

NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN
Final Version

I. INTRODUCTION

A. Background

A memorandum of understanding (MOU), signed by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) and Forest Service (FS), and the U.S. Department of Interior's Bureau of Land Management (BLM) on September 19, 2014, established a Federal Interagency Workgroup (Workgroup) "responsible for planning and coordinating the implementation of ecological site, policy, science, and technologies cooperatively," as identified in the Rangelands Interagency Ecological Site Manual (Interagency Manual) and the Interagency Ecological Site Handbook for Rangelands (Interagency Handbook).

This National Interagency Rangeland Ecological Site Implementation Plan (Implementation Plan) provides guidance and sets achievable goals as the agencies work cooperatively to define ecological sites (ES) and develop ecological site descriptions (ESD) for U.S. rangelands.

The Workgroup recognizes that ES concepts are being evaluated and expanded beyond rangelands to include other land types. These efforts are not addressed in the current Interagency Manual and Handbook, and therefore, are outside the 2014 MOU, the Workgroup, or the Implementation Plan. The Workgroup will evaluate these emerging efforts for relevance to the existing interagency ESD policy.

B. Interagency Agreements, Manual and Handbook

The Implementation Plan is developed by the Workgroup according to the following foundational documents.

- The 2005 MOU among the BLM, FS, and NRCS that established the direction on collaboration of rangeland ecological sites.
- The 2010 Rangeland Interagency Ecological Site Manual (RIESM) by the BLM, FS, and NRCS.
- The 2013 Interagency Ecological Site Handbook for Rangelands (IESHR) by the BLM, FS, and NRCS.
- The 2014 MOU among the BLM, FS, and NRCS that established the Workgroup and its responsibilities for developing and carrying out the Implementation Plan.

These documents--

- Develop a standardized method for defining, delineating, and describing rangeland ecological sites through interagency working groups.
- Establish agency roles and responsibilities for interagency coordination and cooperation in development and use of rangeland ES classifications and descriptions.
- Adopt a common set of ES classifications and descriptions as used in any landscape classification system by the BLM, FS, or NCRS for the inventory, monitoring, and assessment of rangelands.
- Provide guidance and minimum requirements for ESD development.
- Establish the Workgroup for developing the Implementation Plan and coordinating the implementation of ecological site, policy, science, and technologies.

NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN
Final Version

The Interagency Handbook provides the framework to implement the policy outlined in the Interagency Manual. The Interagency Handbook is specific to rangeland ecosystems and pertains only to ESs on rangelands. Implementation of this policy will complement existing agency (BLM, FS, and NRCS) protocols for classifying, describing, mapping, and the inventory of ecosystems characterized by soil, vegetation, geomorphology, etc.

II. POLICIES AND RESPONSIBILITIES

A. National Interagency Workgroup

The Workgroup is comprised of personnel from the BLM, FS, and NRCS to provide leadership in implementation of the MOUs, the Interagency Manual, and the Interagency Handbook. The Workgroup develops and recommends policy, procedures, and data management for the development and use of ESDs.

B. Regional or State Interdisciplinary Working Group

Regional or State-level interdisciplinary all lands working groups will be established under the direction of the NRCS State Conservationist, the FS Regional Forester, the BLM State Director, and other Entities to discuss ES activities, consider the priorities of all agencies, and recommend actions when appropriate due to ownership. Their responsibility includes coordination and oversight for the development and maintenance of ESDs to ensure that they meet unique agency business needs. The working groups also incorporate, into interagency local work plans, the priorities developed by the Workgroup who provides guidance and support in identifying local resource interpretations specific to agency business needs.

When any ESD work encompasses BLM or FS lands, the respective land management agency must be involved through all phases of the ES development, classification, and description to ensure that relevant business needs are met for the agency.

C. Local Interagency Working Group

Local-level interdisciplinary working groups will be established to consolidate ESD needs into interagency local work plans. The local work plans will be developed by Major Land Resource Area (MLRA) and define more specifically the interdisciplinary team membership and methods for the identification, inventory, analysis, documentation, and delineation of ESs. They will provide a crosswalk to other classification and mapping system hierarchies used by the agencies. The local work plans will include a review of ESDs to ensure they meet land and resource interpretation needs for each agency.

D. Current Interagency Policy

The current interagency ESD policy provides direction for developing ESDs in rangelands. Thus, soil or ecological unit inventories on lands administered by the FS and BLM, and those conducted by the NRCS on State, private, and other lands, should include classification and descriptions of rangeland ESs. Rangeland is defined as land on which the indigenous vegetation is predominantly grasses, grass-like plants, forbs, or shrubs, and is managed as a natural ecosystem. Introduced plants in

NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN

Final Version

rangeland ecosystems are managed similarly. Rangelands include natural grasslands, shrub lands, savannas, many deserts, tundra, alpine communities, marshes, and meadows (Society for Range Management 1998).

The processes and interagency policy for the development of ESDs in forests, wetlands, and riparian areas have not been established. The Workgroup will convene an interagency technical team to review methods being employed in the development of ESDs outside of rangelands, and this team will provide recommendations to the Workgroup regarding the prospect of adopting or revising these methods for interagency applications. Furthermore, the technical team will evaluate the feasibility, costs, and benefits of an interagency initiative to develop all-land ESDs and report findings to the Workgroup. Based on its findings, the Workgroup will develop recommendations for senior management review and subsequent direction regarding the need and means of revising the existing agency policy and technical guidance to include all lands' ESDs.

III. PROCEDURES

This section sets forth operating protocols to ensure that all affected cooperators are involved in the development of ESDs and that management of ESD information meets the needs of a variety of users. ES classification, development, and description are shared efforts between the agencies involved where ESDs bridge landscapes under multiple agencies' responsibilities. Local ESD work plans will include all agencies that have a stake in the ESDs.

For the purpose of maintaining regular information flow to regional, forest, State, thematic, local, and extended interagency workgroup membership, each agency must identify a single point of contact with ESD development responsibilities.

A. Review Process

ES development, classification, and description will be reviewed by the local and the regional work groups as identified in the Interagency Manual and Handbook. Where ESs are developed on or will affect public lands, multiple signatures are required and should be consistent in administrative levels between the agencies when certified (Interagency Handbook, page 31). For example, for technical reviews, signatures should include regional soil survey director or regional ecologists by FS and State technical specialists by BLM. For ES certification, the FS Regional Forester (or delegate), the BLM State Director (or delegate), or the NRCS State Conservationist should be the signatory, as appropriate. Ecological Site differentiation and procedures for geospatial and interagency crosswalk will follow the relevant sections of the Interagency Handbook.

B. Resolution of Disagreements

When disagreements arise between agencies and cannot be resolved satisfactorily at the local or regional workgroup levels, position papers should be prepared and presented to the Workgroup for review. The Workgroup will recommend a solution within 90 days of receipt. If the Workgroup cannot reach a resolution, the issue is to be elevated to the appropriate senior leadership of the BLM, FS and NRCS with a decision deadline of 120 days.

NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN
Final Version

IV. PARTNERSHIPS

A. Internal

Senior Leadership Briefings

Annually, the Director (or Deputy Director) of BLM and the Chiefs (or Deputy Chiefs) of FS and NCRS, or their appointed representatives, will be briefed by the Workgroup. The briefing will include—

- Information on issues addressed by the Workgroup.
- Roadblocks to successful implementation of policy.
- Science and technologies concerning ESD development.
- Success stories.
- Recommendations for further action or consideration.

B. Other Entities

Initiation of Communications with Other Entities

The Workgroup initiates communications with other entities regarding interagency efforts on ESDs to facilitate and improve the development and use of ESDs. To date, entities identified include, but are not limited to: U.S. Fish and Wildlife Service, National Park Service, NatureServe, The Nature Conservancy, Landscape Conservation Cooperatives, LANDFIRE, the Vegetation Subcommittee of the Federal Geographic Data Committee (FGDC), professional societies, and State agencies. Within six (6) months of completion of the initial Implementation Plan, the Workgroup will designate members to serve as points of contact to other entities who will provide updates on activities and items of interest occurring at the other agencies. The updates should be provided every six (6) months at a minimum during a Workgroup's regular meeting. Potential partners should be invited to interagency meetings/training at national and regional levels whenever appropriate.

V. COMMUNICATIONS AND REGULAR UPDATES ON IMPLEMENTATION

The Workgroup will hold monthly meetings to track implementation goals and action items and address any emerging issues.

A. Annual Report

The Workgroup will produce an annual report on outreach, policy, training, presentations, publications, and success stories to be distributed electronically to regional and local teams, potential partners, and senior leadership during the annual briefing. One Workgroup member will be designated in August of each year to compile the input from each agency, shared Web sites, and other resources. The draft report will be reviewed by all members of the Workgroup prior to the release of the final version in December of each year.

B. Communications

The Workgroup will coordinate communications to the field through designated regional coordinators or teams who will assist in coordination with designated local coordinators/ teams. Regional coordinators/teams should will be designated by each agency within six (6) months of completion of

NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN Final Version

the Implementation Plan and will serve as the primary points of contact to the Workgroup. An organizational chart of all points of contact will be developed to facilitate the process of ESD development.

The Workgroup will create and maintain an online library of communications, agreements, manuals, handbooks, references, and PowerPoint presentations, through a Web site that is accessible to the regional and local teams. A designated Workgroup member will regularly update the library as new items are submitted.

Liaison with Universities

Within three (3) years of the completion of the Implementation Plan, the Workgroup shall assess the feasibility of appointing liaisons to interface with university programs. The Workgroup should—

- Choose programs willing to pilot the liaison program to implement ESDs and provide research and education/training on emerging issues.
- Consider, for the pilot effort, universities that already have U.S. Forest Service Research & Development, U.S. Geological Survey, or USDA Agricultural Research Service staff co-located onsite.
- Develop specific roles and responsibilities of the liaison in conjunction with the chosen university programs.
- Meet with university faculty to determine the processes available to incorporate ESDs into a formal curriculum.
- Work with liaisons to consider the feasibility of and approach to developing instructional templates/lesson plans/tests for university curriculums (e.g., joint contract with curriculum development consulting group, small working group).

C. Training

Types of Trainings

Training on development and use of ESDs should be open and available to interested personnel from the three agencies. The agencies should adopt a joint approach to training to provide consistency in development, interpretations, and use of ESDs as defined by the requirements of the Interagency Manual and Handbook. The types and specific topics of training include—

- ESD basics for people on the frontline to discuss topics such as procedures, use of new technology, reporting results, and developing work plans (within first 6 months of plan implementation).
- Procedures and decisions training for managers (within the first year of plan implementation).
- Technical implications and applications of the ESD policy for specialists (as needed).
- Using databases and tools in development and application of ESDs (as needed).
- Workshops for interagency regional teams (working with regional staff to develop appropriate schedules, agendas, and topics).
- Workshops for TEUI to provide basic training of NRCS personnel who will work on FS lands where TEUI is the primary protocol in ecological classification, inventory, and mapping.

NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN
Final Version

VI. WORKGROUP ACTION ITEMS (As clarified 5/4/16)

1. The Workgroup will convene an Interagency Technical Team (ITT) to review methods being employed in the development of ESDs outside of rangelands and to provide recommendations for the prospect of adopting or revising these methods for interagency applications. The ITT will evaluate the costs, benefits, and feasibility of an interagency all-land ESD development and inventory initiative. Based on the findings of the ITT, the Workgroup will develop recommendations for senior management review and subsequent direction regarding the need and means of revising existing interagency policy and technical guidance to include forest, wetland, and riparian ESDs.
 - a. Composition: Dave, Terrell, Alix, and an appropriate BLM representative will decide who will be on the team by November 1, 2018.
 - i. Decide if other agencies should be involved.
 - ii. Make sure there is the necessary diversity of skills on the ITT.
 - b. The ITT will convene by November 15, 2018
 - c. Initial results as specified above no later than June 1, 2019.
 - d. The ITT may be converted to a standing committee if necessary.
2. Dave, Terrell, Alix, and an appropriate BLM representative will form an Interagency Science Team (IST) by November 1, 2018, with recommendations from the technical team, to address data management issues (e.g., methods, databases). The agencies should identify database management and stewardship specialists to work on agency needs and rules in development of tools needed. The IST will meet by November 15, 2018 and will provide initial recommendations by January 15, 2019. The following were recommended for consideration:
 - i. FS: Martin F., Linda S., Rob V., Dave C.
 - ii. NRCS: Curt T.,
 - iii. BLM: To be determined Ron McCormick
3. Dave, Terrell, Alix, and an appropriate BLM representative will form an Interagency Mapping Team (IMT) by November 1, 2018, to evaluate common platform needs to enable geospatial crosswalk by adjustments in NRCS LRR's, MLRA's and/or FS ecoregions and other institutional geospatial databases. The team will review incongruent boundaries at various levels of each agency's hierarchy and provide recommendations for reconciling these differences. The IMT will meet by November 15, and, will provide initial recommendations by January 15, 2019.
4. The Workgroup will develop an organizational chart for all teams involved in the interagency ESD efforts. A draft will be sent to workgroup members by June 15. NRCS will take the lead. This chart will include the regional coordinators, teams, or both designated by each agency as the primary points of contact to the Workgroup. The Workgroup will coordinate communications to the field through these designated regional coordinators and/or teams, who will help with establishment of local coordinators and/or teams.
5. The Workgroup will hold quarterly teleconferences, starting September 1, to track progresses made in terms of implementation of the MOUs, the Interagency Manual, and the Interagency

NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN
Final Version

Handbook. The information from this record keeping will be shared with all agencies. Larry L. will organize the first teleconference. Each of FS, SSD, ESD, and BLM will be responsible for a quarter in this order.

6. The Workgroup will create and maintain an online library to archive manuals, handbooks, references, and PowerPoint presentations, via a website that is accessible to the regional and local teams. Curtis M. will lead and will notify the Workgroup members by May 20. A designated Workgroup member (Curtis M.) will regularly make updates to the library as needed.
7. An annual briefing by the Workgroup members will be provided to senior leaderships of the agencies, including the Director (or Deputy Director) and the Chiefs (or Deputy Chiefs) or their appointed representatives. The briefing will include information on issues addressed by the Workgroup, roadblocks to successful implantation of policy, science and technologies concerning ESD development, success stories, and recommendations for further action or consideration.
8. The Workgroup will produce an annual report on outreach, policy, training, presentations, publications, and success stories to be distributed electronically to regional and local teams, potential partners, and Senior Leadership during the annual briefing. One Workgroup member should be designated in September of each year to compile the information from input of each agency, the shared Web sites, and other resources. The draft report will be reviewed by all members of the Workgroup. The final version should be completed by December of each year. This will be an agenda item at the September teleconference of the Workgroup.
9. The Workgroup will initiate communications with other entities in terms of the interagency efforts on ESD. Regular communication between the Workgroup and the other entities should enhance each's ability to address issues regarding ecological site descriptions and their uses. To date, entities that have been identified include but are not limited to: U.S. Fish and Wildlife Service, National Park Service, NatureServe, The Nature Conservancy, Landscape Conservation Cooperatives, professional societies, and state agencies. Within six months of completion of the implementation plan, the Workgroup will designate points of contact who will provide updates on activities and items of interest occurring at the other agencies. This will be an agenda item at the September teleconference of the Workgroup.
10. The Workgroup will facilitate training on the interagency ESD concepts and methodology to ensure that the necessary training is available and the funding for training is committed by each agency.
 - a. Larry and Ron return comments to Joel by July 15 regarding national ecological site team training plan.
 - b. Joel works with National Rangeland Management Specialist to set up a teleconference between the NEST training team and other agencies by September 30. The eventual goal is an interagency ES training curriculum.
11. The Workgroup will review the ESD projects for ways to improve procedures and training. Projects will include those accomplished under interagency collaboration (e.g., on USFS lands or

NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN
Final Version

on BLM lands) to examine different collection methods and data management strategies across agencies, assess ease of access to data, and determine time needed to make data available to each agency. These reviews will be mined for ways to improve training. As part of the training, reviews of successful (and not so successful) cases of ESD development will be presented to provide lessons learned about what worked well and what did not work in the past.

REFERENCES

USDI Bureau of Land Management. 1996. Sampling vegetation attributes. Interagency technical reference. BLM/RS/ST-96/002+1730

Winthers, E., D. Fallon, J. Haglund, T. DeMeo, G. Nowacki, D. Tart, M. Ferwerda, G. Robertson, A. Gallegos, A. Rorick, D. T. Cleland, W. Robbie. 2005. Terrestrial Ecological Unit Inventory technical guide. Washington, DC: U.S. Department of Agriculture, Forest Service, Washington Office, Ecosystem Management Coordination Staff. 245 p.

**NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN
Final Version**

Appendix: CONTACT INFORMATION

A. The national team (Workgroup??)

NRCS	BLM	USFS
Gene Fults Rangeland Management Specialist, WNTSC gene.fults@por.usda.gov 503-273-2430	Ron McCormick Ecologist Washington, D.C. rmccormi@blm.gov 202-912-7135	Dave Cleland Vegetation Ecologist Washington, D.C. dcleland@fs.fed.us 715-360-0612
Joel Brown National Ecological Site Team Leader Las Cruces, NM joel.brown@lin.usda.gov 575-646-2854	Sherm Karl Rangeland Monitoring Specialist Lakewood, CO mkarl@blm.gov 303-236-0166	Larry Laing National Soils Program Leader Washington, DC larrylaing@fs.fed.us 202-329-8716
Curtis Talbot Rangeland Management Specialist, ES Team Lincoln, NM curtis.talbot@lin.usda.gov 402-437-4176	Tim Bottomley Forester Lakewood, CO tbottoml@blm.gov 303-236-0681	Harbin Li Vegetation Ecologist Washington, D.C. hli@fs.fed.us 202-205-1474
Johanna Pate Leader, Grazing Lands Team Fort Worth, TX Johanna.Pate@ftw.usda.gov 817-509-3227	Steve Smith Rangeland/Riparian Specialist Prineville, OR sjsmith@blm.gov 541-416-6703	
Lori Metz CEAP Rangeland Management Specialist Temple, TX lmetz@brc.tamus.edu 254-770-6574		

B. NRCS Regional Contact Information

SSR 6 & 12 List of States covered by region 6 and 12	Nels Barrett Regional ES Specialist SSR 6 & 12 - Amherst, MA nels.barrett@ma.usda.gov 413-253-4353
SSR 10 & 11 List of States covered by region 10 and 11	Stacey Clark Regional ES Specialist SSR 10 & 11 - St. Paul, MN stacey.clark@mn.usda.gov 651-602-7892

**NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN
Final Version**

<p>SSR 3 & 7</p> <p>List of States covered by region 3 and 7</p>	<p>Michelle Clendenin Regional ES Specialist / Biologist SSR 3 & 7 michelle.clendenin@nc.usda.gov 919-873-2125</p>
<p>SSR 4 & 8</p> <p>List of States covered by region 4 and 8</p>	<p>Vacant Regional ES Specialist SSR 4 & 8 - Phoenix, AZ</p>
<p>SSR 5 & 9</p> <p>List of States covered by region 5 and 9</p>	<p>Scott Woodall Regional ES Specialist SSR 5 & 9 - 230 N. 1st Ave., Ste 509 Phoenix, AZ 85003 602-280-8789 Scott.Woodall@az.usda.gov</p>
<p>SSR 1 & 2</p> <p>List of States covered by region 1 and 2</p>	<p>Kendra Moseley Urbanik Regional ES Specialist SSR 1 & 2 – Davis, CA 430 G St, #4164 Davis, CA 95616-4164 kendra.moseley@ca.usda.gov 530-792-5697</p>

C. USFS Regional Contact Information

Region	Soil Scientist	Vegetation Ecologist
<p>Northern Region (Region 1)</p> <p>Montana, North Dakota Also: northern Idaho, northwestern South Dakota</p>	<p>Vince Archer Regional Soil Scientist R1 - Missoula, MT varcher@fs.fed.us 406-329-3300</p>	<p>Mary Manning Regional Vegetation Ecologist R1 - Missoula, MT mmanning@fs.fed.us 406-329-3411</p>
<p>Rocky Mountain Region (Region 2)</p> <p>Colorado, Kansas, Nebraska, Also: most of South Dakota, middle and eastern Wyoming</p>	<p>Stanley Mason Regional Soil Scientist R2 - Lakewood, CO sdmason@fs.fed.us 303-275-5583</p>	<p>Donna Shorrock Regional Vegetation Ecologist R2 - Lakewood, CO dshorrock@fs.fed.us 303-275-5077</p>
<p>Southwestern Region (Region 3)</p> <p>New Mexico, Arizona</p>	<p>Wayne Robbie Regional Soil Scientist R3 - Albuquerque, NM wrobbie@fs.fed.us 505-842-3253</p>	<p>Jack Triepke Regional Vegetation Ecologist R3 - Albuquerque, NM jtriepke@fs.fed.us 505-842-3146</p>
<p>Intermountain Region (Region 4)</p> <p>Utah, Nevada Also: southern Idaho, western Wyoming</p>	<p>Jeff Bruggink Regional Soil Scientist R4 - Ogden, UT jbruggink@fs.fed.us 801-625-5357</p>	<p>Dave Tart Regional Vegetation Ecologist R4 - Ogden, UT dtart@fs.fed.us 801-625-5817</p>

**NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN
Final Version**

Region	Soil Scientist	Vegetation Ecologist
Pacific Southwest Region (Region 5) California, Hawaii, Pacific Islands	Jeff TenPas Regional Soil Scientist R5 - Vallejo, CA itenpas@fs.fed.us 707-562-8955	Hugh Safford Regional Vegetation Ecologist R5 - Vallejo, CA hughsafford@fs.fed.us 707-562-8934
Pacific Northwest Region (Region 6) Oregon, Washington	Cara Farr Regional Soil Scientist R6 - Portland, OR clfarr@fs.fed.us 503-808-2937	Tom DeMeo Regional Vegetation Ecologist R6 - Portland, OR tdemeo@fs.fed.us 503-808-2963
Southern Regional (Region 8) Alabama, Arkansas, Georgia, Florida, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, Puerto Rico	Wallace Dillon Regional Soil Scientist R8 – Atlanta, GA wdillon@fs.fed.us 404-347-3849	Joanne Baggs Regional Vegetation Ecologist R8 - Atlanta, GA jbaggs@fs.fed.us 404-347-3849
Eastern Region (Region 9) Connecticut, Delaware, Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, Pennsylvania, Ohio, Rhode Island, Vermont, West Virginia, Wisconsin	Greg Nowacki Acting Soil Program Leader R9 - Milwaukee, WI gnowacki@fs.fed.us 414-297-1977	Greg Nowacki Regional Vegetation Ecologist R9 - Milwaukee, WI gnowacki@fs.fed.us 414-297-1977
Alaska Region (Region 10) Alaska	John Lane Regional Watershed & Air Program Leader R10 - Juneau, AK jrlane@fs.fed.us 907-586-8978	Barb Schrader Regional Vegetation Ecologist R10 - Juneau, AK bschrader@fs.fed.us 907-586-7863

D. BLM Regional Contact Information

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**NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN
Final Version**

E. NRCS State Contact Information

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Greg J. Schmidt ES Spec. SSR 12 - Grand Rapids, MI greg.schmidt@mi.usda.gov 517-285-7911	Doug Wallace Ecologist (ACES) SSR 6 - Columbia, MO doug.wallace@mo.usda.gov 573-876-9379	Jason Teets ES Spec. SSR 6 - Morgantown, WV jason.teets@wv.usda.gov 304-457-4131
Yuri Plowden ES Spec./ Soil Scientist SSR 6 - Mill Hall, PA yuri.plowden@pa.usda.gov 570-726-3196	Belinda Esham ES Spec. SSR 6 - Clinton, TN belinda.esham@tn.usda.gov 865-494-2343, x110	

NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN
Final Version

Appendix: DATA MANAGEMENT

A. Procedures for ESD Data Storage and Retrieval

The Ecological Site Information System (ESIS) is a database for managing ESD data and information. ESIS will be managed, modified, and updated as needed in order to provide primary functional capacity for the BLM, FS, and NCRS. Access and use will be managed for all other entities, including the public at large. At a minimum, this geo-access database should meet the primary ESD data storage and retrieval needs of the three agencies. To achieve this, the Workgroup will form an interagency science team, with recommendations from the technical team, to address data management issues (e.g., methods, databases); each agency will identify a database management specialist to serve on this multiagency ESD data team. Agency needs and rules will be considered in the development and launch of updated versions of ESIS. Future development plans include a database system available to all users.

B. Description of Data Management Tools Available Across Agencies

NRCS

NRCS currently houses ESIS, which is the repository for ESDs. Approved ESDs are available to the public for viewing. There is also a limited capacity for the printing of customized reports. Draft ESDs reside on a separate server and require permission to view and edit the data. While the great majority of ESIS users are from NRCS, there is a small number of non-NRCS users who currently have access permission.

ESIS also houses legacy point data, labeled as Ecological Site Inventory (ESI) for rangelands and forests, stored as two separate datasets. Standard reports are available to the public for both datasets. Permission is required to view and edit the raw data, as well as to produce custom reports. The ability to certify ESDs will be added to ESIS for FS and BLM, and NRCS' Science & Technology Deputy Area. The local and regional workgroup will identify individuals requiring access.

ESI data will migrate to the National Soil Information System (NASIS). Data entry and editing will be conducted through NASIS after the data migration. Data query and reporting tools will be developed in the future. The general public does not have access to NASIS; therefore, a snapshot of the data will be maintained in ESIS, but no editing of that data will be allowed. The snapshot will be maintained until other alternatives for public viewing and use of the ESI data are identified and developed. ESIS is currently in migration to the Ecosystem Dynamics Interpretive Tool (EDIT) data system.

FS

FS corporate database information is housed in the Natural Resource Manager (NRM) Natural Resource Information System (NRIS). There are two distinct applications: Rangeland Inventory and Monitoring, and Inventory and Mapping. NRM's Rangeland Inventory and Monitoring application is designed to support vegetation sampling using all currently accepted protocols (USDI BLM 1996). The Inventory and Mapping application is designed to support the Terrestrial Ecological Unit Inventory (TEUI) (Winthers et al. 2005), and other ecological classification and ecological unit mapping projects, as well as inventories for more resource-specific business (e.g., geology, soil,

NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN
Final Version

potential natural vegetation). TEUI seeks to classify ecological types and map terrestrial ecological units (TEUs) to a consistent standard throughout National Forest System lands (Winthers et al. 2005). Both applications are intended to store field-collected soil, geology, geomorphology, topographic morphometry, and vegetation data, to help users analyze those data, and to display the features, sample points and map units developed during a project, through the ArcGIS interface. They accommodate casual point observations with basic attributes, but their intended primary use is for formal, protocol- or program-driven inventories for defined projects (NRM Users Guide for Inventory and Mapping, and Rangeland and Mapping, July 2013). The correlated TEUI/Soil Survey information is housed in the NRCS NASIS and Soil Survey Geographic (SSURGO) database.

BLM

BLM uses publicly accessible NRCS databases as its primary repository for soil information collected on BLM lands, though additional soil data are available in the legacy Inventory Data System (IDS) and TerrADat, used by the Assessment, Inventory and Monitoring (AIM) program. Additional, but less specific, information concerning land use, vegetation surveys, etc., is available in the Public Land Statistics reports produced annually and geospatial information from the Enterprise Geographic Information System (EGIS) portal. The EGIS portal is currently only available for use to BLM employees, but is awaiting BLM Washington Office Information Technology program approval to deploy externally to the public. BLM's National Operations Center facilitates development of standardized enterprise-level geodatabase schemas and works with BLM programs on data coding standards and necessary data QA/QC methods.

C. Assessment of Database Integration and Needs

ESIS programmers indicate that it might be easier to focus future interagency programming efforts on the compatibility of data systems, rather than the development of a single super database. Efforts are underway in NRCS to create a business area committee to provide guidance and direction to ES database needs and programming efforts. This committee should include representatives from FS and BLM, ensuring that future efforts meet the needs of all three agencies. Future database development should consider data visualization needs and incorporate or create an interactive, relevant Web tool to replace the current "government report" type ESD information system.

The workgroup will—

- Convene an ad hoc interagency team to review the ESDs developed.
- Examine different data collection methods and management strategies across agencies.
- Assess ease of access to those data, and determine time needed to make those data available to each agency.
- Prepare a report within 1 year to identify what did and did not work.
- Submit recommendations for data management improvements during an annual senior leadership briefing.

D. Accessibility of Data to Other Agencies or Groups

Data access efforts should be expanded to include the compatibility of current and future data systems for use by interested agencies and potential partners. Efforts should also be made to use the many sets of data that can prove useful in development of ES concepts and ESDs, and that exist beyond the

NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN

Final Version

current regulatory and research scopes of the three agencies. In return, those potential partners stand to gain from the ES data maintained by NRCS, FS, and BLM. The NRCS Ecological Site Business Area Committee should extend the invitation to potential partners to discuss data sharing and future collaboration in ES work.

Appendix: COMMUNICATION AND DISSEMINATION AND UPDATES OF THE IMPLEMENTATION PLAN

The rollout of the Implementation Plan should follow a schedule that defines how the plan will be introduced to the regions and local offices in the first year. Examples include a series of webinars and conference calls to accommodate questions and answers, and facilitate coordination. Updates will be provided on a regular basis to the field, and other agencies and partners.

This Implementation Plan is considered a living, working document and will be updated periodically as conditions warrant and new information becomes available. Review of policy needs, identification of new action items, and assessment of action item progress will be performed annually by the Workgroup.

Information to be Maintained and Shared

The Workgroup will maintain a system for tracking information relevant to implementation of the MOUs, the Interagency Manual and Handbook, and the Implementation Plan. The Workgroup will have quarterly calls to keep the implementation records updated. The following information will be shared with all agencies:

- Accomplishment, progress, and status of each action item defined in the Implementation Plan;
- Outcomes of the procedures (sections above), including new policy, decisions, and success stories;
- Activities and successes of any sub-workgroup (e.g., stakeholder groups, cooperating agencies) convened to address a particular issue;
- Partnerships and working relationships among collaborating agencies throughout the ESD development process;
- Costs of ESD development to be reported annually by the Workgroup using a specific mechanism to be developed. The reporting mechanism should be developed within one (1) year of the completion of the Implementation Plan, and the report should describe where, when, how and by whom these costs are assessed.
- Protests, appeals, and litigations associated with the development and use of ESDs; and
- Descriptions of any disagreement and effectiveness in the dispute resolution procedures applied by the agencies.

Webinars/Satellite Broadcasts

The Workgroup should commit to joint sponsored webinars or satellite broadcasts about ESD topics of interest at least once per year. A platform that is compatible with all agencies should be selected as a primary means of disseminating information.

NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN

Final Version

Conferences and Meetings

Professional conferences, planning meetings, and technical symposia on rangelands, soils, climate change, and natural resource assessments offer opportunities to raise awareness of the ESD Implementation Plan and associated goals. It is anticipated that Workgroup members, regional coordinators, and specialists will participate in such conferences and meetings, and are encouraged to coordinate presentations about the interagency framework and success stories about ESD development.

Newsletters and Webpages

The new developments and accomplishments of the Implementation Plan should be presented in relevant newsletters and Webpages to raise awareness. Draft newsletter articles from any agency should be coordinated with the Workgroup to provide consistent messages.

Requests for ESD-related Presentations or Trainings

Other organizations may request information, presentations, or training sessions on the ESD Implementation Plan and the development of ESDs. The Workgroup and associated support teams, regional coordinators, specialists, and others should share external requests for presentations or trainings with the Workgroup to accommodate all requests.

Appendix: TRAINING

The emphasis here is to follow the Interagency Manual and Handbook in developing ESDs with the multi-factor approach that uses all sources of data, including soil, geology, geomorphology, topographic morphometry, and vegetation (e.g., diagnostic indicator species).

Identifying Training Needs and Updating Training Materials

The Workgroup and regional coordinators will identify additional training needs and update training materials on an annual basis. Within one (1) year of completion of the Implementation Plan, the Workgroup will review the past ESD projects accomplished under interagency collaboration (e.g., on USFS lands or on BLM lands) to examine issues, concerns, challenges, recommendations associated with ESD development. As part of the training, reviews of successful (and less successful) cases of ESD development will be presented to provide past lessons learned.

Critiques and Feedback on Training Courses

Prior to conducting the first joint training supported by the Implementation Plan, the Workgroup will develop a common mechanism to collect critiques and feedback on the trainings. Input will be solicited from training participants to help improve future training. The input and results will be shared with senior leadership at the annual briefing.

Continuing Education Credit

Continuing education credits should be provided for ESD trainings through DOI Learn, USDA graduate programs, Society for Range Management (SRM) workshops, and National Cooperative Soil Survey (NCSS) workshops. Within three (3) years, the Workgroup should work with the training

NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN
Final Version

centers for each agency and the associated professional societies to ensure that continuing education credits for ESD workshops and training can be provided to every participant.

Appendix: QUALITY ASSURANCE AND QUALITY CONTROL

QA and QC is about establishing and applying standard processes, procedures, and protocols to ensure ESD products be accurate and consistent, have known error and uncertainty, and meet the objectives. QA is the process of providing policies, technical standards, review, and training to support QC; while QC is the process of providing direction, operating procedures, inspection, and coordination of ESD activities to ensure that all products meet the defined standards.

This section describes what, who, and how in conducting QA/QC in four areas:

- Compilation of existing data,
- Field data collection (including sampling),
- Development of ESD for the site,
- Final evaluation of ESDs (review and approval).

The goal of QA/QC is to ensure data accuracy, product creditability and consistency, and process integrity. The Interagency Handbook (section 5.0) identifies required and recommended content for interagency ESDs, such as descriptive abiotic and biotic plant community name, relationships with both MLRA and ecological subregions, and inclusion of plant association or constancy cover tables for the reference community phase.

Following the Interagency Handbook (section 3.1.3, page 30-31), the Workgroup will provide the overall support to regional and local teams for conducting QA/QC in the development and use of rangeland ESDs. Technical specialists at regional or State offices who are assigned oversight duties for the disciplines involved in the development of ESDs are responsible for QA tasks. These tasks include development of QA procedures and QA review plans, and inspection and spot-checking of various work performed by field units or project teams. The project or team leader in the field has the primary responsibility for QC, performing crew training and work inspection as needed to ensure that all work meets technical standards. When possible, error rates should be estimated and reported to the Workgroup.

A. QA/QC in Compilation of Existing Databases

Development of ESDs requires full use of existing databases on background information. Thus, data quality of existing information must be considered and assured when existing databases are compiled and used to develop ESDs. The team leader should take the primary QA/QC responsibility. For those data sources that will not be covered by subsequent field sampling, their known quality issues must be described, and error sources must be identified and checked. Even though new observations from the field sampling during ESD development may be treated with high confidence, any discrepancies between ES classification and old map data should be examined and explained.

B. QA/QC in Field Data Collection

The Interagency Handbook (section 3.1) identifies three stages of field sampling with different sampling strategies. Each may have different QA/QC objectives.

NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN
Final Version

1. The low intensity stage is to conduct reconnaissance, establish the initial classification, and help design sampling strategy in the next stage. The key QA/QC concern is to establish important environmental gradients and to determine whether the abiotic and biotic variability in a class is too high to warrant further division.
2. The medium intensity stage is to capture the environmental range of an ES concept, determine ES characterization, perform data analysis, and test ES concepts to obtain the classification based on differentiating abiotic and biotic factors. Medium intensity sampling is required in order to formalize the site concept (the Interagency Handbook; page 27). The ES classification should be tested in the field by different end users for validation within six (6) months of classification.
3. The high intensity stage is to provide additional, detailed information on a few modal (representative) sites once the ES concept is established. Modal sites should adequately represent the characteristics of an ES. The selection criteria of the sampling sites should be defined.

When additional data are needed on Federal lands, field sampling should be carried out according to the standard procedures and protocols of sampling and measurement defined by the agencies involved. The field team leader is responsible for developing the sampling strategy and methods, and for training the field crew and inspecting the field work so that surveyor's error can be reduced. The designated QA specialist at the regional/State level is responsible for reviewing the sampling design to ensure that it meets the statistical rigor needed, and for inspecting field work.

C. QA/QC in ESD Development

Development of ESDs requires contributions by interdisciplinary (ID) team members with different perspectives and expertise essential to the integrations of diverse data and conceptual frameworks. Consensus may need to be sought since alternative classification systems and narratives of landscape dynamics may exist. In addition, expertise and data from the agency that manages the lands should be used when appropriate. For QA/QC purposes, the ID team should—

- Use explicitly and consistently defined criteria with multiple factors in delineation of ESs.
- Document all information used in developing ESDs, including—
 - o Detailed documentation of expert opinions and the deliberation process.
 - o Adequate descriptions of the supporting data and literature to highlight the strength of evidence.

Finally, the Workgroup will establish a review process, in concert with Regional coordinators, that will ensure ecological site classification and description are accurate and meet the needs of different end users. This process should be established within six (6) months after the implementation plan is released.

D. QA/QC at the Final ESD Evaluation: Review and Approval

The processes for ESD review and approval are the final QA/QC step before publication of ESDs. Consistency in the classification, delineation, description, and interpretation of ESs should be ensured in the correlation process. The final certification of the ESD document should be secured after the completion of ESD and QA/QC by the agency who administers the land or by all the agencies who share responsibilities over part of the land covered by a particular ESD.

NATIONAL INTERAGENCY RANGELAND ECOLOGICAL SITE IMPLEMENTATION PLAN
Final Version

For technical review, regional soils scientists or regional ecologists should be considered as USFS reviewers, and ecologists, botanists, and rangeland management specialists should be solicited as BLM reviewers. Other third-party members with unique expertise and knowledge of particular landscapes may also be solicited to participate in the review. The process of ES development, classification, and description should be examined by the local and regional work groups as identified in the Interagency Manual and Handbook. For the final approval, the Interagency Handbook (p. 31) dictates that the approval process should be consistent in administrative levels between the agencies when certified. Where ESs are developed on or will affect public lands, multiple signatures are required, (i.e., in addition to the one by the NRCS State Conservationist, the USFS Regional Forester or delegate, and/or the BLM State Director or delegate) should also be the signatory for ESD approval and certification.