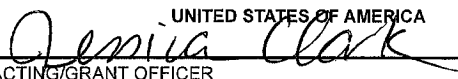


Grant and Cooperative Agreement

CHOOSE ONE:

- ☒ COOPERATIVE AGREEMENT
☐ GRANT

CHOOSE ONE: ☐ EDUCATION ☐ FACILITIES ☐ RESEARCH ☐ SDCR ☐ TRAINING

1. GRANT/COOPERATIVE AGREEMENT NUMBER L16AC00284		2. SUPPLEMENT NUMBER		3. EFFECTIVE DATE 08/01/2016		4. COMPLETION DATE 07/31/2018	
5. ISSUED TO NAME/ADDRESS OF RECIPIENT (No., Street, City/County, State, Zip) UTAH STATE UNIVERSITY Attn: Julia Burton 2400 OLD MAIN HILL LOGAN UT 843220001				6. ISSUED BY BLM OR-ST OFC PROC MGMT BR (OR952) Mailing Address: 1220 SW 3rd Avenue, 12th Floor PORTLAND OR 97204			
7. TAXPAYER IDENTIFICATION NO. (TIN)				9. PRINCIPAL INVESTIGATOR/ORGANIZATION'S PROJECT OR PROGRAM MGR. (Name & Phone) Julia Burton 435-797-5375 julia.burton@usu.edu			
8. COMMERCIAL & GOVERNMENT ENTITY (CAGE) NO.							
10. RESEARCH, PROJECT OR PROGRAM TITLE BLM OR/WA - CESU MANAGING UNDERSTORIES FOR CLIMATE CHANGE							
11. PURPOSE See Schedule							
12. PERIOD OF PERFORMANCE (Approximately) 08/01/2016 through 07/31/2018							
13A.		AWARD HISTORY		13B.		FUNDING HISTORY	
PREVIOUS		\$0.00		PREVIOUS		\$0.00	
THIS ACTION		\$53,973.50		THIS ACTION		\$53,973.50	
CASH SHARE		\$0.00		TOTAL		\$53,973.50	
NON-CASH SHARE		\$0.00					
RECIPIENT SHARE		\$0.00					
TOTAL		\$53,973.50					
14. ACCOUNTING AND APPROPRIATION DATA 01							
PURCHASE REQUEST NO.		JOB ORDER NO.		AMOUNT		STATUS	
0020108840							
15. POINTS OF CONTACT							
	NAME	MAIL STOP	TELEPHONE	E-MAIL ADDRESS			
TECHNICAL OFFICER	PO Louisa Evers		503-808-6377	levers@blm.gov			
NEGOTIATOR							
ADMINISTRATOR	Jessica Clark		(503) 808-6226	j1clark@blm.gov			
PAYMENTS							
16. THIS AWARD IS MADE UNDER THE AUTHORITY OF: FLPMA							
17. APPLICABLE STATEMENT(S), IF CHECKED: <input type="checkbox"/> NO CHANGE IS MADE TO EXISTING PROVISIONS <input type="checkbox"/> FDP TERMS AND CONDITIONS AND THE AGENCY-SPECIFIC REQUIREMENTS APPLY TO THIS GRANT				18. APPLICABLE ENCLOSURE(S), IF CHECKED: <input type="checkbox"/> PROVISIONS <input type="checkbox"/> SPECIAL CONDITIONS <input type="checkbox"/> REQUIRED PUBLICATIONS AND REPORTS			
UNITED STATES OF AMERICA 				COOPERATIVE AGREEMENT RECIPIENT			
CONTRACTING/GRANT OFFICER Jessica Clark		DATE 08/23/2016		AUTHORIZED REPRESENTATIVE		DATE	

Grant and Cooperative Agreement

ITEM NO. (A)	ITEM OR SERVICE (Include Specifications and Special Instructions) (B)	QUANTITY (C)	UNIT (D)	ESTIMATED COST	
				UNIT PRICE (E)	AMOUNT (F)
	<p>CFDA Number: 15.236</p> <p>DUNS Number: 072983455</p> <p>BLM OR/WA - CESU MANAGING UNDERSTORIES FOR CLIMATE CHANGE</p> <p>Funding Opportunity Number: L15AS00011</p> <p>Cost Share/Match: N/A</p> <p>Indirect Cost Rate: 17.5% per CESU agreement and approved indirect memo</p> <p>Financial Reports are due annually.</p> <p>Performance Reports are due annually.</p> <p>Refer to Attachment No. 1 for Award Terms and Conditions.</p> <p>11. PURPOSE:</p> <p>This cooperative agreement is made and entered into by the Department of the Interior, Bureau of Land Management, OR/WA State Office (BLM), and Utah State University, the recipient, for the purpose of transferring something of value to the recipient to carry out a public purpose of support or stimulation authorized by a law of the United States.</p> <p>BLM substantial involvement by the BLM Program Officer (PO) will be collaborative with the Recipient to manage all stages of project development, implementation, and evaluation. Responsibility for project management, control, and direction will be shared by the recipient and the BLM, however the BLM will have the right to intervene by modifying the project management plan if the project is not staying on schedule and/or technical issues arise.</p> <p>This agreement incorporates the Master CP CESU Cooperative and Joint Venture Agreement, BLM No. JSA 141001, the Terms and Conditions of which are Continued ...</p>				

Grant and Cooperative Agreement

ITEM NO. (A)	ITEM OR SERVICE (Include Specifications and Special Instructions) (B)	QUANTITY (C)	UNIT (D)	ESTIMATED COST	
				UNIT PRICE (E)	AMOUNT (F)
00010	<p>made a part of this agreement.</p> <p>Legacy Doc #: BLM</p> <p>Account Assignment: K G/L Account: 6100.411C0</p> <p>Business Area: L000 Commitment Item: 411C00 Cost Center: LLOR933000 Functional Area: L10100000.CD0000 Fund: 16XL1109AF Fund Center: LLOR933000 Project/WBS: LX.SI.CLMTOR00 PR Acct Assign Line: 01</p> <p>Period of Performance: 08/01/2016 to 07/31/2018</p> <p>Managing understories for climate change</p> <p>Obligated Amount: \$53,973.50</p> <p>Grants Management Officer (GMO)</p> <p>Jessica Clark</p> <p>Bureau of Land Management</p> <p>OR/WA State Office</p> <p>PO Box 2965, Portland OR 97208</p> <p>Telephone: 503-808-6226</p> <p>Email: jlclark@blm.gov</p> <p>Program Officer (PO)</p> <p>Louisa Evers</p> <p>Bureau of Land Management</p> <p>OR/WA State Office</p> <p>PO Box 2965, Portland OR 97208</p> <p>Telephone: 503-808-6377</p> <p>Email: levers@blm.gov</p> <p>Recipient</p> <p>Julia Burton</p> <p>Utah State University</p> <p>1415 Old Main Hill Room 64</p> <p>Logan, UT 84322-1415</p> <p>Telephone: 435-797-5375</p> <p>Email: julia.burton@usu.edu</p> <p>Continued ...</p>				53,973.50

Grant and Cooperative Agreement

ITEM NO. (A)	ITEM OR SERVICE (Include Specifications and Special Instructions) (B)	QUANTITY (C)	UNIT (D)	ESTIMATED COST	
				UNIT PRICE (E)	AMOUNT (F)
	The total amount of award: \$53,973.50. The obligation for this award is \$53,973.50.				

1. COOPERATIVE AGREEMENT OBJECTIVES:

A. Objective(s): The objective of this project is to utilize a trait-based approach to study interactions between overstory density, disturbance and future climate change conditions on:

1. Native early-seral plant communities, which are considered rare under current forest management scenarios and have the potential for valuable structure contributions and wildlife habitat in a managed landscape.

2. Species with low mobility, e.g., with short-distance seed dispersal or species with clonal reproduction. These species (which include some tree species) are most likely to be negatively impacted by a changing climate.

3. Special status species, e.g., determined by the Oregon Natural Heritage Information Center. Cultural resources, specifically vegetation traditionally collected used by Native Americans.

B. Public Benefit(s). The activity(ies) to be undertaken through this assistance provide the following public benefit(s):

Understory plant species are important components of healthy forest ecosystems, providing quality habitat for early-seral dependent wildlife species of which many are in decline, nutrients to soils, shade to streams, habitat for native pollinators which are declining, and a variety of resources used by Native Americans such as food, medicines, basketry materials and so forth. Understanding how climate change may interact with timber management will help preserve these functions to the maximum extent possible.

C. Federal Award Performance Goals

Performance Goals:

1. Develop predictions of responses to climate change of plant species with cultural values, high and low mobility, or found in native early seral communities. Estimated completion by August 2017.

2. Provide information on how active forest management may influence plant responses to climate change. Estimated completion by March 2018.

Measures:

1. Annual reports and peer-reviewed journal articles describing the analytical model, projected responses to different climate change scenarios, and effects on ecosystem services (cultural resources, early seral habitat, and species with low mobility).

2. Suggestions for other silvicultural practices to promote adaptive responses to climate change in order to maintain key ecosystem services.

2. PROPOSED WORK

A. The Recipient's Project Proposal is accepted by the BLM and made a part of this agreement in order to serve as the agreement's work plan. Other documents incorporated by

reference include the recipient's Standard Form (SF) 424 Application for Federal Assistance, SF424A, Budget Information - Non-Construction Programs, SF424B, Assurances - Non-Construction Programs, Budget Detail, and signed Certification Regarding Lobbying - Certification for Contracts, Grants, Loans and Cooperative Agreements.

B. In addition, the recipient will also be responsible for significant developments, i.e., events which may occur between the scheduled performance reporting dates that have significant impact upon the supported activity. In such cases, the recipient must inform the BLM or pass-through entity as soon as the following types of conditions become known:

1. Problems, delays, or adverse conditions which will materially impair the ability to meet the objective of the Federal award. This disclosure must include a statement of the action taken, or contemplated, and any assistance needed to resolve the situation.
2. Favorable developments which enable meeting time schedules and objectives sooner or at less cost than anticipated or producing more or different beneficial results than originally planned.

3. TERM OF AGREEMENT

A. The term, or period of performance, of this agreement is in accordance with the dates shown on the signed award cover page. The BLM will consider continued support of the project upon; (a) the recipient showing progress satisfactory to the BLM toward program goals and the determination by the BLM that continuation of the program would be in the best interests of the Government, and/or (b) the availability of funds.

B. Budget and Program Revisions

1. Recipients must submit in writing to the BLM's Program Officer (PO) any request for budget or program revision in accordance with 2 CFR 200.308.
2. All modifications to the agreement shall be in writing and signed by the GMO. No oral statements or any written statements made by any person other than the GMO, shall in any manner modify or otherwise affect the terms of the agreement.

C. Termination. This agreement may be terminated in accordance with the provisions of 2 CFR, Subpart D, Section 200.339 Termination.

4. FINANCIAL SUPPORT AND PAYMENT METHOD

A. Funding. This agreement may be funded each fiscal year (FY) based on the availability of BLM funding. Funds obligated but not expended by the recipient in a FY may be carried forward and expended in subsequent years.

B. Maximum Obligations. The total obligations, including modifications, represent the amount for which the BLM will be responsible under the terms of this agreement. The BLM shall not be responsible to pay for, nor shall the recipient be responsible to perform, any effort that will require the expenditure of Federal funds above the current obligated amount.

C. Reimbursable Costs and Limitations. The recipient shall not incur costs or obligate funds for any purpose pertaining to operation of the program or activities beyond the expiration date stated in the agreement. The only costs which are authorized for a period of up to 90 days following the award expiration date are those strictly associated with closeout activities for preparation of the final report. The BLM's financial participation is limited. The BLM will only fund up to its share of those amounts requested in the project proposal and as are subsequently approved and funded in the agreement. The recipient shall not be obligated to continue performance under the agreement or to incur costs in excess of the costs set forth in the proposal and subsequent agreement. However, if the Recipient chooses to expend funds in excess of the approved project budget, the Recipient will be responsible to fund the excess without funding participation by the Bureau.

D. Cost Sharing and Matching. Cost sharing for this agreement shall be in accordance with 2 CFR, Subpart D, Section 200.306, Cost sharing or matching. There is no cost share or match legislatively required for this award.

E. Program Income

Program income generated for this agreement shall be in accordance with 2 CFR, Subpart D, Section 200.307, Program income. (1) *Deduction*. Ordinarily program income must be deducted from total allowable costs to determine the net allowable costs. Program income must be used for current costs unless the GMO authorizes otherwise. Program income that the recipient did not anticipate at the time of the Federal award must be used to reduce the Federal award and recipient contributions rather than to increase the funds committed to the project.

F. Indirect Costs. Indirect costs are approved for reimbursement under this agreement at the approved CESU indirect cost rate of 17.5% and per the recipient's approved federal agency negotiated indirect cost rate agreement (NICRA).

G. Payment by Reimbursement

1. Payment will be made by draw-down reimbursement through the Department of the Treasury, Automated Standard Application for Payment (ASAP) System. See following website: <http://www.fms.treas.gov/asap> Treasury Circular 1075 (31 CFR 205) requires that draw-downs to a recipient organization shall be limited to the minimum amounts needed and shall be timed to be in accordance with the actual, immediate cash requirements of the recipient organization in carrying out the purposes of the approved program or project. The timing and amount of cash advances shall be as close as is administratively feasible to the actual disbursements by the recipient organization for direct program or project costs and the proportionate share of any allowable indirect costs

2. Funds that are available from repayments to and interest earned on a revolving fund, program income, rebates, refunds, contract settlements, audit recoveries, credits, discounts, and interest earned on any of those funds, must be disbursed before requesting additional cash payments.

H. Agency Review

If a recipient has a history of poor performance, financial instability, uses a management system not meeting standards prescribed by the Uniform Administrative Requirements, has not conformed to the terms and conditions of the award, and/or is not otherwise responsible in safeguarding Federal funds, they may be determined to be "high risk" and be placed on Agency Review. Agency Review limits a recipient's access to funds by requiring that all draw-down requests reviewed and approved prior to their being released. Recipients on agency review must submit a completed Standard Form (SF) 270 Request for Advance Payment or Reimbursement for each payment requested along with a detailed explanation of how the costs correspond to the approved budget categories as listed on their Application for Federal Assistance SF-424A Budget Information and their Detailed Budget Breakdown or Challenge Cost Share Program Commitment Document, whichever is applicable. Being put on Agency Review does not relieve the recipient of required financial or performance reporting requirements.

I. System for Award Management (SAM, www.SAM.gov)

Recipients of Federal financial assistance must maintain current registration with the System for Award Management (SAM, www.SAM.gov). Failure to maintain registration can impact access to funds and future obligations under this agreement and any other financial assistance or procurement award the recipient may have with the Federal government.

5. PERFORMANCE & FINANCIAL MONITORING

A. In accordance with 2 CFR 200.327 Financial Reporting and 200.328 Monitoring and Reporting Program Performance, the recipient is responsible for oversight, monitoring, and reporting of its activities under Federal awards to assure compliance with applicable Federal requirements and that performance expectations are being achieved. The BLM's monitoring of the recipient's activities may include review of the award file including discussions with the recipient regarding reporting, award activities, and project status (desk reviews), analysis of financial and performance reports, and discussions of specific issues related to project implementation, observation of project activity, and review of planned versus actual progress (site visits). The BLM has the right to inspect and evaluate the work performed or being performed under this agreement, and the premises where the work is being performed, at all reasonable times and in a manner that will not unduly delay the work. If the BLM performs inspection or evaluation on the premises of the recipient or a sub-recipient, the recipient shall furnish and shall require sub-recipients to furnish all reasonable facilities and assistance for the safe and convenient performance of these duties.

1. BLM programmatic monitoring addresses the content and substance of the program. It is a qualitative review to determine performance, innovation, and contributions to the field. The BLM may make site visits as warranted by program needs. In addition, the BLM has the right of timely and unrestricted access to any books, documents, papers, or other records of the recipient's that are pertinent to the award, in order to make audits, examinations, excerpts, transcripts, and copies of such documents. This right also includes timely and reasonable access to recipient personnel for the purpose of interviews and discussions related to such documents.

2. BLM financial monitoring ensures compliance with financial guidelines and general accounting practices. On-site or internal financial reviews are conducted to determine if: (1) award recipients are properly accounting for the receipt and expenditures of federal funds; (2) expenditures are in compliance with federal requirements and award special conditions; and (3)

proper documentation on financial monitoring activities is prepared, maintained, and distributed as appropriate.

6. PERFORMANCE, FINANCIAL, AND OTHER REPORTING

Periodic financial, performance, and (if applicable) youth employment status reporting is a condition of this financial assistance award. Submission of reports is required whether or not any work has been attempted and/or any funds have been drawn down or expended. Failure to comply with the reporting requirements included in this agreement may be considered a material non-compliance with the terms and conditions of the award. Non-compliance may result in withholding of future payments, suspension or termination of the agreement, recovery of funds paid under the agreement, and withholding of future awards. The periodic status reporting required under this agreement is as follows.

A. Annual Federal Financial Reports

1. Recipients of Federal financial assistance are required to submit periodic financial reports which document the financial status of their awards. The Federal Financial Report (FFR) or Standard Form (SF) 425 and SF425A - Attachment is the Office of Management and Budget (OMB) standard form used to report financial status. Expenditures and/or income may be reported either on a cash or accrual basis, whichever method is normally used by the recipient. Submitted SF425 reports must be signed by an authorized official of the recipient certifying that the information complete, accurate, consistent with the recipient's accounting system, and that all expenditures and obligations are for the purposes set forth in the agreement. The SF425 represents a claim to the Federal government, filing a false claim may result in civil or criminal penalties. Blank SF425 forms with instructions are available on the Grants.gov web site, URL: <http://www.grants.gov/web/grants/forms.html>.

2. Annual Reporting. Financial status reports under this agreement must be submitted on an annual basis. Reporting periods and report due dates under this agreement shall be as follows:

<u>Reporting Period Dates</u>	<u>Submit Reports By</u>
Award Start Date through September 30, 2017*	December 31, 2017*

*And each 12-Month period thereafter for the life of the agreement.

3. Annual financial reports are due by 90 Calendar days after the end of the reporting period. E-mail financial status reports to the BLM Program Officer and blm_or_so_fa_reports@blm.gov.

4. At the end of the agreement, final SF425 financial reports are due by 90 Calendar days after the expiration, termination, and/or project completion, whichever comes first. E-mail financial status reports to the BLM Program Officer and blm_or_so_fa_reports@blm.gov.

B. Annual Performance Reports

1. Recipients of Federal financial assistance are required to submit periodic performance reports prepared in accordance with 2 CFR, Subpart D, Section 200.328 Monitoring and Reporting Program Performance. There is no standard form, however performance reports should always relate to the performance goals and objectives identified in Section 1. of this agreement. Performance reports must be submitted in a narrative summary to include, but not limited to, the following:

a. Completed established goals, work in progress, future work, the percentage of work completed (based on Section 1 and 2 of this document).

b. The reasons why established goals and objectives were not met or problems which may impact the ability to complete work on time with recommendations on their resolution, if appropriate.

c. Prediction of future activities and how they will be accomplished.

d. Where the accomplishments of the Federal award can be quantified, a computation of the cost (for example, related to units of accomplishment) may be required if that information will be useful.

e. Where performance trend data and analysis would be informative to the BLM program the Federal awarding agency should include this as a performance reporting requirement.

f. Additional pertinent information including, when appropriate, analysis and explanation of cost overruns or high unit costs.

2. Annual Reporting. Performance status reports under this agreement must be submitted on an annual basis. Reporting periods and report due dates under this agreement shall be as follows:

<u>Reporting Period Dates</u>	<u>Submit Reports By</u>
Award Start Date through September 30, 2017*	December 31, 2017*

*And each 12 Months thereafter for the life of the agreement.

3. Annual performance reports are due by 90 Calendar days after the end of the reporting period. E-mail performance reports to the BLM Program Officer and blm_or_so_fa_reports@blm.gov.

4. At the end of the agreement, final performance reports are due by 90 Calendar days after the expiration, termination, and/or project completion, whichever comes first. E-mail performance reports to the BLM Program Officer and blm_or_so_fa_reports@blm.gov.

7. LIABILITY, INSURANCE, AND INDEMNIFICATION

A. Liability. The BLM assumes no liability for any actions or activities conducted under this agreement except to the extent that recourse or remedies are provided by Congress under the Federal Tort Claims Act, 28 USC 2671.

B. Indemnification. The recipient hereby agrees:

1. To indemnify the federal government, Bureau of Land Management (BLM), from any act or omission of the recipient, its officers, employees, or (members, participants, agents, representatives, agents as appropriate) (1) against third party claims for damages arising from one or more activities carried out in connection with this financial assistance agreement and (2) for damage or loss to government property resulting from such an activity, to the extent the laws of the State where the recipient is located permit. This obligation shall survive the termination of this agreement.

2. To pay the United States the full value for all damage to the lands or other property of the United States caused by the recipient, its officers, employees, or (members, participants, agents, representatives, agents as appropriate).

3. To provide workers' compensation protection to the recipient's officers, employees, and representatives.

4. To cooperate with the BLM in the investigation and defense of any claims that may be filed with the BLM arising out of the activities of the recipient, its agents, and employees.

5. In the event of damage to or destruction of the buildings and facilities assigned for the use of the recipient in whole or in part by any cause whatsoever, nothing herein contained shall be deemed to require the BLM to replace or repair the buildings or facilities. If the BLM determines in writing, after consultation with the recipient that damage to the buildings or portions thereof renders such buildings unsuitable for continued use by the recipient, the BLM shall assume sole control over such buildings or portions thereof. If the buildings or facilities rendered unsuitable for use are essential for conducting operations authorized under this agreement, then failure to substitute and assign other facilities acceptable to the recipient will constitute termination of this agreement by the BLM.

C. Flow-down. For the purposes of this clause, "recipient" includes such subrecipients, contractors, or subcontractors as, in the judgment of the recipient and subject to the Government's determination of sufficiency, have sufficient resources and/or maintain adequate and appropriate insurance to achieve the purposes of this clause.

D. Identified Activities. All activities carried out in connection with this financial assistance agreement.

8. BLM PROPERTY STANDARDS

A. Government-furnished property (GFP), such as tools and equipment, furnished by the BLM to the recipient shall be used for official purposes only and shall be subject to the terms of the agreement. Tools and equipment shall be returned in the same condition received except for normal wear and tear in project use. Any BLM property used or other property acquired under this agreement, including intangible property such as copyrights and patents, shall be governed by the property management provisions of 2 CFR, Subpart D, Sections 200.310 to 200.316, Property Standards.

B. Insurance Coverage: The non-Federal entity must, at a minimum, provide the equivalent insurance coverage for real property and equipment acquired or improved with Federal funds as provided to property owned by the non-Federal entity. Refer to 2 CFR, Part 200, Subpart D, Section 310.

C. Intangible Property.

1. Title to intangible property (see § 200.59 Intangible property) acquired under a Federal award vests upon acquisition in the non-Federal entity. The non-Federal entity must use that property for the originally-authorized purpose, and must not encumber the property without approval of the Federal awarding agency. When no longer needed for the originally authorized purpose, disposition of the intangible property must occur in accordance with the provisions in § 200.313 Equipment paragraph (e).

2. The non-Federal entity may copyright any work that is subject to copyright and was developed, or for which ownership was acquired, under a Federal award. The Federal awarding agency reserves a royalty-free, nonexclusive and irrevocable right to reproduce, publish, or otherwise use the work for Federal purposes, and to authorize others to do so.

3. The non-Federal entity is subject to applicable regulations governing patents and inventions, including Governmentwide regulations issued by the Department of Commerce at 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Awards, Contracts and Cooperative Agreements."

4. The Federal government has the right to: (a) Obtain, reproduce, publish, or otherwise use the data produced under a Federal award; and (b) Authorize others to receive, reproduce, publish, or otherwise use such data for Federal purposes.

D. Recipient staff will be required to complete a BLM-approved Defensive Driving Course if driving a Government-owned vehicle (GOV).

E. Recipient staff will be required to complete a BLM-approved Four-wheel ATV safety and training program if using Government-furnished ATVs.

F. Recipient staff will be required to complete a BLM-approved safety and training program if using Government-furnished power equipment, such as chainsaws, wood chippers, etc. The recipient will be responsible for meeting all protective equipment requirements if using Government-furnished equipment.

9. KEY OFFICIALS

The key officials on this agreement are listed on the award cover page(s) and are considered to be essential to ensure maximum coordination and communication between the parties and the work being performed. Upon written notice, either party may designate an alternate to act in the place of their designated key official.

10. GENERAL TERMS AND CONDITIONS

The U.S. Department of the Interior agencies, including the Bureau of Land Management implemented the new regulations on December 26, 2014 in the 2 CFR, Part 200—UNIFORM ADMINISTRATIVE REQUIREMENTS, COST PRINCIPLES, AND AUDIT REQUIREMENTS FOR FEDERAL AWARDS

A. Administrative and National Policy Requirements

1. By accepting Federal funding, your organization agrees to abide by the new Uniform Guidance for Grants in the expenditure of Federal funds and performance under this financial assistance award, which was implemented by Office of Management and Budget (OMB). Final Guidance has been issued and has superseded requirements from OMB Circulars, which have been replaced by the 2 Code of Federal Regulations (CFR) Grants and Agreements, Part 200.

2 CFR, Part 200 is available at the following website: http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Title02/2cfr200_main_02.tpl

B. Administrative Requirements

1. 2 CFR Part 200 Subparts A through D - UNIFORM ADMINISTRATIVE REQUIREMENTS, AND COST PRINCIPLES.

2. 2 CFR, Subpart B, 200.112 - CONFLICT OF INTEREST – Refer to Section 13, item 1. of this document for full text term and condition.

3. 2 CFR, Subpart B, 200.317 – 316 - Procurement Standards.

a. \$200.326 Contract Provisions: The non-Federal entity's contracts must contain the applicable provisions described in Appendix II to Part, 200 – Contract Provisions for non-Federal Entity Contracts Under Federal Awards. Refer to Section 13, item 2. of this document for full text term and condition.

4. 2 CFR, Subpart C, Part 200.412 - 419 – Direct and Indirect (F & A) Cost

a. 2 CFR, Appendix III to Part 200 - Indirect (F&A) Costs Identification and Assignment, and Rate Determination for Institutions of Higher Education (IHEs)

b. Appendix IV to Part 200 - Indirect (F&A) Costs Identification and Assignment, and Rate Determination for Nonprofit Organizations

c. Appendix V to Part 200 - State/Local Government-wide Central Service Cost Allocation Plans

5. 2 CFR Part 200 Subpart F - AUDIT REQUIREMENTS. Non-Federal entities that expend \$750,000.00, or more, in federal awards in a single year shall have a single or program-specific audit conducted for that year in accordance with the Single Audit Act Amendments of 1996 (31 U.S.C. 7501-7507) and revised OMB Circular A-133, available at: http://www.whitehouse.gov/omb/circulars_default.

a. This and any other federal financial assistance award should be reported under its appropriate Catalog of Federal Domestic Assistance (CFDA) number, refer to header for appropriate CFDA to report.

6. Appendix XII to Part 200—Award Term and Condition for Recipient Integrity and Performance Matters. (Refer to Section 13. 3. below for full text.)

C. Program Legislation and/or Regulations: Scientific integrity is vital to Department of the Interior (DOI) activities under which scientific research, data, summaries, syntheses, interpretations, presentations, and/or publications are developed and used. Failure to uphold the

highest degree of scientific integrity will result not only in potentially flawed scientific results, interpretations, and applications but will damage DOI's reputation and ability to uphold the public's trust. All work performed must comply with the DOI Scientific Integrity Policy posted to <http://www.doi.gov>, or its equivalent as provided by their organization or State law. For more information go to URL: <https://www.doi.gov/scientificintegrity>.

D. Standard Award Terms and Conditions

1. Code of Federal Regulations/Regulatory Requirements, as applicable:
 - a. 2 CFR Part 25, *Universal Identifier and System of Award Management*
 - b. 2 CFR Part 170, *Reporting Subawards and Executive Compensation*
 - c. 2 CFR Part 175, *Award Term for Trafficking in Persons*
 - d. 2 CFR Part 180 & 2 CFR Part 1400, *Government-wide Debarment and Suspension (Non-procurement)*
 - e. 2 CFR Part 182 & 2 CFR Part 1401, *Requirements for Drug-Free Workplace (Financial Assistance)*
 - f. 43 CFR 18, *New Restrictions on Lobbying*: Submission of an application also represents the applicant's certification of the statements in 43 CFR Part 18, Appendix A, *Certification Regarding Lobbying*.
 - g. 41 USC §4712, *Pilot Program for Enhancement of Recipient and Sub-recipient Employee Whistleblower Protection*: This requirement applies to all awards issued after July 1, 2013 and shall be in effect until January 1, 2017.
 - (a) This award and related subawards and contracts over the simplified acquisition threshold and all employees working on this award and related subawards and contracts over the simplified acquisition threshold are subject to the whistleblower rights and remedies in the pilot program on award recipient employee whistleblower protections established at 41 U.S.C. 4712 by section 828 of the *National Defense Authorization Act for Fiscal Year 2013* (P.L. 112-239).
 - (b) Recipients, and their subrecipients and contractors awarded contracts over the simplified acquisition threshold related to this award, shall inform their employees in writing, in the predominant language of the workforce, of the employee whistleblower rights and protections under 41 U.S.C. 4712.
 - (c) The award recipient shall insert the substance of this clause, including this paragraph (c), in all subawards or subcontracts over the simplified acquisition threshold, 42 CFR §52.203-17 (as referenced in 42 CFR §3.908-9).
 - h. 41 USC §6306, *Prohibition on Members of Congress Making Contracts with Federal Government*: No member of or delegate to the United States Congress or Resident Commissioner shall be admitted to any share or part of this award, or to any benefit that may arise therefrom; this provision shall not be construed to extend to an award made to a corporation for the public's general benefit.
 - i. Executive Order 13513, *Federal Leadership on Reducing Text Messaging while Driving*: Recipients are encouraged to adopt and enforce policies that ban text messaging while driving, including conducting initiatives of the type described in section 3(a) of the order.

j. Executive Order 13043 , *Increase Seat Belt Use in the United States*

Recipients of grants/cooperative agreements and/or sub-awards are encouraged to adopt and enforce on-the-job seat belt use policies and programs for their employees when operating company-owned, rented, or personally owned vehicles. These measures include, but are not limited to, conducting education, awareness, and other appropriate programs for their employees about the importance of wearing seat belts and the consequences of not wearing them.

k. Executive Order 13658, Minimum Wage for Contractors, seeks to increase the efficiency and cost savings in the work performed by parties who contract with the Federal Government by increasing the hourly minimum wage paid by those contractors and any subcontractors. (see 79 CFR 9851). Refer to Section 13, item 4. of this document for full text term and condition.

l. Opposition to Any Legislation. In accordance with the Department of the Interior, Environment, and Related Agencies Act, 2006, Title IV, Section 402, no part of any appropriation contained in this Act shall be available for any activity or the publication or distribution of literature that in any way tends to promote public support or opposition to any legislative proposal on which Congressional action is not complete other than to communicate to Members of Congress as described in 18 U.S.C. 1913.

m. Endorsements.

(1) Recipient shall not publicize or otherwise circulate, promotional material (such as advertisements, sales brochures, press releases, speeches, still and motion pictures, articles, manuscripts or other publications) which states or implies governmental, Departmental, bureau, or government employee endorsement of a product, service, or position which the recipient represents. No release of information relating to this award may state or imply that the Government approves of the recipient's work products, or considers the recipient's work product to be superior to other products or services.

(2) All information submitted for publication or other public releases of information regarding this project shall carry the following disclaimer:

The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the U.S. Government. Mention of trade names or commercial products does not constitute their endorsement by the U.S. Government.

(3) Recipient must obtain prior Government approval for any public information releases concerning this award which refer to the Department of the Interior or any bureau or employee (by name or title). The specific text, layout photographs, etc. of the proposed release must be submitted with the request for approval.

(4) A recipient further agrees to include this provision in a subaward to and subrecipient, except for a subaward to a State government, a local government, or to a federally recognized Indian tribal government.

n. Publications of Results of Studies. No party will unilaterally publish a joint publication without consulting the other party. This restriction does not apply to popular publications of previously published technical matter. Publications pursuant to this Agreement may be produced independently or in collaboration with others; however, in all cases proper credit will be given to the efforts of those parties contribution to the publication. In the event no agreement is reached concerning the manner of publication or interpretation of results, either party may publish data after due notice and submission of the proposed manuscripts to the other.

In such instances, the party publishing the data will give due credit to the cooperation but assume full responsibility for any statements on which there is a difference of opinion.

o. Retention and Access Requirements for Records.

(1) All recipient financial and programmatic records, supporting documents, statistical records, and other grants-related records shall be maintained and available for access in accordance with 2 CFR, Subpart D, Sections 200.333 through 200.337, Record Retention and Access.

(2) Inspector General's (IG's) Office Access to Records - Recipients shall provide additional access for the IG's office to examine recipient's records and to interview officers/employees of recipient.

2. Order of Precedence. Any inconsistency in this agreement shall be resolved by giving precedence in the following order: (a) Any national policy requirements and administrative management standards; (b) 2 CFR. Part 200; (c) requirements of the applicable OMB Circulars and Treasury regulations; (d) special terms and conditions; (e) all agreement sections, documents, exhibits, and attachments; and (f) the recipient's project proposal.

p. Prohibition on Issuing Financial Assistance Awards to Entities that Require Certain Internal Confidentiality Agreements.

Section 743 of Division E, Title VII of the Consolidated and Further Continuing Resolution Appropriations Act of 2015 (Pub. L. 113-235) prohibits the use of funds appropriated or otherwise made available under that or any other Act for grants or cooperative agreements to an entity that requires employees or contractors of such entity seeking to report fraud, waste, or abuse to sign internal confidentiality agreements or statements prohibiting or otherwise restricting such employees or contractors from lawfully reporting such waste, fraud, or abuse to a designated investigative or law enforcement representative of a federal department or agency authorized to receive such information.

Recipients must not require their employees or contractors seeking to report fraud, waste, or abuse to sign internal confidentiality agreements or statements prohibiting or otherwise restricting such employees or contractors from lawfully reporting such waste, fraud, or abuse to a designated investigative or law enforcement representative of a federal department or agency authorized to receive such information.

Recipients must notify their employees or contractors that existing internal confidentiality agreements covered by this condition are no longer in effect

11. SPECIAL TERMS AND CONDITIONS

A. Deposit of Publications. In addition to any requirements listed in the Project Management Plan, two (2) copies of each applicable publication produced under this agreement shall be sent to the Natural Resources Library with a transmittal that identifies the sender and the publication, and states that the publication is intended for deposit in the Natural Resources Library. Publications shall be sent to the following address:

U.S. Department of the Interior
Natural Resources Library
Interior Service Center
Gifts and Exchanges Section
1849 C Street, N.W.

Washington, D.C. 20240

B. Recipient/Subrecipient Personnel Security and Suitability Requirements

1. As implemented by Homeland Security Presidential Directive-12 (HSPD-12), if performance of this agreement requires recipient/subrecipient personnel to have a Federal government-issued Personal Identity Verification (PIV) credential before being allowed unsupervised access to a DOI facility and/or information system, the Program Officer will be the sponsoring official, and will make the arrangements through a DOI Access Card Sponsor for personal identity verification and DOI Access Card issuance.

2. At least two weeks before start of agreement performance, the recipient must identify all recipient and subrecipient personnel who will require physical and/or logical access for performance of work under this agreement. Physical Access means routine, unescorted or unmonitored access to non-public areas of a Federally-controlled facility. Logical Access means routine, unsupervised access to a Federally-controlled information system. The recipient and subrecipient must make their personnel available at the place and time specified by the Program Officer in order to initiate screening and background investigations. The following forms, or their equivalent, may be used to initiate the credentialing process:

- a. OPM Standard Form 85 or 85P
- b. OF 306
- c. National Criminal History Check (NCHC) (local procedures may require the fingerprinting to be done at a police station; in this case, any charges are to be borne by the recipient or subrecipient, as applicable)
- d. Release to Obtain Credit Information
- e. PIV card application (web-based)

3. Before starting work under this agreement, a National Criminal History Check (NCHC) will be initiated to verify the identity of the individual applying for clearance and to determine the individual's suitability for the position. If the NCHC adjudication is favorable, a DOI Access Card will be issued for that individual. If the adjudication is unfavorable, the credentials will not be issued and the recipient or subrecipient must make other arrangements for performance of the work. In the event of a disagreement between the recipient/subrecipient and the Government concerning the suitability of an individual to perform work under this agreement, DOI shall have the right of final determination.

4. Recipient and subrecipient employees must give, and authorize others to give, full, frank, and truthful answers to relevant and material questions needed to reach a suitability determination. Refusal or failure to furnish or authorize provision of information may constitute grounds for denial or revocation of credentials. Government personnel may contact the recipient or subrecipient personnel being screened or investigated in person, by telephone or in writing, and the recipient or subrecipient must ensure they are available for such contact.

5. Alternatively, if an individual has already been credentialed by another agency through the Office of Personnel Management (OPM), and that credential has not yet expired, further clearance may not be necessary. In that case, the recipient/subrecipient must provide the sponsoring office with documentation that supports the individual's credentialed status.

6. Recipient and subrecipient employees who have been successfully adjudicated will be issued DOI Access Cards, which must be activated at a USAccess Credentialing Center. Those

Recipient or subrecipient employees not located within a reasonable travel time of a USAccess Credentialing Center will be screened and issued alternate credentials, such as temporary access badges.

7. During performance of this agreement, the recipient must keep the Program Officer apprised of changes in personnel to ensure that performance is not delayed by compliance with credentialing processes. Cards that have been lost, damaged, or stolen must be reported to the Program Officer, Grants Management Officer, and Issuing Office within 24 hours. If reissuance of expired credentials is needed, it will be coordinated through the Program Officer.

8. At the end of this agreement's performance, or when a recipient/subrecipient employee is no longer working under this agreement, the recipient will ensure that all identification cards are returned to the Program Officer.

C. Federal Information Systems Security Awareness Training. Before the recipient, or any of its employees or subrecipients, are granted access to the BLM Federal computer system, they must first successfully complete the U.S. Department of the Interior's (DOI) Federal Information Systems Security Awareness Online Course. This course was designed specifically for users of Federal computer systems. The course is a Web-based training product that explains the importance of Information Systems Security and takes approximately one hour to complete. This course is mandatory for all DOI employees, contractors, recipients, and all other users of DOI computer resources. Topics covered in the course include: threats and vulnerabilities, malicious code, user responsibilities, and new developments affecting Information Systems Security.

12. DEFINITIONS & ACRONYMS

Agency Review: If a recipient has a history of poor performance, financial instability, has a management system not meeting standards prescribed by the Uniform Administrative Requirements, has not conformed to the terms and conditions of the award, and/or is not otherwise responsible in safeguarding federal funds, they may be placed on Agency Review. Agency Review limits a recipient's access to funds by requiring that all payments must be requested, reviewed, and approved prior to their being released.

Award Recipient: The Award Recipient is the recipient's individual who is authorized to act for the applicant and to assume the obligations imposed by the Federal laws, regulations, requirements, and conditions that apply to grant applications or grant awards.

BLM: Bureau of Land Management may, also be referred to as Bureau.

CFR: Code of Federal Regulations.

DOI: Department of the Interior.

FFR: Federal Financial Report or Standard Form (SF) 425.

Financial Assistance Agreement: This grant or cooperative agreement. The term grant is defined as all Federal financial assistance that provides support or stimulation to accomplish a public purpose. Use of the term "grant" includes grants and/or cooperative agreements awarded by the Federal Government to eligible recipients.

FY: Federal Fiscal Year which runs from October 1 through September 30 each year.

GMO: Grants Management Officer, the only individual in the BLM who is authorized to obligate funds, award, modify, and/or terminate assistance agreements.

GMS: Grants Management Specialist, the administrative individual authorized to prepare assistance agreement awards and modifications, but who cannot obligate funds, award, modify, and/or terminate the agreement.

NTE: Not-to-exceed amount, the maximum Federal funding amount available for reimbursement to the recipient.

OMB: The Office of Management and Budget. OMB leads development of government-wide policy to assure that grants are managed properly and that Federal dollars are spent in accordance with applicable laws and regulations. OMB Circulars that apply to this agreement may be found on the OMB Website, URL: http://www.whitehouse.gov/omb/circulars_default/.

PI: The BLM Project Inspector, the technical advisor assisting the BLM Program Officer in administering and monitoring the technical aspects of the agreement. The Project Inspector is not authorized to modify this agreement or obligate the Government in any way.

PO: The BLM Program Officer, appointed for the purposes of monitoring the technical aspects of the agreement. The PO will work closely with the RPM and is authorized to clarify technical requirements, and review and approve work which is clearly within the objectives specified in this agreement. The PO will review financial, performance, and youth employment reports, and review and recommend approval of payments to the GMO if a recipient is on Agency Review. The PO is not authorized to modify this agreement or obligate the Government in any way.

Recipient: The organization and/or individual named in Box 5. of the "Grant and Cooperative Agreement" cover sheet.

RPM: The recipient's Project or Program Manager, designated to direct the project or activity being supported by the agreement. The RPM is responsible and accountable to the recipient and BLM for the proper implementation of the project or activity.

13. FULL TEXT TERMS AND CONDITIONS

1. Department of Interior Conflict of Interest Term and Condition:

a. The Recipient must establish safeguards to prohibit its employees and Subrecipients from using their positions for purposes that constitute or present the appearance of a personal or organizational conflict of interest. The Recipient is responsible for notifying the Grants Officer in writing of any actual or potential conflicts of interest that may arise during the life of this award. Conflicts of interest include any relationship or matter which might place the Recipient or its employees in a position of conflict, real or apparent, between their responsibilities under the agreement and any other outside interests. Conflicts of interest may also include, but are not limited to, direct or indirect financial interests, close personal relationships, positions of trust in outside organizations, consideration of future employment arrangements with a different organization, or decision-making affecting the award that would cause a reasonable person with knowledge of the relevant facts to question the impartiality of the Recipient and/or Recipient's employees and Sub-recipients in the matter.

b. The Grants Officer and the servicing Ethics Counselor will determine if a conflict of interest exists. If a conflict of interest exists, the Grants Officer will determine whether a mitigation plan is feasible. Mitigation plans must be approved by the Grants Officer in writing. Failure to resolve conflicts of interest in a manner that satisfies the government may be cause for termination of the award.

c. Failure to make required disclosures may result in any of the remedies described in 2 CFR § 200.338, Remedies for Noncompliance, including suspension or debarment (see also 2 CFR Part 180).

d. Definitions:

(1) Conflict of Interest is defined as any relationship or matter which might place the Recipient, its employees, and/or its Subrecipients in a position of conflict, real or apparent, between their responsibilities under the agreement and any other outside interests. Conflicts of interest may also include, but are not limited to, direct or indirect financial interests, close personal relationships, positions of trust in outside organizations, consideration of future employment arrangements with a different organization, or decision-making affecting the award that would cause a reasonable person with knowledge of the relevant facts to question the impartiality of the Recipient and/or Recipient's employees and Subrecipients in the matter.

(2) Close Personal Relationship means a Federal award program employee's childhood or other friend, sibling, or other family relations that may compromise or impair the fairness and impartiality of the Proposal Evaluator and Advisor and Grants Officer in the review, selection, award, and management of a financial assistance award.

(3) Discretionary Federal Financial Assistance means Federal awards including grants and agreements that are awarded at the discretion of the agency.

(4) Employment means:

(a) In any capacity, even if otherwise permissible, by any applicant or potential applicant for a Federal financial assistance award;

(b) Employment within the last 12 months with a different organization applying for some portion of the award's approved project activities and funding to complete them OR expected to apply for and to receive some portion of the award; and/or

(c) Employment with a different organization of any member of the organization employee's household or a relative with whom the organization's employee has a close personal relationship who is applying for some portion of the award's approved project activities and funding to complete them OR expected to apply for and to receive some portion of the award.

(d) Non-Federal entity means a State, local government, Indian tribe, institution of higher education, or nonprofit organization that carries out a Federal award as a Recipient or Subrecipient.

(e) Recipient means a non-Federal entity that receives a Federal award directly from a Federal awarding agency to carry out an activity under a Federal program. The term Recipient does not include Subrecipients.

(f) Subrecipient means a non-Federal entity that receives a subaward from a pass-through entity to carry out part of a Federal program, but does not include an individual who is a beneficiary of such program. A Subrecipient may also be a recipient of other Federal awards directly from a Federal awarding agency.

2. Appendix II to Part 200—Contract Provisions for Non-Federal Entity Contracts Under Federal Awards

In addition to other provisions required by the Federal agency or non-Federal entity, all contracts made by the non-Federal entity under the Federal award must contain provisions covering the following, as applicable.

(A) Contracts for more than the simplified acquisition threshold currently set at \$150,000, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.

(B) All contracts in excess of \$10,000 must address termination for cause and for convenience by the non-Federal entity including the manner by which it will be effected and the basis for settlement.

(C) Equal Employment Opportunity. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

(D) Davis-Bacon Act, as amended (40 U.S.C. 3141-3148). When required by Federal program legislation, all prime construction contracts in excess of \$2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.

(E) Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708). Where applicable, all contracts awarded by the non-Federal entity in excess of \$100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the

purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

(F) Rights to Inventions Made Under a Contract or Agreement. If the Federal award meets the definition of “funding agreement” under 37 CFR §401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that “funding agreement,” the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency.

(G) Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended—Contracts and subgrants of amounts in excess of \$150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

(H) Debarment and Suspension (Executive Orders 12549 and 12689)—A contract award (see 2 CFR 180.220) must not be made to parties listed on the Governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), “Debarment and Suspension.” SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

(I) Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)—Contractors that apply or bid for an award exceeding \$100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

(J) See §200.322 Procurement of recovered materials.

3. Appendix XII to Part 200—Award Term and Condition for Recipient Integrity and Performance Matters

A. Reporting of Matters Related to Recipient Integrity and Performance

1. General Reporting Requirement

If the total value of your currently active grants, cooperative agreements, and procurement contracts from all Federal awarding agencies exceeds \$10,000,000 for any period of time during the period of performance of this Federal award, then you as the recipient during that period of time must maintain the currency of information reported to the System for Award Management (SAM) that is made available in the designated integrity and performance system (currently the Federal Awardee Performance and Integrity Information System (FAPIS)) about

civil, criminal, or administrative proceedings described in paragraph 2 of this award term and condition. This is a statutory requirement under section 872 of Public Law 110-417, as amended (41 U.S.C. 2313). As required by section 3010 of Public Law 111-212, all information posted in the designated integrity and performance system on or after April 15, 2011, except past performance reviews required for Federal procurement contracts, will be publicly available.

2. Proceedings About Which You Must Report

Submit the information required about each proceeding that:

- a. Is in connection with the award or performance of a grant, cooperative agreement, or procurement contract from the Federal Government;
- b. Reached its final disposition during the most recent five year period; and
- c. Is one of the following:
 - (1) A criminal proceeding that resulted in a conviction, as defined in paragraph 5 of this award term and condition;
 - (2) A civil proceeding that resulted in a finding of fault and liability and payment of a monetary fine, penalty, reimbursement, restitution, or damages of \$5,000 or more;
 - (3) An administrative proceeding, as defined in paragraph 5. of this award term and condition, that resulted in a finding of fault and liability and your payment of either a monetary fine or penalty of \$5,000 or more or reimbursement, restitution, or damages in excess of \$100,000; or
 - (4) Any other criminal, civil, or administrative proceeding if:
 - (i) It could have led to an outcome described in paragraph 2.c.(1), (2), or (3) of this award term and condition;
 - (ii) It had a different disposition arrived at by consent or compromise with an acknowledgment of fault on your part; and
 - (iii) The requirement in this award term and condition to disclose information about the proceeding does not conflict with applicable laws and regulations.

3. Reporting Procedures

Enter in the SAM Entity Management area the information that SAM requires about each proceeding described in paragraph 2 of this award term and condition. You do not need to submit the information a second time under assistance awards that you received if you already provided the information through SAM because you were required to do so under Federal procurement contracts that you were awarded.

4. Reporting Frequency

During any period of time when you are subject to the requirement in paragraph 1 of this award term and condition, you must report proceedings information through SAM for the most recent five year period, either to report new information about any proceeding(s) that you have not reported previously or affirm that there is no new information to report. Recipients that have Federal contract, grant, and cooperative agreement awards with a cumulative total value greater than \$10,000,000 must disclose semiannually any information about the criminal, civil, and administrative proceedings.

5. Definitions

For purposes of this award term and condition:

a. Administrative proceeding means a non-judicial process that is adjudicatory in nature in order to make a determination of fault or liability (e.g., Securities and Exchange Commission Administrative proceedings, Civilian Board of Contract Appeals proceedings, and Armed Services Board of Contract Appeals proceedings). This includes proceedings at the Federal and State level but only in connection with performance of a Federal contract or grant. It does not include audits, site visits, corrective plans, or inspection of deliverables.

b. Conviction, for purposes of this award term and condition, means a judgment or conviction of a criminal offense by any court of competent jurisdiction, whether entered upon a verdict or a plea, and includes a conviction entered upon a plea of nolo contendere.

c. Total value of currently active grants, cooperative agreements, and procurement contracts includes—

(1) Only the Federal share of the funding under any Federal award with a recipient cost share or match; and

(2) The value of all expected funding increments under a Federal award and options, even if not yet exercised.

4. MINIMUM WAGES UNDER EXECUTIVE ORDER 13658 (January 2015)

(a) Definitions. As used in this clause—

“United States” means the 50 states and the District of Columbia.

“Worker”—

(1) Means any person engaged in performing work on, or in connection with, a contract covered by Executive Order 13658, and

(i) Whose wages under such contract are governed by the Fair Labor Standards Act (29 U.S.C. chapter 8), the Service Contract Labor Standards statute (41 U.S.C. chapter 67), or the Wage Rate Requirements (Construction) statute (40 U.S.C. chapter 31, subchapter IV),

(ii) Other than individuals employed in a bona fide executive, administrative, or professional capacity, as those terms are defined in 29 CFR part 541,

(iii) Regardless of the contractual relationship alleged to exist between the individual and the employer.

(2) Includes workers performing on, or in connection with, the contract whose wages are calculated pursuant to special certificates issued under 29 U.S.C. 214(c).

(3) Also includes any person working on, or in connection with, the contract and individually registered in a bona fide apprenticeship or training program registered with the Department of Labor's Employment and Training Administration, Office of Apprenticeship, or with a State Apprenticeship Agency recognized by the Office of Apprenticeship.

(b) Executive Order Minimum Wage rate.

(1) The Contractor shall pay to workers, while performing in the United States, and performing on, or in connection with, this contract, a minimum hourly wage rate of \$10.10 per hour beginning January 1, 2015.

(2) The Contractor shall adjust the minimum wage paid, if necessary, beginning January 1, 2016 and annually thereafter, to meet the Secretary of Labor's annual E.O. minimum

wage. The Administrator of the Department of Labor's Wage and Hour Division (the Administrator) will publish annual determinations in the Federal Register no later than 90 days before the effective date of the new E.O. minimum wage rate. The Administrator will also publish the applicable E.O. minimum wage on www.wdol.gov (or any successor Web site) and on all wage determinations issued under the Service Contract Labor Standards statute or the Wage Rate Requirements (Construction) statute. The applicable published E.O. minimum wage is incorporated by reference into this contract.

(3) (i) The Contractor may request a price adjustment only after the effective date of the new annual E.O. minimum wage determination. Prices will be adjusted only if labor costs increase as a result of an increase in the annual E.O. minimum wage, and for associated labor costs and relevant subcontract costs. Associated labor costs shall include increases or decreases that result from changes in social security and unemployment taxes and workers' compensation insurance, but will not otherwise include any amount for general and administrative costs, overhead, or profit.

(ii) Subcontractors may be entitled to adjustments due to the new minimum wage, pursuant to paragraph (b)(2). Contractors shall consider any subcontractor requests for such price adjustment.

(iii) The Contracting Officer will not adjust the contract price under this clause for any costs other than those identified in paragraph (b)(3)(i) of this clause, and will not provide duplicate price adjustments with any price adjustment under clauses implementing the Service Contract Labor Standards statute or the Wage Rate Requirements (Construction) statute.

(4) The Contractor warrants that the prices in this contract do not include allowance for any contingency to cover increased costs for which adjustment is provided under this clause.

(5) A pay period under this clause may not be longer than semi-monthly, but may be shorter to comply with any applicable law or other requirement under this contract establishing a shorter pay period. Workers shall be paid no later than one pay period following the end of the regular pay period in which such wages were earned or accrued.

(6) The Contractor shall pay, unconditionally to each worker, all wages due free and clear without subsequent rebate or kickback. The Contractor may make deductions that reduce a worker's wages below the E.O. minimum wage rate only if done in accordance with 29 CFR 10.23, Deductions.

(7) The Contractor shall not discharge any part of its minimum wage obligation under this clause by furnishing fringe benefits or, with respect to workers whose wages are governed by the Service Contract Labor Standards statute, the cash equivalent thereof.

(8) Nothing in this clause shall excuse the Contractor from compliance with any applicable Federal or State prevailing wage law or any applicable law or municipal ordinance establishing a minimum wage higher than the E.O. minimum wage. However, wage increases under such other laws or municipal ordinances are not subject to price adjustment under this subpart.

(9) The Contractor shall pay the E.O. minimum wage rate whenever it is higher than any applicable collective bargaining agreement(s) wage rate.

(10) The Contractor shall follow the policies and procedures in 29 CFR 10.24(b) and 10.28 for treatment of workers engaged in an occupation in which they customarily and regularly receive more than \$30 a month in tips.

(c) (1) This clause applies to workers as defined in paragraph (a). As provided in that definition—

(i) Workers are covered regardless of the contractual relationship alleged to exist between the contractor or subcontractor and the worker;

(ii) Workers with disabilities whose wages are calculated pursuant to special certificates issued under 29 U.S.C. 214(c) are covered; and

(iii) Workers who are registered in a bona fide apprenticeship program or training program registered with the Department of Labor's Employment and Training Administration, Office of Apprenticeship, or with a State Apprenticeship Agency recognized by the Office of Apprenticeship, are covered.

(2) This clause does not apply to—

(i) Fair Labor Standards Act (FLSA)-covered individuals performing in connection with contracts covered by the E.O., i.e. those individuals who perform duties necessary to the performance of the contract, but who are not directly engaged in performing the specific work called for by the contract, and who spend less than 20 percent of their hours worked in a particular workweek performing in connection with such contracts;

(ii) Individuals exempted from the minimum wage requirements of the FLSA under 29 U.S.C. 213(a) and 214(a) and (b), unless otherwise covered by the Service Contract Labor Standards statute, or the Wage Rate Requirements (Construction) statute. These individuals include but are not limited to—

(a) Learners, apprentices, or messengers whose wages are calculated pursuant to special certificates issued under 29 U.S.C. 214(a).

(b) Students whose wages are calculated pursuant to special certificates issued under 29 U.S.C. 214(b).

(c) Those employed in a bona fide executive, administrative, or professional capacity (29 U.S.C. 213(a)(1) and 29 CFR part 541).

(d) Notice. The Contractor shall notify all workers performing work on, or in connection with, this contract of the applicable E.O. minimum wage rate under this clause. With respect to workers covered by the Service Contract Labor Standards statute or the Wage Rate Requirements (Construction) statute, the Contractor may meet this requirement by posting, in a prominent and accessible place at the worksite, the applicable wage determination under those statutes. With respect to workers whose wages are governed by the FLSA, the Contractor shall post notice, utilizing the poster provided by the Administrator, which can be obtained at www.dol.gov/whd/govcontracts, in a prominent and accessible place at the worksite. Contractors that customarily post notices to workers electronically may post the notice electronically provided the electronic posting is displayed prominently on any Web site that is maintained by the contractor, whether external or internal, and customarily used for notices to workers about terms and conditions of employment.

(e) Payroll Records.

(1) The Contractor shall make and maintain records, for three years after completion of the work, containing the following information for each worker:

(i) Name, address, and social security number;

- (ii) The worker's occupation(s) or classification(s);
- (iii) The rate or rates of wages paid;
- (iv) The number of daily and weekly hours worked by each worker;
- (v) Any deductions made; and
- (vi) Total wages paid.

(2) The Contractor shall make records pursuant to paragraph (e)(1) of this clause available for inspection and transcription by authorized representatives of the Administrator. The Contractor shall also make such records available upon request of the Contracting Officer.

(3) The Contractor shall make a copy of the contract available, as applicable, for inspection or transcription by authorized representatives of the Administrator.

(4) Failure to comply with this paragraph (e) shall be a violation of 29 CFR 10.26 and this contract. Upon direction of the Administrator or upon the Contracting Officer's own action, payment shall be withheld until such time as the noncompliance is corrected.

(5) Nothing in this clause limits or otherwise modifies the Contractor's payroll and recordkeeping obligations, if any, under the Service Contract Labor Standards statute, the Wage Rate Requirements (Construction) statute, the Fair Labor Standards Act, or any other applicable law.

(f) Access. The Contractor shall permit authorized representatives of the Administrator to conduct investigations, including interviewing workers at the worksite during normal working hours.

(g) Withholding. The Contracting Officer, upon his or her own action or upon written request of the Administrator, will withhold funds or cause funds to be withheld, from the Contractor under this or any other Federal contract with the same Contractor, sufficient to pay workers the full amount of wages required by this clause.

(h) Disputes. Department of Labor has set forth in 29 CFR 10.51, Disputes concerning contractor compliance, the procedures for resolving disputes concerning a contractor's compliance with Department of Labor regulations at 29 CFR part 10. Such disputes shall be resolved in accordance with those procedures and not the Disputes clause of this contract. These disputes include disputes between the Contractor (or any of its subcontractors) and the contracting agency, the Department of Labor, or the workers or their representatives.

(i) Anti-retaliation. The Contractor shall not discharge or in any other manner discriminate against any worker because such worker has filed any complaint or instituted or caused to be instituted any proceeding under or related to compliance with the E.O. or this clause, or has testified or is about to testify in any such proceeding.

(j) Subcontractor compliance. The Contractor is responsible for subcontractor compliance with the requirements of this clause and may be held liable for unpaid wages due subcontractor workers.

(k) Subcontracts. The Contractor shall include the substance of this clause, including this paragraph (k) in all subcontracts, regardless of dollar value, that are subject to the Service Contract Labor Standards statute or the Wage Rate Requirements (Construction) statute, and are to be performed in whole or in part in the United States.

END OF AGREEMENT



PROJECT PROPOSAL

Instructions

A Project Proposal must be submitted with the Standard Form (SF) 424 Application for Financial Assistance for all Financial Assistance Agreements. A new proposal must be included with any request for modification which involves a revision to funding, project scope, period of performance, or key personnel.

Agreement or Funding Opportunity No.: L15AS00011 Date: 07/18/2016

Organization Name: Utah State University

Project Title: Managing Understories for Climate Change

Estimated Period of Performance (POP): August 1, 2016 to July 31, 2018

Name & Title of Person Submitting Proposal: Research Assistant Professor Julia Burton (PI) & Professor Klaus Puettmann (Collaborator, Oregon State University)

* If a specific start work date is needed, contact your BLM Program Officer. Do not start work without prior approval from the Grants Management Officer.

1. Purpose and Objectives:

In the past, BLM management efforts in Oregon were based on an interpretation of the O&C act (Public Law 75-405), which emphasized supporting a forest products-based economy in local counties. Recent changes in policies, societal expectations and ecological understandings have expanded management objectives to include wildlife habitat, visual quality, biodiversity, and cultural values -- most prominently reflected in the Northwest Forest Plan (Thomas et al. 2006). However, political and scientific discussions about the ability of forest management to meet divergent societal needs continue at global and local scales (Schmithuesen 2007, Ammer and Puettmann 2009, Franklin and Johnson 2012). Meanwhile, constraints on federal forest management lead to an emphasis on thinning plantations established 40 to 70 years ago to meet both economically- and ecologically-oriented objectives. Economic goals emphasized supporting the local economy while ecological considerations were related to accelerating the development of late-successional habitat (Cissel et al. 2006). Our studies using the Density Management Study on BLM land highlighted vegetation responses to a range of such thinning treatments including various intensities intermixed with gaps and leave islands, including growth and mortality of overstory trees (Dodson et al. 2012, Dodson et al. 2013), understory vegetation (Fahey and Puettmann 2007, Fahey and Puettmann 2008, Ares et al. 2009, Ares et al. 2010, Burton et al. 2013), and natural regeneration (Kuehne and Puettmann 2007, Dodson et al. in press). Other related studies by our group, and by our colleagues conducted on Forest Service and Oregon Department of Forestry land have complemented this information (e.g., Davis and Puettmann 2009, Yegorova et al. 2013).

While thinning is now, by far, the dominant forest management activity on federal land in the Pacific Northwest, it has become clear that a long-term federal forest management vision and strategies have to extend beyond thinning (Vilsack 2009, USDA 2012). These strategies rely heavily on variable retention harvests, not only within the context of thinning, but also – and controversially - with a renewed emphasis on forest regeneration (Franklin and Johnson 2012; see also the recent proposal by Senator Wyden). The large-scale management experiments, such as the Density Management Study, are perfectly suited to provide valuable contributions to the discussion of variable retention harvesting. Our studies have already surpassed the traditional emphasis of thinning (i.e., focused

solely on the response of residual trees) and investigated numerous aspects of ecosystem responses associated with varying the intensity and pattern of harvesting. The proposed research utilizes our detailed information about overstory tree growth and mortality, and the development of understory vegetation. These studies will provide crucial information to better understand the implications of partial harvesting operations, as the BLM plans to rely on such techniques to achieve a wide range of objectives more heavily in the future.

In addition to the “standard” political and ecological challenges, politicians, scientists and the general public are becoming more concerned about the implication of climate change for forests. Little is known about how projected climate changes will affect our ability to manage forests to provide the variety of desired ecosystem goods and services, such as timber, wildlife habitat, and cultural and spiritual values, that society demands. Although studies have investigated the climate conditions under which selected species (mostly tree species) can grow (Rehfeld et al. 2006), very little is known about how climate change interacts with forest management to affect the different vegetation components and associated interactions (Puettmann 2011). Earlier studies suggest that thinning contributes to the maintenance of heat- and drought tolerant species (Neill and Puettmann 2013), thus effects of future climate changes may depend strongly on forest management. The proposed study would investigate this question, specifically, first in terms of effects of density management on tree growth and mortality as it is impacted by climate change. Then, with respect to how climate change and the resulting changes in overstory development affects understory plant communities. Both aspects are necessary to assess the interactive effects of climate change and partial harvests on understory vegetation and associated ecosystem services.

Utilizing a trait-based approach, we propose to assess effects of interactions between overstory density, disturbance and future climate change conditions on:

- 1) Native early-seral plant communities, which are considered rare under current forest management scenarios (Franklin and Johnson 2012) and have the potential for valuable structure contributions and wildlife habitat in a managed landscape (Swanson et al. 2011, Donato et al. 2012, Campbell and Donato, in press).
- 2) Species with low mobility, e.g., with short-distance seed dispersal or species with clonal reproduction. These species (which include some tree species) are most likely to be negatively impacted by a changing climate (Aitken et al. 2008).
- 3) Special status species, e.g., determined by the Oregon Natural Heritage Information Center. Selection of these species will be done in collaboration with BLM personal.
- 4) Cultural resources, specifically vegetation traditionally collected used by Native Americans. Selection of these species will be done in cooperation with BLM personal and local tribes.

The trait-based approach is a very sensitive indicator of changes in environmental conditions (changes both due to climate change and management treatments) because it links the abundance of plant species to their physical characteristics (Campbell and Donato, in press). To distinguish various aspects of changes in the plant community, we separate “response” traits from “effect” traits (Puettmann 2011). The response of a species to their environment is a function of its so-called “response traits” (Table 1). For example, specific leaf area is related to growth and survival, while leaf size is related to energy balance, seed size and seed mass are related to regeneration strategy (e.g., seedbanking, dispersal distance) while whole-plant traits (e.g., Raunkiaer plant life-form) accounts for overwintering location of primary meristems, tolerance of cold temperatures and disturbance. Thus, these traits can provide the basis for predicting future vegetation patterns due to climate change, disturbance and overstory density. At the same time, the “effect traits” of species indicate which ecosystem functions - and associated ecosystem goods and services - are supported by a species. For example, specific leaf area (of tree species) has been related to the production of a) Lepidoptera, a major food source for songbirds in the Pacific Northwest and b) small mammals, a

major food source for predators, such as the spotted owl (Campbell and Donato, in press). For example, Neill and Puettmann (2013) provide an example of how the response and effect traits of understory plants in the Density Management Study can be used to predict the development of food sources for wildlife under climate change and as a function of density management regimes.

Studies of tree species response to climate change can assume a direct linear response of the trees to the changing climate conditions. In contrast, overstory composition and structure moderates environmental conditions for understory vegetation. Therefore, we hypothesize that reductions in overstory density provide opportunities for early-seral communities to adapt to climate change, but limit opportunities for late-seral species due to limited plant and species turnover. This study will permit us to identify 'at-risk' late-seral species with low mobility and species of cultural value, providing critical information for designing management strategies that facilitate migration of such species, and future studies examining effects of assisted migration.

2. Technical Approach:

Data collection:

To develop the procedure and stay within the budget constraints, we will take advantage of the Density Management Study. This study includes three operational-scale thinning treatments and an untreated control replicated seven times across much of the spatial distribution of the BLM holdings in Oregon. It has a documented history of treatments that include a variety of thinning densities, gaps, and leave islands. Also, data about abundance of vegetation is already on file. Thus, field sampling is limited to develop species-trait relationships. If additional funding is available, we plan to expand the geographical extent of the study through field sampling of additional stands that fit the study criteria.

Methods: We will use data sets on understory species abundance, overstory structure and down wood from the Density Management Study. We will compile a list of priority species comprising at least 80% of the relative abundance at all sites (8-37 species at each site). Field sampling will be used to supplement and compile data on response traits for those species (Table 1) following standardized protocols (Weiher et al. 1999, Cornelissen et al. 2003).

Table 1. Traits determining species responses to climate, overstory density (BA), competition and disturbance.

Trait	Hypothesized Response	Mechanism(s)
Whole plant traits		
Growth form	Climate, BA, competition, disturbance	Allocation
Life form	Climate, BA, competition, disturbance	Overwintering, placement of buds
Plant height	Climate, BA, disturbance, competition	Height-structured competition
Clonality	Climate, BA, competition, disturbance	Below-ground competition, persistence
Leaf traits		
Specific leaf area	Climate, BA, competition	Growth rate
Leaf size	Climate, BA, competition	Energy balance
Dry matter content	Climate, BA	Drought tolerance
Leaf phenology	Climate, BA, competition	Stress tolerance
Stem and below-ground traits		
Stem specific density	Climate, disturbance	Support, defense
Specific root length	Climate, BA, competition	Growth rate
Diameter of fine root	Climate, BA	Growth rate
Rooting depth distribution	Climate, BA, competition, disturbance	Resource acquisition, drought tolerance
95% Rooting depth	Climate, BA, competition	Resource acquisition,

Trait	Hypothesized Response	Mechanism(s)
Regenerative traits		drought tolerance
Dispersal mode	Disturbance	Colonization rate
Seed shape and size	Disturbance	Seed banking, colonization rate
Seed mass	BA, disturbance, competition	Seed banking, colonization rate
Clonality	Climate, BA, competition, disturbance	Persistence, colonization rate
Resprouting capacity	BA, disturbance	Persistence

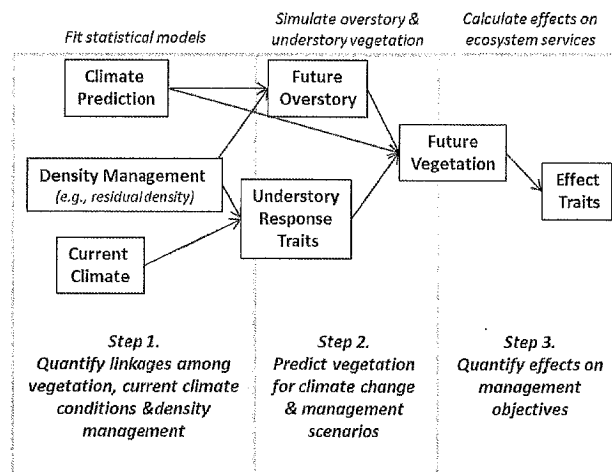


Figure 1. Schematic workflow delineating linkages among datasets, analytical procedures, and proposed research objectives.

Step 1 Examine Relationships of Plant Communities with Climate and Forest Structure: We will use generalized linear mixed models to identify response traits associated with overstory density, down wood and climate variables (Jamil et al. 2012). This analysis is similar to fourth corner analysis, but more powerful for comparisons across sites because it permits random effects associated with differences among sites, hierarchical data structure (different variables measured at different scales) and residual spatial covariance (Littell et al. 1996).

Step 2 Predicting Climate Change Conditions and Projecting Effects of Climate Change

2a: After consultations with climate modelers and BLM personnel, we will select the climate change model and emission scenarios for 2020, 2050 and 2080 of most interest in western Oregon (<http://regclim.coas.oregonstate.edu/gccv/>; Mote and Salathé 2010). These discussions will also address findings that climate change will not express itself homogenous within smaller landscapes or terrain (Daly et al. 2010). For example, temperature changes are more likely to be evident on exposed hillsides and ridgetops versus sheltered valley bottoms, which act as cold air pools and are not represented well in global circulation models (Daly et al. 2010).

2b: For understory communities, we will develop general additive models relating community weighted mean (CWM) traits identified as significant response traits to climate variables and structural characteristics manipulated during density management (i.e., overstory basal area and down wood). Using the parameters estimated by these models, we will predict CWM traits associated with future scenarios using climate projections and model output on forest structure variables from Step 1a (i.e., overstory basal area and down wood). CWM trait values, \bar{T} , for each sampling unit, k , are calculated as:

$$\bar{T}_{jk} = \sum_{i=1}^S p_{ik} \bar{T}_{ij},$$

where p is the proportional abundance of species i in sampling unit k , and \bar{T}_i is the average trait value observed for trait j sampling unit k (Shipley 2009).

Step 3. *Examine Effects on Subsets of Interest: Early-seral species, species with low mobility and culturally important species*

Using the community assembly by trait-based selection (CATS) maxEnt model (Shipley 2009), we will predict understory species responses to climate and management from CWM traits predicted in Step 2 (Frenette-Dussault et al. 2013). We will then quantify the relative roles of direct (climate variables) and indirect effects (structural attributes) for different management scenarios using multi-group structural equation modeling analysis (Grace 2006, Burton et al. 2011, Burton et al. 2013).

Deliverables will include:

1. Information about predicted responses to climate change of:
 - a. vegetation with cultural values
 - b. native early-seral plant communities
 - c. vegetation with high and low mobility
2. Details of how density management practices influence responses
3. Suggestions for other silvicultural practices to influence responses
4. Presentations at meetings, workshops and scientific conferences
5. Publication in peer-reviewed journals

Timeline:

1. Start work: May 2015
2. Interim Report # 1: completed October 2015
3. Annual Report # 1: Assessment of intraspecific trait variability, August 30 2016
4. Assessment of multivariate trait variability, emergent trait groupings, December 2016
5. Annual Report # 2: Analytical model (August 30, 2017)
6. Project effects of climate change scenarios on understory (Step 2b): March 2018
7. Final report (Annual report #3): Analyze effects on ecosystem services i.e., cultural resources, early-seral habitat and species with low mobility, develop silvicultural recommendations for facilitated migration, etc. (Step 3). August 30 2018

We will:

1. Collect and analyze the relevant data using appropriate methods to evaluate potential interactions between forest management, climate change, and understory species response.
2. Provide suggestions for alternative approaches to forest management practices that would promote adaptive responses to climate change that would maintain key ecosystem functions provided by understory plant species.
3. Prepare reports and peer-reviewed journal articles and provide electronic copies of final reports and published journal articles to BLM.
4. Follow management requirements for access to study sites located behind locked gates.

The BLM will agree to:

1. Provide access to study sites located behind locked gates.
2. Provide a list of sensitive species to include in the study, if present on the study sites.
3. Review draft documents within one month of receipt and provide comments.

Both parties agree to:

1. Coordinate access to the study sites during sensitive periods such as in the event of a wildfire, following storms that may damage the study sites or access routes, or during hunting seasons.
2. Keep each other apprised of access issues, incidents of vandalism to the gates or sites, or other factors affecting study site conditions.
3. Jointly develop alternative approaches in the event of a wildfire or other event that adversely affects the study.

3. Qualifications, Experience, and Past Performance:

The research will be carried out by Research Assistant Professor Julia Burton (6 months fiscal year 1 (ending July 31, 2017), 6 months in year 2 (August 1, 2017-July 31, 2018), and collaborator Klaus Puettmann, Edmond Hayes Professor of Silvicultural Alternatives at Oregon State University (OSU). Dr. Burton and Dr. Puettmann will collaborate to develop deliverables and associated publications, presentations and reports. Dr. Burton oversaw and supervised all data collection activities and completed analyses as a postdoctoral research associate at OSU before moving to USU in July 2016.

PI, Dr. Burton is a Research Assistant Professor, in the Wildland Resources Department and Quinney College of Natural Resources at Utah State University (USU). She is also affiliated with the USU Ecology Center. With 5.5 years of post-doctoral research experience working with Dr. Puettmann, and educational backgrounds in forestry (BS 2002), silviculture and ecology (MS 2004, PhD 2011), Dr. Burton brings subject area knowledge, regional expertise, and field, lab and analytical skills required to complete the proposed research. Dr. Puettmann has over 25 years of experience directing research in silviculture and forest ecology, and regional expertise. Recent work emphasizes the role of silviculture in managing forest adaptability to climate change - a major thrust of this project.

4. Estimated Budget:

Please complete a Budget Detail form.