  - A Longitudinal Study of the SC Personal Pathways to Success Initiative
  Federal CFDA Number: 84.RD ULRF 08-0181-04
  Expenditures: 38,276

- University of Michigan
  - Lifelong Learning Curriculum Transformation Project
  Federal CFDA Number: 84.RD 3002053929
  Expenditures: 1,168

- University of South Carolina
  - Center for Adolescent Research in Schools (CARS)
  Federal CFDA Number: 84.RD PO#41793(13580 FA84)/12-2043
  Expenditures: 120,885

**Total Department of Education**

430,235

#### Vietnam Education Foundation

**Vietnam Education Foundation Fellowship**

Federal CFDA Number: 85.RD F09034F
Expenditures: 1,000

**Vietnam Education Foundation Fellowship**

Federal CFDA Number: 85.RD None
Expenditures: 1,520

**Total Vietnam Education Foundation**

2,520

#### Election Assistance Commission

**2010 Voting Technology and Accessibility Research - Accessible Voting Technology Initiative**

Federal CFDA Number: 90.RD EAC110149A
Expenditures: 1,525,302

**Total Election Assistance Commission**

1,525,302
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<td>A Multi-Level, Cohort-Sequential Study of Rural Adolescent Dating Violence Victimization and Perpetration</td>
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<td>93.RD</td>
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| A Novel Colon-Specific Bi-Functional Amebicidal Therapeutics: Gai-Dextran-MM |
| 93.RD  | SR03AI076869-02  | 926 |

| ARRA - Epidemiology of Sexual Violence: A Trajectory-Based Approach |
| 93.RD  | 1R15HD065568-01S1 | 272,829 |

| ARRA - Mechanisms of Immunological Adaptation to a Harsh Chemical Environment |
| 93.RD  | 1R15ES016905-01A1 | 3,017 |

| Avian Middle Ear Development |
| 93.RD  | SR01DC009236-05  | 307,778 |

| Biomaterials for Guided Neural Regeneration-Center of Biomaterials for Tissue Regeneration (CBTR) |
| 93.RD  | SP20GM103444-05  | 145,893 |

| Biomechanical Characterization of Human Cartilaginous End-Plate |
| 93.RD  | SR03AR055775-02  | 86,745 |

| Biphasic Intervertebra Disc Regeneration using Biomimetic Scaffolds - Benjamin Whatley |
| 93.RD  | 1F31AG040929-01A1 | 33,982 |

| Cardiac-Cell Mechanics at the Single-Cell Level: Properties & Interactions |
| 93.RD  | 5K2SHE092228-04  | 164,072 |

| Cardiovascular Tissue Engineering in Diabetes |
| 93.RD  | SR21EB008935-02  | 26,385 |

| Center of Biomaterials for Tissue Regeneration (CBTR) |
| 93.RD  | SP20GM103444-05  | 947,972 |

| Controlling Fatty Acid Synthesis in African Trypanosomes |
| 93.RD  | 3R10AI081207-01A1S1 | 28,456 |

| DelPhi: Software for Electrostatic Modeling of Biomolecules |
| 93.RD  | 5R01GM093937-03  | 417,196 |

| Development of Scar-Inhibiting Compliant Tissue Adhesive |
| 93.RD  | SR21EB008785-02  | 90,974 |

| Vascular Grafts |
| 93.RD  | SR03TW008941-02  | 7,130 |

| Electromechanical Imaging of Live Vascular Smooth Muscle Cells |
| 93.RD  | SR21RR024449-02  | 62 |

| Enabling Technology for Brain Tissue Regeneration-Center of Biomaterials for Tissue Regeneration (CBTR) |
| 93.RD  | SP20GM103444-05  | 79,881 |

| Enhancing Patient Safety for Nurses Through Virtual Pediatric Patient Interaction |
| 93.RD  | 1R03HS020233-01  | 49,876 |

| Epidemiology of Sexual Violence: A Trajectory-Based Approach (supplement grant) |
| 93.RD  | 3R15HD065568-01S1 | 106,023 |

| GAGs: Function and Fixation in Bioprosthetic Heart Valves |
| 93.RD  | 5R01HL070969-08  | 382,406 |

| Health Coaches for Hypertension Control |
| 93.RD  | D04RH12726-03-00  | 49,972 |

| High-Performance Membrane Chromatography for Protein Purification |
| 93.RD  | 1R15GM094676-01  | 108,253 |

| Histology and Imaging Core-Center of Biomaterials for Tissue Regeneration (CBTR) |
| 93.RD  | SP20GM103444-05  | 131,779 |

| Hyaluronan Based Vascular Grafts-Center of Biomaterials for Tissue Regeneration (CBTR) |
| 93.RD  | SP20GM103444-05  | 51,936 |

| Improved Spray Scavenging of Particulates Via Acoustical Excitation of Drop Oscil |
| 93.RD  | SR01TH000546-03  | 66,859 |

| Integrating Biomechanics & Cell Biology to Understand TMJ Pathology |
| 93.RD  | 5R01DE021134-02 revised  | 242,609 |

| Investigating Mechanism of Intracellular Rotational Transport with Optical T |
| 93.RD  | 1R15EB014560-01A1 | 41,177 |

| Investigation of Effective Training of "promotoras" in Oral Rehydration Therapy |
| 93.RD  | 1R03NR013228-01A1 | 42,434 |

| Label Free RF Imaging of Cell Membrane Heterogeneity in Liquid |
| 93.RD  | 1K25GM100480-01A1 | 79,847 |

| Materials Synthesis and Characterization-Center of Biomaterials for Tissue Regeneration (CBTR) |
| 93.RD  | SP20GM103444-05  | 162,803 |

| Mechanically Guided Urological Tissue Regeneration-Center of Biomaterials for Tissue Regeneration (CBTR) |
| 93.RD  | SP20GM103444-05  | 105,256 |

| Naturally Occurring Dog Model for Juvenile Dermatomyositis |
| 93.RD  | 1R15AR062868-01A1 | 14,576 |

<p>| Nutrient Sensing and Hexokinases in T. brucei |
| 93.RD  | 2R15AI075326-02 revised  | 106,317 |</p>
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<td>Polymer Dot Nanoparticles for Detection of Single Molecules in Live Cells</td>
<td>93.RD R01 GM081040-04</td>
<td>5 R01 GM089510-03</td>
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<td>Role of Mei5-Sae3 in Meiotic Homologous Recombination</td>
<td>93.RD R01 GM098510-03</td>
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<td>Skin Cancer Detection Using Polarized Light Spectroscopic Methods</td>
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<tr>
<td>Stem Cell-myocyte Electrical Coupling-Center of Biomaterials for Tissue Regeneration (CBTR)</td>
<td>93.RD R01 GM098510-03</td>
<td>1R15CA131808-01 Revised</td>
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<td>Telluride Science Research Meeting on &quot;Frontiers in Biomagnetic Particles III&quot;, in Telluride, CO, June 2 - 5, 2013</td>
<td>93.RD R01 GM098510-03</td>
<td>1R15CA131808-01 Revised</td>
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<tr>
<td>The Presence of A Bacterial Metabolic Pathway in Eukaryotic Fungi</td>
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<td>The Role of CAR and PXR in Gender Predominant P450 Expression and Induction</td>
<td>93.RD R01 GM098510-03</td>
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<tr>
<td>Tissue Engineered Aortic Heart Valves: Scaffolds &amp; Stem Cells</td>
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<td>Tissue Engineered Repair of Cranial Facial Muscle (Emily Lynn Ongstad)</td>
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<td>Tissue Engineering in Spinal Cord Regeneration</td>
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<td>Trans-generational Impact of Maternal Obesity and Diabetes on Health Disparities</td>
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<td>Vibratory Mechanotransduction</td>
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<td>Xanthine DNA Glycosylase in Mammalian Systems</td>
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<td>Pass-through programs from:</td>
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<tr>
<td>Bite Technologies, LLC</td>
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<td>Assessing the Bite Counter as a Tool for Food Intake Monitoring</td>
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<td>Development of Research Grade Goldenseal Phase II</td>
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<td>Cedars-Sinai Medical Center Nanoconjugate based on polymeric acid for brain tumor treatment</td>
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<tr>
<td>Cell &amp; Tissue Systems, Incorporated SBIR Phase II: Design and Assessment of a Compliant Nanofibrous Vascular Graft</td>
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<td>Chesterfield County Coordinating Council Drug Free Chesterfield</td>
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<td>Children’s Hospital Boston Novel Angiogenesis Inhibitors Targeting the Anthrax Toxin Inhibitors</td>
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<td>Novel Angiogenesis Inhibitors Targeting the Anthrax Toxin Receptors</td>
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<td>East Carolina University Understanding the Formation of Nanoparticle-Protein Corona Impact on Cellular Uptake and Activation</td>
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<td>Emory University Group Interventions for Abused, Suicidal Black Women</td>
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<td>Medical University of South Carolina Assessing the Frequency and Costs Associated with Emergency Department Transfers Among South Carolina Nursing Home Residents</td>
<td>93.RD R01 GM098510-03</td>
<td>1R15CA131808-01 Revised</td>
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<td>Methods for Retrospective Multi-Site Research</td>
<td>93.RD R01 GM098510-03</td>
<td>1R15CA131808-01 Revised</td>
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### RESEARCH AND DEVELOPMENT CLUSTER, Continued

#### Department of Health and Human Services, continued

Pass-through programs, continued:

<table>
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<tr>
<th>Federal Grantor/Pass-Through Grantor/Program Title</th>
<th>Federal CFDA Number</th>
<th>Grantor’s/Pass-Through Grantor’s Number</th>
<th>Expenditures</th>
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<td>NUBAD, LLC</td>
<td>93.RD</td>
<td>N08-29-2011</td>
<td>40,282</td>
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<td>A Rapid Assay for RNA Targeted Drugs</td>
<td>93.RD</td>
<td>NUBAD1R41GM100607-01</td>
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<td>Rutgers, The State University of New Jersey</td>
<td>93.RD</td>
<td>4705/S1694198</td>
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<td>Coarse Grained Modeling of Biomolecule-Copolymer Conjugate Systems</td>
<td>93.RD</td>
<td>S1543487 4433 433677 10578</td>
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<td>South Carolina Department of Social Services</td>
<td>93.RD</td>
<td>None</td>
<td>12,411</td>
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<td>Strengthening SC Systems in Support of Quality Child Care Programs</td>
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<td>P16010CPPW11</td>
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<td>University of Kansas</td>
<td>93.RD</td>
<td>None</td>
<td>(10,749)</td>
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<td>Tuning of Cellular Efficacy and Profiling of Cross-Species Antiparasitic Potential by Additional SAR Rounds By Synthesis of Trypanosoma Brucei Hexokinase 1 Inhibitors</td>
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<td>16,204</td>
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<td>University of South Carolina</td>
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<td>ARRA - Creation of an Integrated Consent Process for Biospecimen Collection and Community Research Participation in South Carolina</td>
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<td>PO#31854L/11-1874</td>
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<td>Palmetto State Geriatric Education Center</td>
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<td>SC Cancer Disparities Community Network II (Community Core-Year 2)</td>
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<td>PO#41751(11500-FA1B)/12-2036</td>
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<td>South Carolina Cancer Disparities Community Network II (Community Core-Year 3)</td>
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<td>South Carolina iDeA Networks of Biomedical Research Excellence (INBRE)</td>
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<td>South Carolina iDeA Networks of Biomedical Research Excellence (SC INBRE) - Year 3 Bioinformatics Core</td>
<td>93.RD</td>
<td>13-2191 PO#51610/15590-FA93</td>
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<td>University of Texas Austin</td>
<td>93.RD</td>
<td>UTA12-000570</td>
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<td>A Novel Approach for the Design and Development of Valvular Replacement Biomaterials</td>
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<td>Widmeyer Communications</td>
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*Total Department of Health and Human Services: 6,925,182*

#### Department of Homeland Security

Pass-through programs from:

| Federal Alliance for Safe Homes                                                                                   | 97.RD               | None                                   | 9,510        |
| College Education for Building Codes: Current Status and Best Practices                                          | 97.RD               | 2013000770 ReScU                        | 24,262       |
| FLASH - ReScU                                                                                                     | 97.RD               | 2013000770 Bldg Code                    | 31,426       |
Clemson University, South Carolina  
Schedule of Expenditures of Federal Awards  
For the year ending June 30, 2013

<table>
<thead>
<tr>
<th>Federal Grantor/Pass-Through Grantor/Program Title</th>
<th>Federal CFDA Number</th>
<th>Grantor's/Pass-Through Grantor's Number</th>
<th>Expenditures</th>
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</table>

**RESEARCH AND DEVELOPMENT CLUSTER, Continued**

**Department of Homeland Security, continued**

Pass-through programs from, continued:
- Indiana University
  Developing Frameworks to Address Issues in Privacy
  Federal Grantor/Pass-Through Grantor’s Number: 97.RD BL-404718-CU (PO# 1311540)
  Expenditures: 23,761
- Medical University of South Carolina
  Nuclear Forensics Education Award Program (NFEAP)
  Federal Grantor/Pass-Through Grantor’s Number: 97.RD MUSC12-104
  Expenditures: 111,750
- Total Department of Homeland Security: 200,709

**Agency for International Development**

Pass-through programs from:
- Virginia Polytechnic Institute
  Building Local Capacity in IPM Solutions
  Federal Grantor/Pass-Through Grantor’s Number: 98.RD 451071-19244
  Expenditures: 113,197
- Ecologically-Based Participating IPM-SE Asia
  Federal Grantor/Pass-Through Grantor’s Number: 98.RD 425976-19244
  Expenditures: 214,898
- Total Agency for International Development: 328,095

**Central Intelligence Agency**

Ear Feature Analysis, Extraction Tools, and Classification for Improved Recognition
Federal Grantor/Pass-Through Grantor’s Number: 99.RD 2011-11071400004
Expenditures: 34,680

**Total Central Intelligence Agency**: 34,680

**Total Research and Development Cluster**: 56,358,844

**STUDENT FINANCIAL ASSISTANCE CLUSTER**

**Department of Education**

Federal Supplemental Educational Opportunity Grants
Federal Grantor/Pass-Through Grantor’s Number: 84.007 UNKNOWN
Expenditures: 309,250

Federal Work Study Program
Federal Grantor/Pass-Through Grantor’s Number: 84.003 UNKNOWN
Expenditures: 576,385

Federal Work Study Program - Federal Job Location and Development
Federal Grantor/Pass-Through Grantor’s Number: 84.003 UNKNOWN
Expenditures: 50,000

Federal Perkins Loan Program Federal Capital Contributions
Federal Grantor/Pass-Through Grantor’s Number: 84.038 UNKNOWN
Expenditures: 122,119

Federal Pell Grant Program
Federal Grantor/Pass-Through Grantor’s Number: 84.063 UNKNOWN
Expenditures: 12,807,913

Federal Direct Loans
Federal Grantor/Pass-Through Grantor’s Number: 84.268 UNKNOWN
Expenditures: 83,431,480

Total Department of Education: 97,297,147

**Total Student Financial Assistance Cluster**: 97,297,147

**SNAP CLUSTER**

**Department of Agriculture**

Pass-through programs from:
- South Carolina Department of Social Services
  SNAP Outreach Community Partnership Program
  Federal Grantor/Pass-Through Grantor’s Number: 10.561 5000012588
  Expenditures: 150,317
  SNAP Outreach Community Partnership Program
  Federal Grantor/Pass-Through Grantor’s Number: 10.561 5000013157
  Expenditures: 73,670
  Supplemental Nutrition Assistance Program (SNAP-ED) for Clemson University
  Federal Grantor/Pass-Through Grantor’s Number: 10.561 500012249/620000101/6200000
  Expenditures: 145
  Supplemental Nutrition Assistance Program (SNAP-ED) for Clemson University
  Federal Grantor/Pass-Through Grantor’s Number: 10.561 None
  Expenditures: 20,850
  Supplemental Nutrition Assistance Program Employment and Training (SNAP E&T)
  Federal Grantor/Pass-Through Grantor’s Number: 10.561 Task Order #2
  Expenditures: 15,086

Total Department of Agriculture: 370,496

**Total SNAP Cluster**: 370,496
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<td>HIGHWAY PLANNING AND CONSTRUCTION CLUSTER</td>
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<td>Sustainable Trails Short Course</td>
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<td>Total Highway Planning and Construction Cluster</td>
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<td>SPECIAL EDUCATION CLUSTER</td>
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<td>NAHLN-LIMS Integration Consulting</td>
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<td>Building Entrepreneurial, Business Management and Land Stewardship Capacity for South Carolina New and Beginning Farmers</td>
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<td>A Coordinated Extension IPM Training Program for South Carolina to Address Stakeholder Needs in Key Commodities</td>
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<td>Development of Extension IPM Training in South Carolina to Address Stakeholder Needs in Key Commodities</td>
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<td>Expanded Health Coaches for Hypertension Control</td>
<td>10.500</td>
<td>2012-46100-20122</td>
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<td>Sustainable Agriculture Research and Education Professional Development Program</td>
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<td>2012-47001-19735</td>
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<td>Web Based Nutrition Education and Evaluation Reporting System (webNEERS)</td>
<td>10.500</td>
<td>2012-41510-20085</td>
<td>144,235</td>
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<td>Reducing Ground Water Hazards in Low Income Rural South Carolina Counties Through Increased Recycling and Landfill Gas Use</td>
<td>10.762</td>
<td>Loan # 11 46-039-576000254</td>
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<td>Expansion of Innovation Center</td>
<td>10.769</td>
<td>Loan # 09 46-039-576000254</td>
<td>30,446</td>
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<td>Expansion of Innovation Center</td>
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<td>Rural Business Enterprise Grant (RBEG) - Technical Assistance</td>
<td>10.769</td>
<td>Loan 6 46-039-576000254</td>
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<td>Development of Training Workshops for Weed Control and a SC NRCS Pamphlet: Weed Suppression Using Rolled Cover Crops (Organic)</td>
<td>10.902</td>
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<td>Development of Training Workshops for Weed Control and a SC NRCS Pamphlet: Weed Suppression Using Rolled Cover Crops (Weed)</td>
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<td>Creation of South Carolina MarketMaker Website</td>
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<td>Demonstration of Innovative Interseeding Technology for Crop Rotations to Enhance Soil Properties and Reduce Energy Consumption and Pest Occurrence While Optimizing Farm Profits</td>
<td>10.912</td>
<td>69-3A75-12-212</td>
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<td>Demonstration of Innovative Water Conservation Technologies to Enhance Resilience to Drought While Optimizing Farm Profits</td>
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<td>69-3A75-13-88</td>
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<td>5 Borlaug Fellows to Clemson University</td>
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<td>Cogongrass Detection, Eradication &amp; Education and Forest Pests Detection &amp; Education Project</td>
<td>10.UNK</td>
<td>None</td>
<td>34,262</td>
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<td>Cogongrass Detection, Eradication and Education Project</td>
<td>10.UNK</td>
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<td>South Carolina Department of Agriculture</td>
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<tr>
<td>Canning Coaches for Safe Home Preservation of Locally Grown Specialty Crops</td>
<td>10.170</td>
<td>12-25-B-1253</td>
<td>3,674</td>
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<tr>
<td>University of Florida</td>
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</table>
Clemson University, South Carolina  
Schedule of Expenditures of Federal Awards  
For the year ending June 30, 2013

<table>
<thead>
<tr>
<th>Federal Grantor/Pass-Through Grantor/Program Title</th>
<th>Federal CFDA Number</th>
<th>Grantor’s/Pass-Through Grantor’s Number</th>
<th>Expenditures</th>
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<tbody>
<tr>
<td>OTHER PROGRAMS, Continued</td>
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<tr>
<td>Department of Agriculture, continued</td>
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<tr>
<td>Educating and Training Future Farmers, Researchers and Extension Personnel in Sustainable Agriculture (Clemson subcontract with the University of Florida)</td>
<td>10.215</td>
<td>UF10245</td>
<td>18,142</td>
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<tr>
<td>University of Georgia Implement Plan of Work for the Southern Region Sustainable Agriculture Research &amp; Education (SARE) Program</td>
<td>10.215</td>
<td>RD309-117/4893516</td>
<td>12,735</td>
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<td>Implement Plan of Work for the Southern Region Sustainable Agriculture Research and Education Professional Development (PDP) Program</td>
<td>10.215</td>
<td>RE675-116/4892336</td>
<td>16,229</td>
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<td>Pass-through programs from University of Georgia, continued: Sustainable Agriculture Research &amp; Education (SARE) Program</td>
<td>10.215</td>
<td>RD309-122/4940046</td>
<td>19,441</td>
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<tr>
<td>Enhancing the Safety of Locally Grown Produce Through Research and Extension</td>
<td>10.303</td>
<td>RE256-119/4690768</td>
<td>37,831</td>
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<tr>
<td>National Center for Home Food Processing and Preservation</td>
<td>10.303</td>
<td>RE256-131/4893626</td>
<td>9,340</td>
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<tr>
<td>Michigan State University Food Borne Norovirus in Elder Care Facilities: An Integrated Approach to Prevention and Control</td>
<td>10.303</td>
<td>61-4299CU</td>
<td>33,860</td>
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<tr>
<td>Texas A&amp;M University The Southern Region Water Resource Project</td>
<td>10.303</td>
<td>451009</td>
<td>14,762</td>
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<tr>
<td>University of Florida Southern Plant Diagnostic Network</td>
<td>10.304</td>
<td>UF12230</td>
<td>22,000</td>
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<td>FamilyFarmed.org Valdosta RO Wholesale Success: Managing Wholesale Production, Marketing, Financial, and Human Risks for Alabama and South Carolina Specialty Crop Farmers, project#010</td>
<td>10.460</td>
<td>None</td>
<td>4,999</td>
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<td>Auburn University Healthy Homes Project</td>
<td>10.500</td>
<td>10-ACES-374584-CU</td>
<td>649</td>
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<tr>
<td>Kansas State University 4-H Air Force Military Partnership Project</td>
<td>10.500</td>
<td>S13181</td>
<td>2,452</td>
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<tr>
<td>4-H Military Partnerships: 4-H Army Youth Development Project Military 4-H Club Grant - &quot;Children, Youth and Families at Risk 4-H Military Partnership Program&quot;</td>
<td>10.500</td>
<td>S12046.02</td>
<td>56,830</td>
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<td>South Carolina 2012 Military 4-H Club Support</td>
<td>10.500</td>
<td>S12128.02</td>
<td>23,040</td>
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<td>South Carolina 2012 Office of Secretary of Defense/Operation Military Kids Camp (SC 2012 OSD/OMK Camp)</td>
<td>10.500</td>
<td>S12238.01</td>
<td>17,781</td>
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<td>South Carolina OMK Local/Regional Support Network (L/RSN) - Darlington Area</td>
<td>10.500</td>
<td>S12158.02</td>
<td>12,996</td>
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<td>South Carolina OMK Local/Regional Support Network (L/RSN) - GLNS Region</td>
<td>10.500</td>
<td>S12109.02</td>
<td>17,925</td>
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<td>Purdue University Military Community Family and Youth Extension Program</td>
<td>10.500</td>
<td>8000047940 / 2010-48869-20781</td>
<td>71,122</td>
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<tr>
<td>Military Community Family and Youth Extension Program</td>
<td>10.500</td>
<td>8000054851</td>
<td>4,073</td>
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<td>University of Arkansas Building Organic Agriculture Extension Training Capacity in the Southeast</td>
<td>10.500</td>
<td>UACES 23481-04</td>
<td>(733)</td>
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<tr>
<td>University of Georgia Developing Mobile Applications Using Social Media for the Southeast Cattle Advisor</td>
<td>10.500</td>
<td>RE684-168/4943546</td>
<td>523</td>
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<tr>
<td>Implement Plan of Work for the Southern Region Sustainable Agriculture Research &amp; Education Professional Development (PDP) Program</td>
<td>10.500</td>
<td>RE675-167/4941476</td>
<td>5,198</td>
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<tr>
<td>Saluda County Saluda County: Agribusiness Strategic Plan with an Emphasis on Developing Local Assets</td>
<td>10.762</td>
<td>2012000687</td>
<td>30,013</td>
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<tr>
<td><strong>Total Department of Agriculture</strong></td>
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<td><strong>10,585,418</strong></td>
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## Clemson University, South Carolina
### Schedule of Expenditures of Federal Awards
#### For the year ending June 30, 2013

<table>
<thead>
<tr>
<th>Federal Grantor/Pass-Through Grantor/Program Title</th>
<th>CFDA Number</th>
<th>Grantor's/Pass-Through Grantor’s Number</th>
<th>Expenditures</th>
</tr>
</thead>
</table>

### OTHER PROGRAMS, Continued

**Department of Commerce**
- Pass-through programs from:
  - South Carolina Sea Grant Consortium
    - Coastal and Marine Recreation and Tourism Outreach Partnership: SCSGC/Clemson PRTM - Year 4
      - Federal CFDA Number: 11.417
      - Grantor’s Number: M437-A/E-1e
      - Expenditures: $36,556
    - Coastal and Marine Recreation and Tourism Outreach Partnership: SCSGC/Clemson PRTM - Year 3
      - Federal CFDA Number: 11.417
      - Grantor’s Number: M337-A/E-1b
      - Expenditures: $52,521

**Total Department of Commerce**
- Expenditures: $89,077

**Department of Defense**
- SCOMK (Operation: Military Kids)
  - Federal CFDA Number: 12.UNK
  - Grantor’s Number: NAFBA1-13-M-0190
  - Expenditures: $21,152
- Pass-through programs from:
  - South Carolina Army National Guard
    - Rich Media Coordinator
      - Federal CFDA Number: 12.UNK
      - Grantor’s Number: 4100013833/4100019464
      - Expenditures: $318
  - SC Army National Guard Agribusiness Development Team (AADT) Training
      - Federal CFDA Number: 12.UNK
      - Grantor’s Number: W912QG-11-C-0002
      - Expenditures: $85,126

**Total Department of Defense**
- Expenditures: $106,596

**Department of the Interior**
- Development of Healthy Parks - Healthy People Strategic Action Plan for Hot Springs National Park
  - Federal CFDA Number: 15.UNK
  - Grantor’s Number: P12AC11294
  - Expenditures: $35,545
- The Open Parks Grid Project (CESU)
  - Federal CFDA Number: 15.UNK
  - Grantor’s Number: J5041100026
  - Expenditures: $8,419

**Total Department of the Interior**
- Expenditures: $43,964

**Department of Justice**
- Pass-through programs from:
  - South Carolina Department of Public Safety
    - Disproportionate Minority Contact Research Project
      - Federal CFDA Number: 16.540
      - Grantor’s Number: J090006
      - Expenditures: $694
    - Disproportionate Minority Contact Research Project
      - Federal CFDA Number: 16.540
      - Grantor’s Number: J111001
      - Expenditures: $3,124
  - National 4-H Council
    - SC Tech Wizards 2012
      - Federal CFDA Number: 16.726
      - Grantor’s Number: 2011-OJDP-MNTR-137
      - Expenditures: $183,200
    - SC Youth Mentoring Program
      - Federal CFDA Number: 16.726
      - Grantor’s Number: 2012-OJDP-NMPIII-340
      - Expenditures: $19,641
  - South Carolina Department of Alcohol and Drug Abuse Services
    - Palmetto Initiative for Campus-Community Collaboration
      - Federal CFDA Number: 16.727
      - Grantor’s Number: CLE-PICC-2
      - Expenditures: $22,634
    - National 4-H Council
      - York County 4-H Catawba Mentoring Program/Tribal Youth
      - Federal CFDA Number: 16.731
      - Expenditures: $20,235

**Total Department of Justice**
- Expenditures: $241,892

**Department of State**
- Pass-through programs from:
  - International Research & Exchanges Board
    - Teaching Excellence and Achievement and International Leaders in Education Program (ILEP)
      - Federal CFDA Number: 19.408
      - Grantor’s Number: FY12-ILEP-Clemson-01
      - Expenditures: $172,583

**Total Department of State**
- Expenditures: $172,583

**Appalachian Regional Commission**
- STEM Labs for Appalachian Youth
  - Federal CFDA Number: 23.022
  - Grantor’s Number: SC-17375
  - Expenditures: $29,370

**Total Appalachian Regional Commission**
- Expenditures: $29,370
## Schedule of Expenditures of Federal Awards

**For the year ending June 30, 2013**

### Other Programs, Continued

#### National Aeronautics and Space Administration

- **A Mult-Instrument Study of Electron-Positron Annihilation in the Milky Way**  
  - Pass-through programs from:  
    - College of Charleston  
    - NASA EPSCoR RID Augmentation Travel Award Program - 2012
  
  - Federal Grantor/Pass-Through Grantor: NNX09AC80 G  
  - Expenditures: 10,862

#### National Endowment for the Arts

- **Pass-through programs from:**  
  - South Arts  
  - 2012-2013 Southern Circuit
  
  - Federal Grantor/Pass-Through Grantor: None  
  - Expenditures: 2,400

#### National Science Foundation

- **Collaborative Research: Computational Intelligence Methods for Dynamic Stochastic Optimization of Smart Grid Operation with High Penetration of Renewable Energy**  
  - Federal Grantor/Pass-Through Grantor: ECCS-1232070  
  - Expenditures: 9,920

- **Collaborative Research: Communicating Hurricane Information to Local Officials for Protective Action Decision Making**  
  - Federal Grantor/Pass-Through Grantor: SES-0838639  
  - Expenditures: 7,820

- **Biosystems Technology ATE Project**  
  - Federal Grantor/Pass-Through Grantor: DUE-0703117  
  - Expenditures: 48,449

- **Clemson University MAT Noyce Scholarship Program for Middle Grades Education**  
  - Federal Grantor/Pass-Through Grantor: DUE-0733711  
  - Expenditures: 8,770

- **Southeastern Regional Noyce Conference**  
  - Federal Grantor/Pass-Through Grantor: DUE-1062155  
  - Expenditures: 159,197

- **A Planning Workshop to Scale Condominium Cluster Model to Condo of Condos**  
  - Federal Grantor/Pass-Through Grantor: OCI-1249541  
  - Expenditures: 54,445

#### Small Business Administration

- **Pass-through programs from:**  
  - University of South Carolina  
  - Small Business Administration Jobs Act  
  - Small Business Development Center - Operating Grant (Federal)
  
  - Federal Grantor/Pass-Through Grantor: PO#32207L/1-603001-Z-0149, Federal  
  - Expenditures: 36,086, 367,228

#### Environmental Protection Agency

- **2011-2013 Certification and Training Pesticide Programs**  
  - Federal Grantor/Pass-Through Grantor: E98463811  
  - Expenditures: 62,279

- **2011-2013 Enforcement Pesticide Programs Cooperative Agreement**  
  - Federal Grantor/Pass-Through Grantor: E98463611  
  - Expenditures: 167,307

- **2011-2013 Special Pesticide Programs Cooperative Agreement**  
  - Federal Grantor/Pass-Through Grantor: E98463711  
  - Expenditures: 171,231

- **Pass-through programs from:**  
  - Commonwealth of Virginia  
  - Animal Waste Analysis for Commonwealth of VA
  
  - Expenditures: 38,446

#### Total Federal Expenditures

- **Total National Aeronautics and Space Administration: 13,430**
- **Total National Endowment for the Arts: 2,400**
- **Total National Science Foundation: 289,544**
- **Total Small Business Administration: 403,314**
- **Total Environmental Protection Agency: 439,263**
## Clemson University, South Carolina
### Schedule of Expenditures of Federal Awards
#### For the year ending June 30, 2013

<table>
<thead>
<tr>
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<th>Federal CFDA Number</th>
<th>Grantor’s/Pass-Through Grantor’s Number</th>
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<tbody>
<tr>
<td><strong>OTHER PROGRAMS, Continued</strong></td>
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<tr>
<td><strong>Department of Energy</strong></td>
<td></td>
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<tr>
<td>Clemson University 15 Megawatt Hardware-In-the-Loop (HIL) Grid Simulator</td>
<td>81.087</td>
<td>DE-EE0005723</td>
<td>1,500,000</td>
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<tr>
<td>ARRA: Clemson University Wind Turbine Drivetrain Testing Facility</td>
<td>81.087</td>
<td>DE-EE0003023</td>
<td>5,363,898</td>
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<td><strong>Total Department of Energy</strong></td>
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<td>6,863,898</td>
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<td><strong>Department of Education</strong></td>
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<tr>
<td>Applied International Monetary Economics</td>
<td>84.116</td>
<td>P116J090063</td>
<td>27,678</td>
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<td>The Consortium for Small and Medium-size Enterprises and Entrepreneurship Education (SMEEE)</td>
<td>84.116</td>
<td>P116J080038-11</td>
<td>26,206</td>
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<td>Transatlantic Double Degree in International Business</td>
<td>84.116</td>
<td>P116J090006</td>
<td>55,568</td>
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<td>Special Education-Personnel Preparation to Improve Services and Results for Children with Disabilities</td>
<td>38.325</td>
<td>H325D080056-11</td>
<td>221,575</td>
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<tr>
<td>National Dropout Prevention Center for Students with Disabilities</td>
<td>38.326</td>
<td>H326W080003-12</td>
<td>633,584</td>
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<td><strong>Pass-through programs from:</strong></td>
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<td>South Carolina Department of Education</td>
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<tr>
<td>Agricultural Education Professional Development</td>
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<tr>
<td>Agriculture Teacher Education and Professional Development</td>
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<td>Cherry Grove FFA Camp Caretaker</td>
<td>84.048</td>
<td>12V3A302-42</td>
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<td>Cherry Grove FFA Camp Caretaker</td>
<td>84.048</td>
<td>13V3A302-42</td>
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<td>Communities In Schools of Chester County</td>
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<td>21st Century Community Learning Centers Grant</td>
<td>84.287</td>
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<td>South Carolina Department of Education</td>
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<tr>
<td>21st Century Community Learning Center (Youth Development Center and Youth Challenge Academy)</td>
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<td>12CL302-03</td>
<td>90,649</td>
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<td>21st Century Community Learning Center (Youth Development Center and Youth Challenge Academy)</td>
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<td>48,018</td>
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<tr>
<td>21st Century Community Learning Centers - GoalPOST II</td>
<td>84.287</td>
<td>13CL302-02</td>
<td>275,535</td>
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<tr>
<td>21st Century Community Learning Centers - GoalPOST III</td>
<td>84.287</td>
<td>13CL302-20</td>
<td>142,711</td>
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<td>21st Century Community Learning Centers for Charleston County Schools (A.I.M. Achieve, Inspire, Motivate)</td>
<td>84.287</td>
<td>13CL302-21</td>
<td>128,277</td>
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<td>GoalPOST I (Goal-Oriented Performance in Out of School Time)</td>
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<td>12CL302-01</td>
<td>154</td>
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<td>GoalPOST II (Goal-Oriented Performance in Out of School Time)</td>
<td>84.287</td>
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<td>Inquiry Based Learning: A Companion Course for the Biology End-of-Course Exam</td>
<td>84.366</td>
<td>12MS302-01</td>
<td>79,283</td>
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<tr>
<td>Inquiry Based Learning: A Companion Course for the Biology End-of-Course Exam</td>
<td>84.366</td>
<td>13MS302</td>
<td>18,436</td>
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<td>Inquiry Based Learning: A Companion Course for the Biology End-of-Course Test</td>
<td>84.366</td>
<td>11MS302-01</td>
<td>24,532</td>
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<td>National Writing Project</td>
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<tr>
<td>Upstate Writing Project Teacher Leadership Development</td>
<td>84.367</td>
<td>01-SC11-SEED2012</td>
<td>96,514</td>
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<tr>
<td>South Carolina Commission on Higher Education</td>
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<tr>
<td>iPad Technology in Middle Grades Mathematics: Meeting the Need for Highly Technologically Qualified Teachers FY 2011-12</td>
<td>84.367</td>
<td>None</td>
<td>8,515</td>
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<tr>
<td>Meeting the Need for Highly Qualified Mathematics Teachers - FY 2011-12</td>
<td>84.367</td>
<td>None</td>
<td>12,321</td>
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<tr>
<td>Project RES: Reform-Based Environmental Science - FY 2011-12</td>
<td>84.367</td>
<td>ITQ 2011-2012</td>
<td>1,799</td>
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<tr>
<td>Project RES: Reform-Based Environmental Science - FY 2012-13</td>
<td>84.367</td>
<td>ITQ 2012-13</td>
<td>74,168</td>
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<td>Project RES: Reform-Based Environmental Science FY 2011-12 Supplemental Grants</td>
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<td>FY 2011-12 Supplemental</td>
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<td>The Ohio State University</td>
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<td>ARRA: Reading Recovery: Scaling Up What Works</td>
<td>84.396</td>
<td>60029187 (PO# RF01229125)</td>
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<tr>
<td>Federal Grantor/Pass-Through Grantor/Program Title</td>
<td>Federal CFDA Number</td>
<td>Grantor's/Pass-Through Grantor's Number</td>
<td>Expenditures</td>
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<tr>
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<tr>
<td>OTHER PROGRAMS, Continued</td>
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<tr>
<td>Department of Education, continued</td>
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<tr>
<td>Pass-through programs from National Writing Project:</td>
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<tr>
<td>2013 i3 NWP College-Ready Writers Program (CRWP) Study and Planning Grant</td>
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<td>01-SC11-i32013</td>
<td>24,185</td>
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<td>2013 i3 NWP College-Ready Writers Program (CRWP) Study and Planning Grant proposal</td>
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<td>01-SC11-i32013</td>
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<td>Upstate Writing Project SC-2012-2013 i3 College-Ready Writers Program: Study and Planning Grant</td>
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<td>01-SC11-i32013</td>
<td>19,613</td>
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<tr>
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<tr>
<td>Department of Health and Human Services</td>
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<tr>
<td>Pass-through programs from:</td>
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<tr>
<td>University of South Carolina</td>
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<tr>
<td>Health Information Technology Extension Program: Practice and Workflow Design to Support Meaningful Use of EHR</td>
<td>93.718</td>
<td>PO#31611L/11-1835 (22000-FL05)</td>
<td>7,394</td>
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<td>Live Well Greenville-YMCA of Greenville</td>
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<tr>
<td>Building Dreams-Community Transportation Grant</td>
<td>93.737</td>
<td>Prime # 1H75DP004224-01</td>
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<tr>
<td>University of South Carolina</td>
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<tr>
<td>A Partnership to Promote Physical Activity and Healthy Eating in AME Churches</td>
<td>93.837</td>
<td>PO#71659,71660</td>
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<tr>
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<td>Department of Homeland Security</td>
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<td>Assistance to Firefighter Grant</td>
<td>97.044</td>
<td>EMW-2011-FO-8505</td>
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<tr>
<td>Pass-through programs from:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Carolina Law Enforcement Division</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional Food and Agriculture Sector Criticality Assessment Project (Multi-State)</td>
<td>97.UNK</td>
<td>9SHSP45</td>
<td>71,722</td>
</tr>
<tr>
<td>South Carolina Emergency Management Division</td>
<td>97.UNK</td>
<td>None</td>
<td>7,500</td>
</tr>
<tr>
<td>Clemson University Continuity of Operations Plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Carolina Law Enforcement Division</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010 Buffer Zone Protection Program - Clemson University Sports Complex</td>
<td>97.078</td>
<td>10BZPP01</td>
<td>93,528</td>
</tr>
<tr>
<td>Total Department of Homeland Security</td>
<td></td>
<td></td>
<td>192,463</td>
</tr>
<tr>
<td>Total Other Programs</td>
<td></td>
<td></td>
<td>22,073,242</td>
</tr>
<tr>
<td>Total Federal Expenditures</td>
<td></td>
<td></td>
<td>176,679,893</td>
</tr>
</tbody>
</table>
Note 1. Basis of Presentation

The accompanying schedule of expenditures of federal awards (the schedule) includes the federal grant activity of Clemson University (the University) and is presented on the accrual basis of accounting. The information in the schedule is presented in accordance with the requirements of Office of Management and Budget (OMB) Circular A-133, Audits of States, Local Governments, and Non-Profit Organizations. Therefore, some amounts presented in the schedule may differ from amounts presented in, or used in the preparation of, the basic financial statements.

Note 2. Summary of Significant Accounting Policies for Federal Award Expenditures

Expenditures for student financial aid programs include the federal share of students’ Federal Supplemental Educational Opportunity Grant (FSEOG) program grants and Federal Work Study (FWS) program earnings, certain other federal financial aid for students and administrative cost allowances, where applicable.

Expenditures for federal research and development programs are determined using the cost accounting principles and procedures set forth in OMB Circular A-21, Cost Principles for Educational Institutions. Under these cost principles, certain expenditures are not allowable or are limited as to reimbursement.

Expenditures for nonfinancial aid awards include indirect costs, related primarily to facilities operation and maintenance and general, divisional and departmental administrative services, which are allocated to direct cost objectives (including federal awards) based on negotiated formulas commonly referred to as facilities and administrative cost rates. Facilities and administrative costs allocated to such awards for the year ended June 30, 2013, were based on predetermined fixed rates negotiated with the University's cognizant federal agencies.

Note 3. Federal Perkins Loan Program (CFDA Number 84.038)

The Federal Perkins Loan Program is administered directly by the University and balances and transactions relating to the program are included in the University’s financial statements. The balance of loans outstanding under the Federal Perkins Loan Program was $8,499,167 as of June 30, 2013.

Note 4. Matching

Under the FWS program, the University matched $205,273 in total compensation for the year ended June 30, 2013 in addition to the federal share of expenditures in the accompanying schedule of expenditures of federal awards.

Under the FSEOG program, the University matched $640,672 in funds awarded to students for the year ended June 30, 2013, in addition to the federal share of expenditures in the accompanying schedule of expenditures of federal awards.
Note 5. Contingencies

The University receives funds under various federal grant programs and such awards are to be expended in accordance with the provisions of the various grants. Compliance with the grants is subject to audit by various government agencies which may impose sanctions in the event of non-compliance. Management believes that they have complied with all aspects of the various grant provisions and the results of adjustments, if any, relating to such audits would not have any material financial impact.

Note 6. Subrecipients

<table>
<thead>
<tr>
<th>Federal CFDA Number</th>
<th>Amount Provided to Subrecipients</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department of Agriculture</strong></td>
<td></td>
</tr>
<tr>
<td>10.UNK</td>
<td>$ 8,398</td>
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<tr>
<td>10.170</td>
<td>29,475</td>
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<tr>
<td>10.200</td>
<td>23,499</td>
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<tr>
<td>10.206</td>
<td>8,979</td>
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<tr>
<td>10.253</td>
<td>1,961</td>
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<tr>
<td>10.303</td>
<td>428,732</td>
</tr>
<tr>
<td>10.309</td>
<td>2,321</td>
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<td>10.311</td>
<td>95,264</td>
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<tr>
<td>10.561</td>
<td>185,823</td>
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<tr>
<td><strong>Total Department of Agriculture</strong></td>
<td>784,452</td>
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<tr>
<td><strong>Department of Commerce</strong></td>
<td></td>
</tr>
<tr>
<td>11.417</td>
<td>$ 10,857</td>
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<tr>
<td><strong>Total Department of Commerce</strong></td>
<td>10,857</td>
</tr>
<tr>
<td><strong>Department of Defense</strong></td>
<td></td>
</tr>
<tr>
<td>12.UNK</td>
<td>$ 144,158</td>
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<tr>
<td>12.300</td>
<td>833</td>
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<tr>
<td>12.351</td>
<td>124,463</td>
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<td>12.420</td>
<td>74,910</td>
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<td>12.431</td>
<td>4,441</td>
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<tr>
<td>12.800</td>
<td>91,892</td>
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<tr>
<td><strong>Total Department of Defense</strong></td>
<td>440,697</td>
</tr>
<tr>
<td><strong>Department of Interior</strong></td>
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</tr>
<tr>
<td>15.805</td>
<td>$ 7,256</td>
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<tr>
<td><strong>Total Department of Interior</strong></td>
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<tr>
<td><strong>Department of State</strong></td>
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<tr>
<td>19.345</td>
<td>$ 48,987</td>
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<tr>
<td><strong>Total Department of State</strong></td>
<td>48,987</td>
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</table>
Note 6. Subrecipients, Continued

<table>
<thead>
<tr>
<th>Federal CFDA Number</th>
<th>Amount Provided to Subrecipients</th>
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</thead>
<tbody>
<tr>
<td>Department of Transportation</td>
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<tr>
<td>20.UNK</td>
<td>$71,135</td>
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<tr>
<td>20.761</td>
<td>$4,475</td>
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<td>Total Department of Transportation</td>
<td>$75,610</td>
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<tr>
<td>National Aeronautics and Space Administration</td>
<td>$15,770</td>
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<td>43.001</td>
<td>$15,770</td>
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<tr>
<td>Total National Aeronautics and Space Administration</td>
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<tr>
<td>Institute of Museum and Library Services</td>
<td>$42,752</td>
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<tr>
<td>45.312</td>
<td>$42,752</td>
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<tr>
<td>Total Institute of Museum and Library Services</td>
<td>$42,752</td>
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<tr>
<td>National Science Foundation</td>
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<tr>
<td>47.041</td>
<td>$391,603</td>
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<td>47.049</td>
<td>$117,353</td>
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<td>47.070</td>
<td>$104,753</td>
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<td>47.074</td>
<td>$142,087</td>
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<td>47.076</td>
<td>$319,717</td>
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<td>47.081</td>
<td>$26,475</td>
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<tr>
<td>47.082</td>
<td>$21,856</td>
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<tr>
<td>Total National Science Foundation</td>
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<tr>
<td>Environmental Protection Agency</td>
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<tr>
<td>66.509</td>
<td>$147,877</td>
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<tr>
<td>Total Environmental Protection Agency</td>
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<tr>
<td>Department of Energy</td>
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<td>81.UNK</td>
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<td>81.057</td>
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<td>Total Department of Energy</td>
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<tr>
<td>Department of Education</td>
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<td>84.051</td>
<td>$1,600</td>
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<tr>
<td>84.116</td>
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<td>84.287</td>
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<tr>
<td>Total Department of Education</td>
<td>$197,058</td>
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</table>
### Note 6. Subrecipients, Continued

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<thead>
<tr>
<th>Federal CFDA Number</th>
<th>Amount Provided to Subrecipients</th>
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<tbody>
<tr>
<td><strong>Election Assistance Commission</strong></td>
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</tr>
<tr>
<td>90.403</td>
<td>$1,087,489</td>
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<tr>
<td><strong>Total Election Assistance Commission</strong></td>
<td>$1,087,489</td>
</tr>
<tr>
<td><strong>Department of Health and Human Services</strong></td>
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</tr>
<tr>
<td>93.121</td>
<td>$35,573</td>
</tr>
<tr>
<td>93.286</td>
<td>2,072</td>
</tr>
<tr>
<td>93.837</td>
<td>375,864</td>
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<td>93.853</td>
<td>78,552</td>
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<tr>
<td>93.859</td>
<td>231,474</td>
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<tr>
<td>93.865</td>
<td>148,420</td>
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<tr>
<td><strong>Total Department of Health and Human Services</strong></td>
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<tr>
<td><strong>Agency for International Development</strong></td>
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<tr>
<td>98.001</td>
<td>$186,000</td>
</tr>
<tr>
<td><strong>Total Agency for International Development</strong></td>
<td>$186,000</td>
</tr>
<tr>
<td></td>
<td>$6,041,932</td>
</tr>
</tbody>
</table>
Members of the Board of Trustees
Clemson University
Clemson, South Carolina

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in Government Auditing Standards issued by the Comptroller General of the United States, the financial statements of the business-type activities and discretely presented component units of Clemson University (the University), as of and for the year ended June 30, 2013, and the related notes to the financial statements, which collectively comprise the University’s basic financial statements, and have issued our report thereon dated October 2, 2013. Our report includes a reference to other auditors who audited the financial statements of Clemson University Research Foundation and Clemson University Land Stewardship Foundation, as described in our report on Clemson University’s financial statements. This report does not include the results of other auditors’ testing of internal control over financial reporting or compliance and other matters that are reported on separately by those auditors.

Internal Control over Financial Reporting

In planning and performing our audit of the financial statements, we considered the University’s internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the University’s internal control. Accordingly, we do not express an opinion on the effectiveness of the University’s internal control.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A material weakness is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity’s financial statements will not be prevented, or detected and corrected on a timely basis. A significant deficiency is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.
Compliance and Other Matters

As part of obtaining reasonable assurance about whether the University's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under Government Auditing Standards.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity’s internal control or on compliance. This report is an integral part of an audit performed in accordance with Government Auditing Standards in considering the entity’s internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

Greenville, South Carolina
October 2, 2013
INDEPENDENT AUDITOR’S REPORT ON COMPLIANCE FOR EACH MAJOR FEDERAL PROGRAM; REPORT ON INTERNAL CONTROL OVER COMPLIANCE; AND THE REPORT ON THE SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS REQUIRED BY OMB CIRCULAR A-133

Members of the Board of Trustees
Clemson University
Clemson, South Carolina

Report on Compliance for Each Major Federal Program

We have audited Clemson University’s (the University) compliance with the types of compliance requirements described in the OMB Circular A-133 Compliance Supplement that could have a direct and material effect on each of the University’s major federal programs for the year ended June 30, 2013. The University’s major federal programs are identified in the summary of auditor’s results section of the accompanying schedule of findings and questioned costs.

The University’s basic financial statements include the operations of the Clemson University Research Foundation (CURF), a discretely presented component unit, which received $4,941,534 in federal awards, which is not included in the schedule during the year ended June 30, 2013. Our audit, described below, did not include the operations of CURF because the discretely presented component unit engaged other auditors to perform an audit in accordance with Circular A-133.

Management’s Responsibility

Management is responsible for compliance with the requirements of laws, regulations, contracts, and grants applicable to its federal programs.

Auditor’s Responsibility

Our responsibility is to express an opinion on compliance for each of the University’s major federal programs based on our audit of the types of compliance requirements referred to above. We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States; and OMB Circular A-133, Audits of States, Local Governments, and Non-Profit Organizations. Those standards and OMB Circular A-133 require that we plan and perform the audit to obtain reasonable assurance about whether noncompliance with the types of compliance requirements referred to above that could have a direct and material effect on a major federal program occurred. An audit includes examining, on a test basis, evidence about the University’s compliance with those requirements and performing such other procedures as we considered necessary in the circumstances.
We believe that our audit provides a reasonable basis for our opinion on compliance for each major federal program. However, our audit does not provide a legal determination of the University’s compliance.

**Opinion on Each Major Federal Program**

In our opinion, the University complied, in all material respects, with the types of compliance requirements referred to above that could have a direct and material effect on each of its major federal programs for the year ended June 30, 2013.

**Report on Internal Control Over Compliance**

Management of the University is responsible for establishing and maintaining effective internal control over compliance with the types of compliance requirements referred to above. In planning and performing our audit of compliance, we considered the University’s internal control over compliance with the types of requirements that could have a direct and material effect on each major federal program to determine the auditing procedures that are appropriate in the circumstances for the purpose of expressing an opinion on compliance for each major federal program and to test and report on internal control over compliance in accordance with OMB Circular A-133, but not for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, we do not express an opinion on the effectiveness of the University’s internal control over compliance.

A deficiency in internal control over compliance exists when the design or operation of a control over compliance does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, noncompliance with a type of compliance requirement of a federal program on a timely basis. A material weakness in internal control over compliance is a deficiency, or combination of deficiencies, in internal control over compliance, such that there is a reasonable possibility that material noncompliance with a type of compliance requirement of a federal program will not be prevented, or detected and corrected, on a timely basis. A significant deficiency in internal control over compliance is a deficiency, or a combination of deficiencies, in internal control over compliance with a type of compliance requirement of a federal program that is less severe than a material weakness in internal control over compliance, yet important enough to merit attention by those charged with governance.

Our consideration of internal control over compliance was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control over compliance that might be material weaknesses or significant deficiencies. We did not identify any deficiencies in internal control over compliance that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

The purpose of this report on internal control over compliance is solely to describe the scope of our testing of internal control over compliance and the results of that testing based on the requirements of OMB Circular A-133. Accordingly, this report is not suitable for any other purpose.

**Report on Schedule of Expenditures of Federal Awards Required by OMB Circular A-133**

We have audited the financial statements of the business type activities and discretely presented components of the University, a component unit of the State of South Carolina, as of and for the year ended June 30, 2013 and the related notes to the financial statements, which collectively comprise the University’s basic financial statements. We issued our report thereon dated October 2, 2013, which contained unmodified opinions on those financial statements. Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the basic financial statements. The accompanying schedule of expenditures of federal awards is presented for purposes of additional analysis as required by OMB Circular A-133 and is not a required part of the basic financial statements. Such information is the responsibility of
management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the schedule of expenditure of federal awards is fairly stated in all material respects in relation to the basic financial statements as a whole.

Greenville, South Carolina
October 2, 2013
Section I. Summary of Auditor’s Results

Financial Statements

Type of auditors’ report issued: Unmodified

Internal control over financial reporting:

- Material weakness identified? _____ yes X no
- Significant deficiency identified that is not considered to be a material weakness _____ yes X none reported

Noncompliance material to financial statements noted _____ yes X no

Federal Awards

Internal control over major federal programs:

- Material weakness identified? _____ yes X no
- Significant deficiency identified that is not considered to be a material weakness _____ yes X none reported

Type of auditors’ report issued on compliance for major federal programs: Unmodified

Any audit findings disclosed that are required to be reported in accordance with Section 510(a) of Circular A-133 X yes _____ no

Identification of major federal programs:

<table>
<thead>
<tr>
<th>CFDA Numbers</th>
<th>Name of federal program or cluster</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.RD; 11.RD; 12.RD; 15.RD; 16.RD; 17.RD; 19.RD; 20.RD; 23.RD; 43.RD; 45.RD; 47.RD; 59.RD; 64.RD; 66.RD; 77.RD; 81.RD; 84.RD; 85.RD; 90.RD; 93.RD; 97.RD; 98.RD; 99.RD</td>
<td>Research and Development Cluster</td>
</tr>
<tr>
<td>81.087</td>
<td>ARRA: Clemson University Wind Turbine Drivetrain Testing Facility; Clemson University 15 Megawatt Hardware-In-the-Loop (HIL) Grid Simulator</td>
</tr>
<tr>
<td>84.396</td>
<td>ARRA: Reading Recovery: Scaling Up What Works</td>
</tr>
</tbody>
</table>

Dollar threshold used to distinguish between Type A and Type B Programs $3,000,000

Auditee qualified as low-risk auditee? X yes _____ no
Section II. Financial Statement Findings

None

Section III. Federal Award Questioned Costs & Findings

Finding 2013-1

Program: CFDA No. 84.396 – ARRA: Reading Recovery: Scaling Up What Works

Criteria or Specific Requirement: For calculations related to indirect cost recoveries, the University should exclude Tuition and Fees and Stipends from the indirect cost recovery base used to determine the indirect costs charged to the award.

Condition: The University did not appropriately categorize expenditures in accordance with the grant agreement, resulting in an overstated cost recovery base used to calculate the indirect cost recovery amount.

Questioned Costs: $12,508

Context: A test of the facilities and administrative cost allocation adjustment recorded during the fiscal year indicated the adjustment was not properly supported by an appropriate indirect cost recovery base. The cost base used included direct expenditures for Teacher Stipends charged to the award during fiscal year 2012 incorrectly coded as Site Support. Charges for Site Support are eligible for inclusion in the indirect cost recovery base, while charges for Teacher Stipends are not eligible. The cost allocation adjustment was the only such adjustment made during the fiscal year.

Effect: Costs of $12,508 are questioned as a result of including the ineligible charges in the Indirect Cost Recovery base.

Cause: A lack of detailed review of the proper coding of direct charges in the accounting system caused inappropriate items to be included in the indirect cost recovery base.

Recommendation: Classification of direct charges should be reviewed for compliance with the grant award document by a responsible individual with oversight authority before the indirect cost base is determined and used to calculate the indirect cost recovery amounts.

View of Responsible Official and Corrective Actions: Procedures have been reviewed and updated to ensure appropriate categorization of expenditures and accurate indirect cost recovery amounts. Subsequently, the affected college hired a post-award administrator who is reviewing and reconciling the identification of direct cost expenditures by the department for this program before Grants and Contracts Administration sends the invoice to the sponsor.
Section III. Federal Award Questioned Costs & Findings, Continued

The Director of Grants and Contracts Administration is reviewing and approving indirect cost adjustments prepared by Grants and Contracts Administration fiscal managers on all sponsored projects before journal entries are posted to the General Ledger.

Communication is ongoing via the Grants and Contracts Administration newsletter and quarterly post-award University meetings with emphasis on identifying and allocating costs correctly. The reconciling adjustment is being prepared and excess funds will be returned to the sponsor.