



Best Management Practices for Developing Legislative Maps



Forward

The following BMPs complement the guidance in permanent IM 2013-169, Policies & Procedures for Handling Congressional Map Requests. Permanent IM 2013-169 promotes consistency of BLM-generated maps by establishing mandatory workflow and quality standards. These BMPs provide detailed guidance on communication and information sharing based on lessons learned in engaging with congressional offices on a wide variety of legislative proposals concerning wilderness, recreation areas, withdrawals, and land conveyances, among others. All BLM employees are reminded that they must act in accordance with the anti-lobbying laws (18 U.S.C. § 1913 and provisions that appear annually in the Interior Appropriations Act), and the Standards of Ethical Conduct for Employees of the Executive Branch. BLM Ethics officials and BLM Headquarters (HQ) Legislative Affairs staff are available to assist employees with any questions.

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I. The Communication & Information Sharing Process

Maintaining effective communication between BLM and congressional staff throughout the entire legislative map-making process is integral to providing an outcome that meets Congressional intent while ensuring that maps accurately reflect land status and identify boundaries that can be effectively managed by the BLM. While the BLM does not take a position on legislative proposals prior to the Office of Management and Budget approving formal positions on legislation, BLM staff are able to share factual information about the public lands which may not be readily available to congressional staff and their constituents.¹ BLM program staff may also provide mission-related expertise in wilderness, recreation, grazing, and other natural resource management areas, that can prove valuable throughout the legislative process.

BLM Headquarters (HQ) and State Office Legislative Affairs or Public Affairs staff serve as primary contacts in responding to congressional map requests; however, the process is interdisciplinary and must involve program staff at the state and field level with direct knowledge of the lands that are affected by proposed legislation. For example, realty, range, recreation, and minerals specialists can confirm existing land uses and development within specified areas. Additionally, consulting with State Office cadastral surveyors can help determine the feasibility of clearly defining certain boundaries in areas with complex adjoining land uses.

The following outline provides an ideal framework for information gathering and sharing when engaging with congressional staff requests on legislative map requests. While the requested response time for congressional map inquiries is often extremely short, it is recommended that BLM staff follow this framework to the maximum extent possible given the timeframe provided.

Note: The term “legislative map” refers to the map cited in legislation. This includes both bills signed into law and newly introduced or draft bills. The term “congressionally-required map” refers to maps that are required by enabling legislation, and which are filed with the Senate and House committees with jurisdiction over the subject matter.

¹ BLM staff are often requested to provide information to local non-profit organizations, local and state governments and other individuals and organizations regarding legislative proposals. In these cases, BLM staff are also directed to provide factual, publicly available information and to not take a position.

A. Outline for Engaging with Congressional Staff on Legislative Map Requests

1. Congressional Map Request Received / HQ Legislative Affairs Engages with State Office

- i. Congressional staff requests a map from HQ Legislative Affairs.² Note: If a request goes to BLM State or Field Office, the State Office Legislative Lead notifies HQ Legislative Affairs.
- ii. HQ Legislative Affairs sends a written map request to the State Office Legislative Lead per Permanent IM 2013-169. Should additional information be required, such as acreage and Geospatial Information System (GIS) data files, these requests should be included in the map request.
- iii. HQ Legislative Affairs offers webinar to congressional staff to allow them to become familiar with existing activities within an area affected by a legislative proposal.
- iv. HQ Legislative Affairs contacts the State Office Legislative Lead to discuss the proposed map request and to select dates for the webinar with congressional staff.
- v. The State Office Legislative Lead schedules a BLM pre-call (discussed below) and HQ Legislative Affairs schedules the webinar with congressional staff after the BLM pre-call. Note: When working on legislative maps of proposed wilderness areas, it is recommended to share wilderness resources with pre-call and webinar attendees, including: <https://wilderness.net/learn-about-wilderness/stewardship/default.php>.

2. State Office Legislative Lead Engages with Field Staff

- i. State Office Legislative Lead notifies appropriate State leadership (e.g., State Director and District Manager) of the legislative proposal, and contacts Field Manager to request that field staff begin to gather all necessary data within the proposed area to prepare for BLM pre-call and webinar with congressional staff. Data should include any current resource issues in the affected area, such as

² Often, a Non-Governmental Organization will alert a BLM Field Office that they are working on a potential proposal. Field Office and State Office staff should be notified that this early outreach often results in a legislative proposal and map requests. This is a good time to begin collecting existing data on the area (all mineral activity, grazing allotments and infrastructure, fences, conditions of surveys, roads, etc.) in preparation for a possible congressional map request, should time/priorities allow.

mineral activity, grazing allotments, infrastructure, fences, conditions of surveys, roads³ etc.

- ii. A GIS Congressional Map Lead/Point of Contact for the project is identified and coordinates with Field Office GIS to gather data. Field Office GIS Points of Contact should be established to coordinate necessary preliminary data and prepare necessary products for State Office review.
- iii. An internal BLM pre-call with HQ Legislative Affairs, appropriate HQ Program staff, State Office Legislative Lead and staff (e.g., appropriate State Office Program staff, Field Manager, any necessary field staff, Cadastral Survey staff and State Office GIS Congressional Map Lead/Point of Contact) is advised to help identify issues and determine staff participation in the congressional webinar. Note: When working on legislative maps of proposed wilderness areas, it is critical to include Wilderness staff (HQ and State Office) in the pre-call.

Participants will also identify associated support tasks that are required to complete the maps and determine the amount of time necessary to finish these associated activities (e.g., field confirmation of conflicting uses, reviewing condition of surveys, Public Land Survey System (PLSS) dataset, reviewing Master Title Plats, etc.). This information will be used to develop a reasonable minimum timeframe for responding to the congressional map request.

During the internal BLM pre-call, the State Office Legislative Affairs Lead will brief participants regarding the type of communication that is appropriate with congressional staff. Providing factual information about a public use in a descriptive manner is appropriate. Expressing a position or opinion is not appropriate.⁴ Participants are also reminded that any maps or boundary discussions that are being developed at the request of Congress should be kept confidential, are for deliberative purposes, and that the information is developed solely for the use of that congressional office.⁵ The information should not be discussed or shared with the public, and requests for information on the legislation or the boundaries should be directed to the BLM State Office Legislative Affairs Lead who may reach out to the congressional office.

³ Road data must be consistent with Manual 6330 1.6 D. 6 b. vi, Motorized/Mechanical Transport, boundary data must be consistent with the current edition of the Specifications for Descriptions of Land.

⁴ For example, providing factual information about a public use in a descriptive manner such as “the two-track routes west of Simpson Creek are popular for mountain biking...” is appropriate. Expressing a position or opinion such as “the area west of Simpson Creek should be excluded from wilderness so that BLM can manage for mountain biking” is not appropriate.

⁵ In unique cases, questions may be referred to the Freedom of Information Act Office.

HQ Legislative Affairs will moderate the webinar with congressional staff and will document the issues addressed. The BLM is only providing factual information at this point and not making any recommendations.

3. Map Guidance & Development

- i. HQ Legislative Affairs works with congressional staff to determine the time frame for developing the map and to ensure the boundaries desired by the congressional office are clearly understood following the webinar.
- ii. HQ Legislative Affairs prepares official map guidance and sends to the State Office Legislative Lead per Permanent IM 2013-169, Policies & Procedures for Handling Congressional Map Requests. For an example of map guidance, see Model Map Guidance, Attachment 1 of Permanent IM 2013-169. Map Guidance should include the requested timeline and any supplemental requested products, such as acreage calculations, geospatial data or tables.
- iii. State Office Legislative Lead works with appropriate State Office management team members and the GIS Map Lead/Point of Contact to ensure relevant program leads are available to discuss map guidance.
- iv. The identified State Office GIS Congressional Map Lead/Point of Contact works on the map while coordinating with Field Office GIS (State Office GIS should identify a back-up mapping specialist with access to data if identified lead is out of office or unavailable).
- v. If any potential areas of concern or other errors/issues that have boundary ramifications are found during map preparation, they should be brought to the attention of State Office Legislative Lead to be routed to HQ Legislative Affairs for resolution – likely in coordination with the requesting congressional office. As time and workflow allows, the State Office Legislative Lead is encouraged to share these issues with the Cadastral Survey staff for additional input.

4. Review & Completion of the Map

- i. Identified State Office GIS Specialist or Congressional Map Lead completes the map, reviews the exported map products, and shares with State Office Legislative Lead who provides to relevant State Office and/or Field Office program staff for review. See section II, Subsection C, Review for Effective Boundaries, for recommendations on reviewing boundaries of proposed designations.

- ii. State Office Legislative Lead confirms that the prepared map follows map guidance and conducts a final, thorough review of the exported map products for GIS or other errors.
- iii. State Office Legislative Lead sends the prepared map to the Field Manager (indicating in email that the map is the property of the congressional office and confidential, per Permanent IM 2013-169) to ensure the webinar covered all the issues congressional staff should be aware of and to check for any concerns.
- iv. Following Field Manager review, the State Office Legislative Lead briefs the State Director and sends the map to HQ Legislative Affairs.
- v. HQ Legislative Affairs ensures the map follows BLM map guidance and the congressional request.

5. Delivering the Map to the Congressional Office

- i. HQ Legislative Affairs saves the map in the HQ shared files.
- ii. HQ Legislative Affairs delivers a copy of the map to the requesting congressional staff, and a separate copy to the State Office Legislative Affairs Lead and to the relevant HQ Program Lead.

II. Identifying Information Critical to Congressional Map Requests

Evaluating a legislative proposal requires the ability to recognize issues of fact, law, and policy related to the lands subject to the proposal. This section provides an introduction to identifying 1) key reference documents; 2) existing land uses that may be impacted by the legislative proposal; and 3) long-term considerations for effective boundaries. Using this section as a checklist will help you identify issues requiring attention, including issues requiring further engagement with the requesting congressional office.

A. Key Reference Documents for Review

The following list includes planning and wilderness documents recommended for reference when evaluating a legislative proposal. The nature of the legislative proposal will determine which reference documents should be reviewed. For example, evaluating a legislative proposal impacting a wilderness or wilderness study area (WSA) will require review of wilderness case files and wilderness study reports as well as land use planning documents. Alternatively, an evaluation of a legislative proposal without a wilderness nexus would not require review of wilderness case files or study reports, but would benefit from review of relevant land use planning documents. The key reference documents outlined below are the most commonly referenced; additional document review may be needed depending on the specifics of the legislative proposal.

1. Resource Management Plans (RMP)

The BLM develops Resource Management Plans (RMPs) that serve as land management blueprints. These are done with extensive public engagement. A review of the latest RMP can help identify current issues, including conflicting and compatible uses. For example, some WSAs have been closed to recreational motorized and mechanized use through the RMP process. Closed routes in these areas may still be visible in aerial imagery and may still be included in national compilation road GIS data sets, such as the U.S. Census Bureau TIGER line road data, even though they are no longer authorized for use. RMPs also provide an important reference for identifying utility corridors, Special Recreation Management Areas and their target activities, the status of mineral leasing, and other potential conflicting land uses.

2. Implementation Level Plans, e.g. Travel & Transportation Management Plans

Travel and Transportation Management Plans (TTMPs) designate travel systems that mitigate the impacts of travel in sensitive areas while providing sufficient access to natural resource development areas, as well as access to recreation opportunities throughout BLM lands. TTMPs are especially valuable sources of information on potential conflicts with a proposed wilderness designation relating to roads. Completed travel management plans, where available, provide detailed information on routes' status and purpose. GIS data and aerial imagery should always be cross-referenced with TTMPs. Additional implementation level plans for recreation areas, Areas of Critical

Environmental Concern, Wild and Scenic Rivers, and Wilderness Management Plans are valuable reference documents. Note: With regard to WSAs, RMPs and TTMP decisions are secondary to protecting Congress' direction that they be managed so as not to impair their suitability for preservation as wilderness.

3. Wilderness Study Areas (WSA) Case Files

When a WSA is created, a case file is originated which includes the WSA name and number, description, map, NEPA documentation since the date of establishment, etc. (See [MS 6330, Management of BLM Wilderness Study Areas](#)). The WSA case files should be located at the District or Field Office. Where legislative proposals include existing WSAs, a review of the WSA case file can answer many questions regarding boundary locations, potentially conflicting uses, and values of the area. For example, GIS data depicting the boundaries of WSAs may be based on legacy sources that are less accurate than many current sources of GIS data. Apparent boundary conflicts (such as a boundary crossing a County Road) may simply be the result of inherent inaccuracies in the source WSA boundary data. Cross-referencing the WSA GIS, PLSS and GTLF data with the WSA case file can help identify areas where apparent conflicts are merely an artifact of inaccurate, legacy boundary mapping.

4. Wilderness Study Reports

In 1976, Congress passed the Federal Land Policy and Management Act, directing the BLM to identify and review all the public lands under its administration which possess the wilderness characteristics described in the Wilderness Act. The BLM conducted three phases of wilderness review: inventory, study, and reporting. The ensuing Wilderness Study Reports summarize the study of the multiple resource values of each WSA. Note: 1:24,000 scale topographic maps depicting WSA boundaries were prepared in conjunction with the study report. These are normally available at both the State and Field offices. These maps contain more detailed information about the intended WSA boundary lines on the ground than is available in the study report.

A review of a Wilderness Study Report can further identify the area's values and issues. Hard copies of the wilderness study documents should be retained by state offices. Many of the documents have been scanned and can be found in the BLM library at: <https://www.blm.gov/learn/blm-library/agency-publications/select-state-publications/state-wilderness-documents>

Wilderness Study Reports contain the BLM's 1991 recommendations and rationale for whether a WSA or portions of WSAs should be designated as wilderness. The reports can serve as a starting point for identifying potential conflicting uses and issues. However, the basis for the recommendation may not be relevant today, as changes since the 1991 recommendations have commonly occurred.

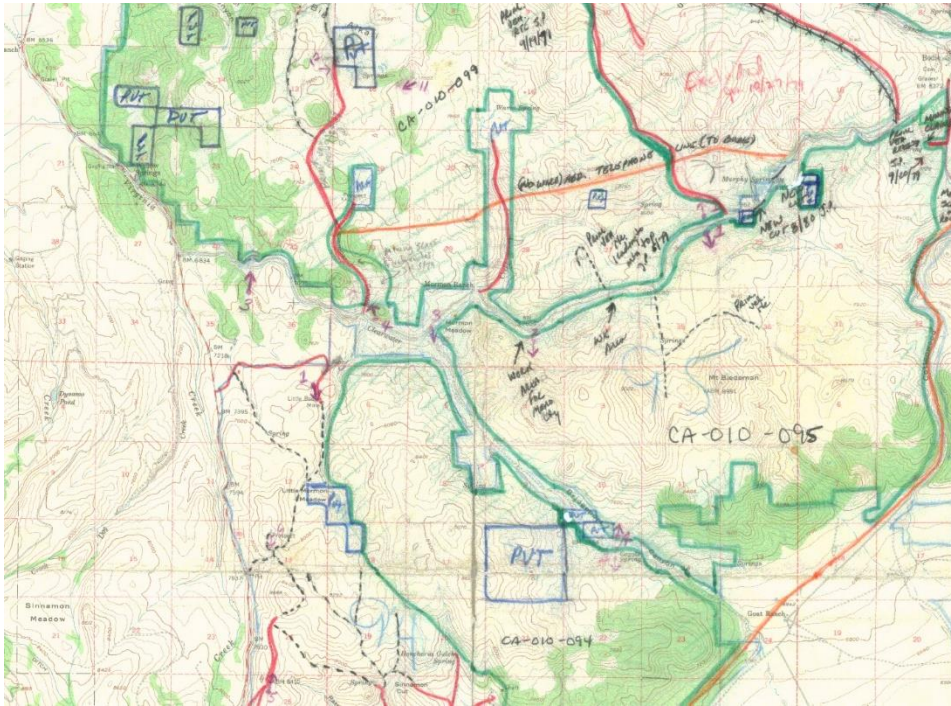


Figure 1- Inventory Map from 1979

Figure 1 is an image taken from an original inventory map from 1979. These maps should be retained in the original WSA files at the field level and can be reviewed to identify the reason behind WSA boundary locations. Maps predating GIS technology and setbacks were drawn along roads and other features in an exaggerated fashion to highlight their presence. They do not represent actual setbacks.

5. Lands with Wilderness Characteristics Inventory Documentation

The BLM evaluates lands with wilderness characteristics through the land use planning process. When such lands are present, the BLM will examine options for managing these lands and determine the most appropriate land use allocations for them.⁶ Where inventory units have been carried through the RMP process, information on manageability, potential conflicting uses, etc., is likely available and can be found in the Record of Decision for the applicable RMP.

Note: Undeveloped rights-of-way, potential R.S. 2477 claims, unpatented mining claims, undeveloped mineral leases, etc., not currently causing on-the-ground impacts are not considered in the inventory itself. Caution should be used in assuming no potential land use conflicts exist when solely referencing lands with wilderness characteristics inventory information.

⁶ The policy contained in manual sections 6310 and 6320 outline the inventory and planning process associated with lands with wilderness characteristics.

B. Review of Existing Land Uses

A thorough evaluation of a legislative proposal includes identification of the existing uses of lands subject to the proposal. Existing land uses may be incompatible with the allowable uses outlined in a legislative proposal. Further, unintended inclusion of incompatible land uses in legislation can cause long-term management complexities and difficulties. Conversely, there may be situations where values integral to proposed legislation are inadvertently located outside the proposal as they are unknown to congressional staff. It is important to carefully review existing land uses as they relate to legislative proposals and communicate the existing land uses to congressional staff.

The list below includes various land uses and/or encumbrances along with questions to be considered and shared with Congressional staff during the legislative map-making process. This is a partial list and there may be other uses or issues unique to specific areas. Although it may be a challenge to answer all of these questions in the often short timeframes associated with legislative mapping requests, an interdisciplinary approach with both State Office and field specialist involvement should be able to narrow the list to a manageable workload for a more detailed review.

Please note that proposals to designate wilderness study areas as wilderness will generally not have many of the conflicting uses identified below as they have been under protective management that precludes those uses. There are exceptions associated with valid existing rights and grandfathered uses, so a careful review is still necessary. Particular care should be made in examining wilderness proposals that extend beyond WSA boundaries, as protections have not been in place and certain conflicting uses such as rights-of-way (ROWS), utility corridors, mineral leases, etc., are more common.

1. Grazing & Wildlife

- Questions:
 - What grazing facilities exist in the area?
 - What wildlife water developments exist in the area?
 - Will existing grazing be impacted by the legislation? If so, to what degree?
 - Are areas utilized for wild horse and burro populations?
 - Are there priority wildlife habitats (sage grouse, etc.)?
- Wilderness Specific Considerations:
 - Most grazing facilities (fences, small watering reservoirs) are allowed in wilderness. It is usually best to exclude facilities that require extensive motor vehicle access such as wells or line cabins, i.e., temporary work housing, from wilderness.
 - The Congressional Grazing Guidelines⁷ describe the facilities that may remain, and the motorized access allowed to maintain them. The Congressional Grazing Guidelines serve as a framework for grazing issues.

⁷ For information on the Congressional Grazing Guidelines see, [Implications of the Congressional Grazing Guidelines](#), or the full House Report 101-405 Appendix A

- The Congressional Wildlife Guidelines are intended provide State and Federal officials with direction for the management of fish and wildlife in wilderness.⁸

2. Mining Claims

- Questions:
 - Does the area include mining claims?
 - What is the degree of development on the claim?
 - What is the likelihood of future development (high mineral potential, etc.)?
 - Does the area include abandoned mining claims?
 - Check Abandoned Mine Land (AML) Inventory if complete.

3. Leasable Minerals

- Questions:
 - Are there any mineral leases in the proposed area or in adjacent lands?
 - Are they developed or in production?
 - If undeveloped, what is the likelihood of production and when do the leases expire?
 - Are there orphaned wells in the proposed area?

4. Mineral Materials

- Questions:
 - Are there any mineral material sites in the proposed area (e.g., gravel pits)?
 - Are they abandoned or active?
 - Are there any hazardous materials or Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) issues?

5. Recreational Uses

- Questions:
 - Are there any current recreational uses that would be impacted?
 - Have any special recreational permits been issued in the proposed area? If so, what type and how many?
 - Would access for administrative use be impacted?
- Wilderness Specific Considerations:
 - Are there legally occurring recreational uses that could conflict with a wilderness designation (for example, OHV, mountain bikes, rock climbing fixed anchors, hang gliding, competitive events, etc.)?
 - Identifying/differentiating unapproved recreational activities is important to facilitating awareness of an area. Be clear in distinguishing the difference between approved and unapproved uses. For example, distinguish between

⁸ For information on the Congressional Wildlife Guidelines see, House Report No. 101-405, Appendix B.

primitive routes open to public vehicle use, routes that are closed, and routes that were illegally established. (Also see RMPs and TTMPs.)

- Are there dispersed camping sites that could create management issues?

6. Travel & OHV Management

- Questions:
 - Is the legislative proposal consistent with current travel and OHV management?
 - Would access to or through the lands of the legislative proposal be impacted?
- Wilderness Specific Considerations:
 - Review the RMP and, if available, TTMP and associated GIS layers to determine the purpose of vehicle routes and whether they are closed to public motorized or mechanized use.
 - If the routes are open for authorized use by permittees, inholders, etc., determine the type and level of use. (Also see Inholdings/Grazing.)

7. Inholding Access Issues

- Questions:
 - Does the area contain any non-federal land inholdings?
 - Are these lands developed or undeveloped?
 - How are the non-federal lands accessed? Are there valid permits or ROWs for this access?
 - Is certainty of location an issue?
 - Are there non-federal landowners outside of the proposed area that use an access route that crosses the proposed area?

8. ROW

- Questions:
 - Do ROWs exist?
 - If yes, what are they?
 - Where are they, i.e., certainty/uncertainty of location?
 - Are there R.S. 2477 claims?
 - Have future expansion of ROW or corridors been taken into account?
 - Explain the use of the ROW and identify any associated access roads. The ROW might be a certain width, but the utility might be on one side instead of in the center. How would this impact a setback?
 - Are there any undeveloped ROWs within the area? What is their potential for development? When do they expire?

9. Communication Sites

- Questions:
 - Are communications sites present?
 - How is the communication site authorized?
- Wilderness Specific Considerations:

- Ensuring access to communication sites without an access road can be addressed with legislative text. Communication sites with an access road might be best addressed by excluding them from the designated area. These should be discussed and addressed on a case-by-case basis.

10. International Border

- Questions:
 - Is the area affected by U.S. border management issues? If so, what are these? How can they be addressed?
 - Is there border protection infrastructure within the proposed boundary (e.g., roads used for patrol, radio facilities, etc.).
 - Are there existing withdrawals in effect along the border?
 - Border Protection Infrastructure (e.g., road, buildings, etc.):
 - Identify this infrastructure for internal discussion and consideration, but it may not be included in the final legislative map for security and safety reasons. Ensure that any special requirements are discussed and potentially addressed in legislative text.

11. On-the-Ground Military Use

- Questions:
 - Is the area affected by U.S. military activity?
 - Wilderness Specific Consideration: Areas under consideration for wilderness designation that are not WSAs may have regular military use, including activities such as helicopter landings, trainings, etc.
 - Is potential cleanup of legacy military use sites such as hazmat ordnance, etc. necessary?
 - Note:
 - The BLM may be unable to depict military use of Federal lands on a map. This information is sensitive and best conveyed during briefings or in legislative text.
 - Wilderness Specific Consideration: Military overflights are normally not an issue in wilderness, and legislation often has explicit language clarifying they will not be affected.

12. Tribal Relations

- Questions:
 - Are reservation boundaries clearly marked?
 - Could potential conflicts arise out of traditional Tribal use of the lands, e.g., ceded lands with reserved rights?
 - Wilderness Specific Consideration: Are there known cultural sites which Tribes access by motor vehicle, or other situations that may conflict with the Wilderness Act?

13. Section 368 Utility Corridors:

- Questions:
 - Are [Section 368 Corridors](#) present?⁹
 - Section 368 of the Energy Policy Act of 2005 (Public Law 109-58) directs the Secretaries of Agriculture, Commerce, Defense, Energy, and the Interior to designate, under their respective authorities, corridors on federal land in 11 western states for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities (energy corridors). These corridors and any associated potential conflicts should be identified if included in a legislative proposal.

14. Adjacent Land Issues & Features (complementary or potentially conflicting)

- Questions:
 - Are there land issues adjacent to the proposed area which are integral or complementary to the proposal?
 - Change in land ownership – Identify recent acquisitions or disposals contiguous with the proposed area.
 - Accurate boundaries – Ensure boundaries are drawn with up-to-date data.
 - Resource values contiguous with the proposed area – Identify important habitats or species populations that are partially affected by proposed boundaries.
 - Features contiguous with the proposed area – Identify landmarks or particularly scenic features contiguous with the boundary of the proposal, especially in wilderness legislative proposals where they are an actual element of the wilderness visitor experience.
 - Wilderness Specific Consideration: Pay careful attention to lands outside of WSAs or other areas contained in proposals as they generally have not been managed to prevent impairment or restrict encumbrances.

15. Federal/Private Land Interface

- Questions:
 - Is the area considered “urban interface” under the Healthy Forests Restoration Act or under some other law or plan?
 - What is the distance from the area to the nearest structures? Be cognizant of potential access problems that a legislative proposal could cause now or later in these areas.
 - Are encroachments or trespasses on BLM-managed lands present? If so, how will they be addressed?

⁹ See <https://www.corridoreis.anl.gov/eis/guide/>

16. Miscellaneous

- Questions:
 - Are there special or overlapping designations in the proposed area (e.g., Areas of Critical Environmental Concern, Research Natural Areas, etc.)?
 - Are there invasive species management issues?
 - Are there any fire/fuels management considerations?

C. Review for Effective Boundaries

It is in the best interest of the BLM to have effective boundaries to avoid time consuming controversy and questions that may arise after legislation is enacted. Effective boundaries: 1) support efficient preparation of the congressionally-required legal boundary descriptions; 2) facilitate cost-effective boundary marking and survey should survey later be required (see Appendix 1 for example of congressionally-required map and legal boundary description), and 3) prevent encroachment of nonconforming uses.

Boundary segments should be tied to an existing official survey such as the Public Land Survey System (PLSS), or – at a minimum – to readily identifiable on-the-ground human-made or natural features. Some of these features, however, are clearer than others. The following section will help identify features and their merit for use as boundaries under various circumstances.

Initial maps received from congressional staff are often based on information provided by constituents or non-governmental organizations and may have been prepared with incomplete information. In addition, consideration may not have been given to the delineation of a boundary that can be readily identified on the ground and, when necessary, surveyed. Normally, minor boundary adjustments can be suggested to the congressional staff to meet their intent while also creating an effective boundary. Congressional staff are usually appreciative of receiving this information.

1. Identifying Potential Boundary Issues via a Risk Management Approach

There is no single standard for determining an effective boundary location from a manageability standpoint. The risk for encroachment of incompatible adjoining land uses is a primary factor for consideration. For example, PLSS boundaries are efficient for cadastral survey to accurately identify/monument if questions arise regarding adjoining public land uses, such as private land development, mineral leases, mining claims, timber harvest boundary, etc. A ridgetop or bluff edge would be more costly to survey but may be preferable in a location where it is important to identify and explain the boundary to members of the public. For example, a boundary along a ridge adjoining an OHV area may require less signing/fencing or other on-the-ground development to identify and prevent encroachment of incompatible (e.g., motorized) uses. Some boundaries are in

areas where threats of encroachment from adjoining incompatible uses are minimal so concern is lower regarding boundary identification (e.g., a wilderness boundary within a rugged inaccessible portion of a protected National Monument).

It is recommended that this risk-management approach¹⁰ be considered in discussing the list of optimal boundaries described below with congressional staff so that attention can be focused on the normally small subset of boundary segments that may cause manageability issues. If possible, involve the cadastral survey staff in identifying potential boundary concerns and solutions. Cadastral input is especially important in areas with known or likely boundary issues where conflicts or encroachments may occur.

2. Easily Identifiable & Manageable Boundary Features

i. Surveyed Line Segments

Any surveyed line segments are the preferred boundary for easy identification and defensibility from a legal/survey standpoint. In most cases, these will be part of the PLSS but could also be from a local or administrative survey. The PLSS is the universal surveying method developed and used in the United States to plat, or divide, real property for sale, settling, and administration of Federal interest lands.

Cadastral surveys create, define, mark, and re-establish the boundaries and subdivisions of the Federal interest lands of the United States. These surveys serve as the definitive authority and provide public land managers and the general public with essential information needed to correctly determine ownership rights and privileges and facilitate good land management decisions. For example, questions arising about a boundary from adjoining rights of use (e.g., private land developments, federal mineral leases, timber sales, etc.) are most easily resolved if they can be tied to the PLSS. Figure 2 below shows the subdivisions used in the PLSS.

¹⁰ For additional information see Departmental [Manual Section 600DM 5, Standards for Federal Lands Boundary Evidence](#), and BLM [Handbook H-9600-1, Cadastral Survey](#).

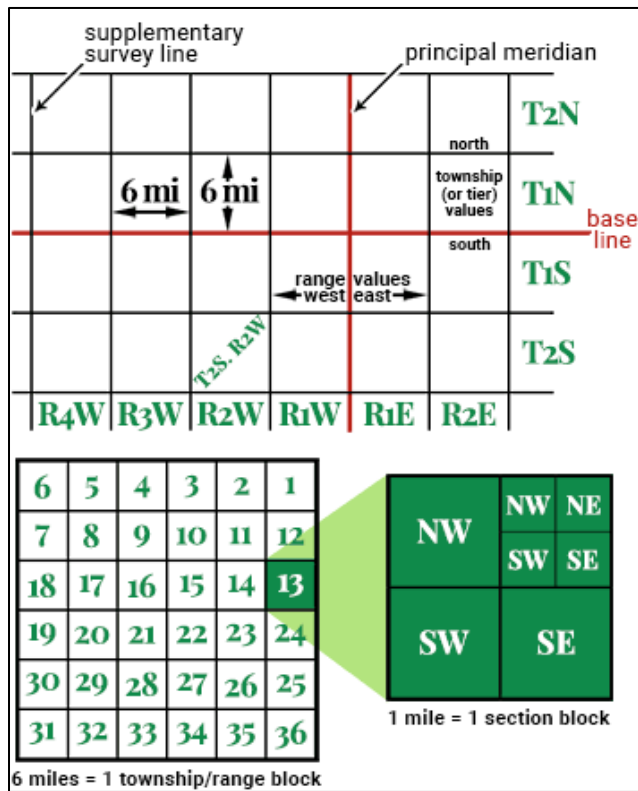


Figure 2 – Public Land Survey System subdivisions

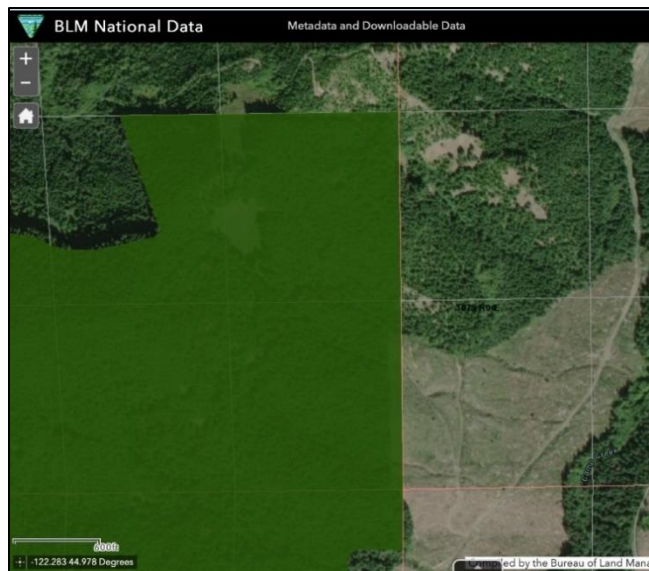


Figure 3 - PLSS boundary

Boundaries following PLSS are optimal in situations where a survey may be required to ensure a boundary is clearly delineated and defensible – such as this boundary of Table Rock Wilderness, or where it adjoins high-value private timberlands.



Figure 4 – A PLSS boundary is optimal in a landscape such as this where there are no clearly definable permanent natural or human-made features. As seen above, numerous minor dry ambulatory washes cut across unconsolidated (non-bedrock) material. Had one of the washes been selected as the southern boundary, it could move or become indistinguishable, making it very difficult to develop a legal boundary description or to manage the boundary to prevent incursions.

ii. Permanent/Non-Ambulatory Human-Made Features

Human-made features that are relatively permanent and non-ambulatory (immobile) can be desirable and identifiable boundary features and are especially useful to delineate boundaries adjoining high areas of incompatible public uses (e.g., motorized recreation use). Improved (graded or paved) roads, constructed trails, powerlines, pipelines or other developed ROWs (with setbacks from either a defined centerline or to the boundary of the ROW) can also make good boundary features. Use of undeveloped ROW for boundaries should be avoided as they may never be developed and expire. Undeveloped ROWs should still be identified during map development and congressional staff should be informed of likely conflicts if they are included within a proposed wilderness area. In reviewing human-made boundary features such as energy transmission lines, pipelines, etc., ensure that maintenance roads are not overlooked as they may be less obvious and not parallel to the line, particularly in steep terrain. Consideration should also be given to avoid some lower-level or less permanent human made features for boundaries (e.g., low-use jeep trail) as they may move, be relocated, or abandoned and overgrown over time and therefore become less identifiable.¹¹

¹¹Note: In the example of the low-use jeep trail, the boundary location is determined from the jeep trail location on the date of the enactment, not at some previous or future jeep trail location.



Figure 5 - Boundary created using a human-made feature

Human-made features such as this paved highway are relatively permanent and can make easily identifiable boundaries where the centerline or ROW boundary are or can be defined. In a wilderness area, absent specific legislative language, the setback is to the ROW or to the standard BLM road setbacks outlined MS 6340, Management of Designated Wilderness Areas. Note how the boundary in Figure 5 was delineated to exclude drainage structures associated with the ROW, e.g., the top of cut bank to the outside edge of ditchline.

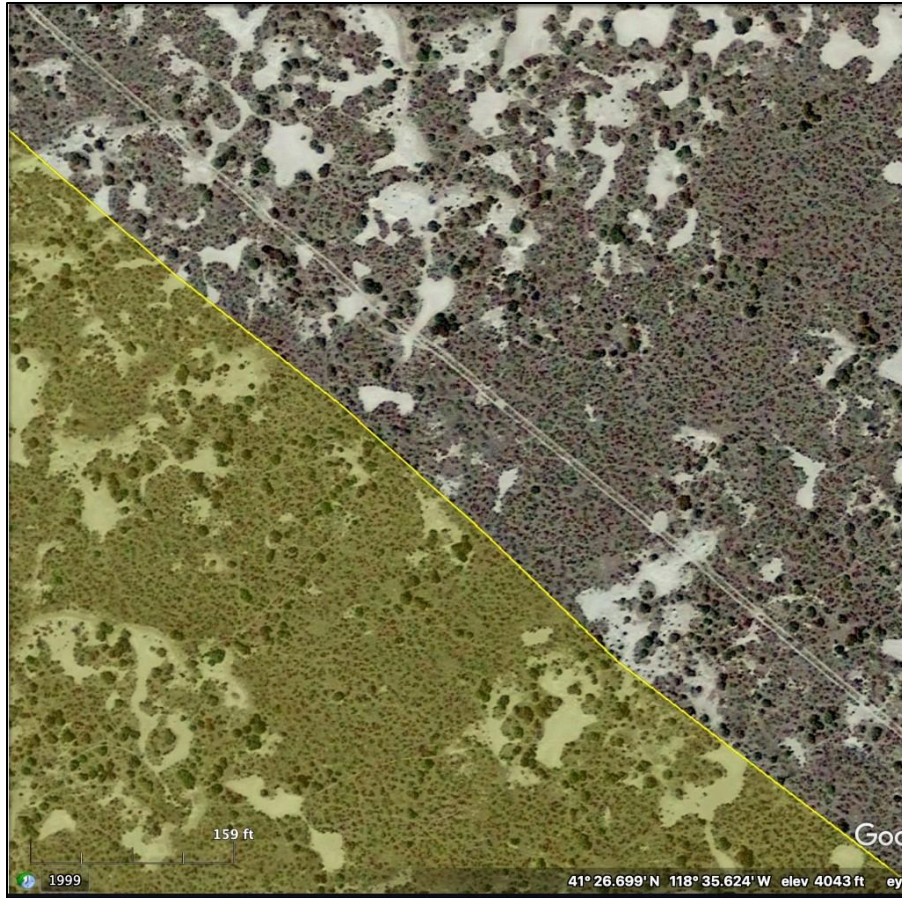


Figure 6 - Boundary created using less permanent human-made feature (i.e., two-track road)

Lightly used features such as two-track roads may be less permanent than higher-level developments and carry the risk of becoming relocated, overgrown, or indistinguishable over time if no longer used.

iii. Permanent/Non-Ambulatory Natural Features

Natural features that are permanent, well defined, and non-ambulatory can be readily identifiable and especially useful to delineate boundaries adjoining high areas of incompatible public uses. Examples include a stream course in a bedrock channel, a sharply delineated bedrock cliff edge, or other permanent definable feature. These can be reasonable to map, describe and survey. As stated above, both permanent human-made and natural features have the added benefit of being easy to describe to the public and denote on the ground.

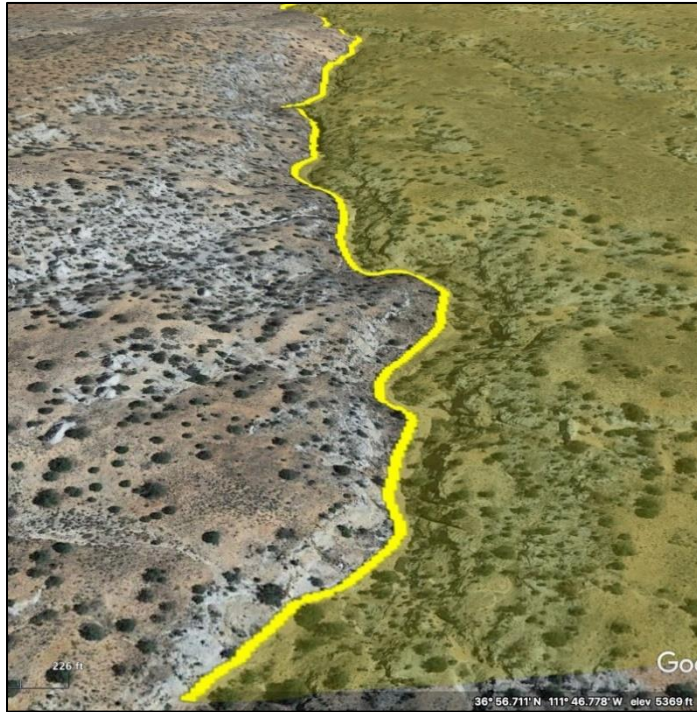


Figure 7 - Boundary created using a topographic feature

This boundary follows a relatively minor topographic feature (dry wash). However, the feature's thread is well-defined and permanent (bedrock channel) so it is a defensible boundary that is easily identifiable by the public.

3. Less Identifiable Boundary Features or Features that may Require Annotation to Confirm Congressional Intent

The following boundary features are less identifiable and may require annotation on the legislative map to confirm congressional intent. They should be avoided in situations where a high level of boundary location accuracy and precision is important. Annotations should be considered on legislative maps where there is potential for misinterpretation or ambiguity. In these cases, annotations can ensure that the intended boundary is portrayed or described in a manner that can be readily identified and managed in the long term. In other cases, such as in wilderness designations, congressionally-required legal boundary descriptions may not be completed until years after legislation is enacted and it can be difficult to interpret the intended boundary location in the interim. An annotated boundary on the legislative map can help identify the physical boundary on the ground before the legal boundary description is available.

Helpful information to include in annotation is the latitude/longitude coordinates (with reference datum) at the end of a cherrystem,¹² or other point, that otherwise would be difficult to pinpoint. If annotation of the legislative maps is not possible, Global Navigation Satellite Systems (GNSS) ground truthing should be completed as soon as possible after enactment of legislation to document boundary features that may be difficult to interpret without this additional information.

Lastly, well after the legislative map is completed, less identifiable boundary segments will need to be described by Cadastral Survey in the congressionally- required map/legal boundary description in a manner that can be surveyed and monumented if necessary. As explained below, this may require approximation of the boundary depicted in the legislative map to tie the survey point to a point locatable on the ground. Guidelines for interpreting congressional intent in developing congressionally-required map and legal boundary descriptions for these boundary types are contained in this document in Section III, Part E, Sources of Clarifying Guidance.

i. Ambulatory Human-made Features such as Vehicle Routes & Ambulatory Natural Features

The exact location of routes (e.g., primitive, two-track routes and jeep trails) in areas with low topographic relief and particularly within dry washes may change over time based on floods, stream course realignment, or vehicles use of alternate routes to avoid obstructions. This is particularly true in, but not limited to, arid environments. When a boundary feature's location changes over time, it becomes difficult to locate and maintain the congressionally intended boundary i.e., the boundary location on the day of enactment. These changes can be minor or substantial and can cause confusion or conflicts over time. Difficulties locating the boundary over time can cause significant management issues. Boundaries using ambulatory human-made features (typically primitive routes) should be avoided in areas with high conflict potential or other situations where precision is critical. In a wilderness area, consideration can also be given to providing wider set-backs along vehicle routes in these situations to allow for these changes without impacting the wilderness boundary. Optimally, when these ambulatory vehicle routes are used as boundaries, congressional intent should be annotated on the map or within the legislative language.

Where natural features such as meandering stream channels change over time, survey law addresses how these changes are managed and interpreted from a legal standpoint. Although these legal precedents are in place, if it is important that a boundary remain fixed, and not ambulatory, PLSS or a non-ambulatory natural feature should still be used.

¹² “Cherrystem” is a word commonly used to refer to small areas of land carved out of a wilderness to allow for a non-conforming use. For example, a cherrystemmed road is a dead-end road where the boundary of the wilderness extends up one side of the road, around its terminus, and down the other side.



Figure 8 - Boundary created along an OHV route

This boundary along an OHV route in a braided wash or the center/edge of the wash itself would be difficult to precisely determine and survey in the event of adjoining conflicting land uses.

ii. Natural Features That are Difficult to Delineate

Rounded ridgelines, watershed boundaries, gradual slope breaks or other less abrupt natural features can be approximated on GIS map layers and identified with GNSS units, described to the public, and signed. However, they can be difficult and expensive to survey precisely and therefore less legally defensible and cost effective in situations where boundary conflicts may occur (e.g., adjoining mineral leases, renewable energy development projects, etc.).

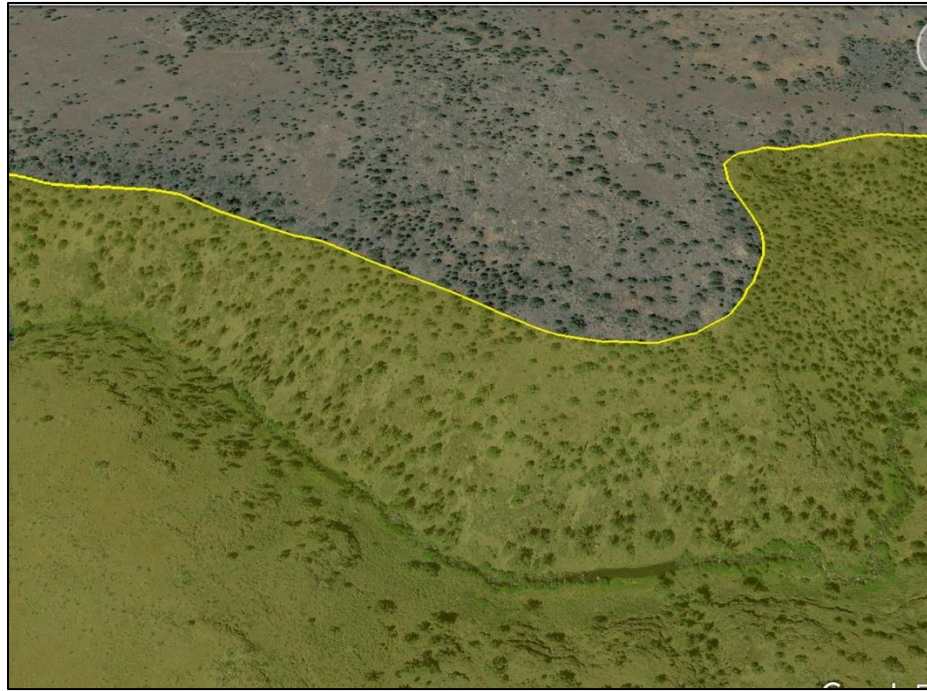


Figure 9 - Boundary created along the rim of a bluff

This wilderness boundary along the rim of a bluff adjoining BLM lands is within a protected National Conservation Lands unit so the risk of encroachment from non-wilderness land uses is minimal. The boundary is also easy to identify and describe to the public.

a. Topographic Contour Lines

Topographic contour lines (lines of equal elevation) can also be approximated but require costly and difficult metes and bounds surveys, including knowledge of the reference datum used. The location of a mapped contour line can often be reasonably approximated using lines defined by PLSS subdivisions, recognizable human features or well-defined natural features. Lines controlled by points defined by latitude and longitude¹³ that reasonably approximate the map contour line would be preferred over contour lines. Similarly, contour lines are difficult to describe and sign for the public. Contour lines should be avoided, particularly in areas with moderate topography where it is most difficult to delineate and the likelihood of a future need to identify it is high because adjoining uses that have the potential to conflict or encroach upon the legislated boundary.

¹³ When coordinates or contours are used, reference datum of the source coordinates or elevations is required to ensure the coordinates or contours can be plotted accurately by different users.

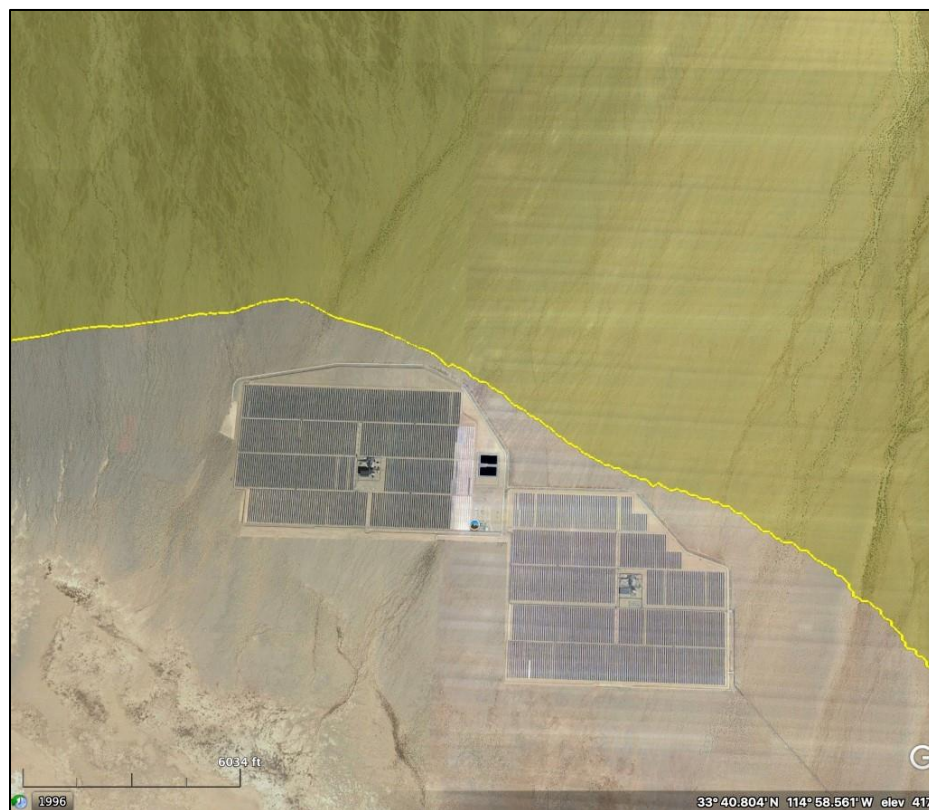


Figure 10 - Boundary created using a contour line

For example, the southern boundary of the Palen-McCoy wilderness follows a contour line in a gently sloping area of public lands. At the time of designation (1994), public use and demands on use of adjoining BLM lands and the associated conflict potential were very low. However, over 20 years later, the situation changed greatly as needs for suitable renewable energy generation sites resulted in demands for level to gently sloping sites in the region. The location and accuracy of the contour line boundary makes management and location of projects difficult. Contour line boundaries are also difficult to sign and identify for the public and should be avoided when possible. *See* Section III, Subsection C (5), “Guidance for Developing Metes and Bounds Boundary Segments along Natural Features and Contour Lines,” for additional information.

b. Free Hand Boundaries

A free hand boundary is based on a sketch that is not tied to any existing surveyed point or recognizable human-made or natural geographic feature. Free-hand boundaries are often sent to the BLM in initial proposals developed by congressional staff and by interest groups. Normally, when BLM staff explain the difficulties and complications of managing free-hand boundaries, congressional staff are amenable to relocating boundaries to the closest PLSS lines or recognizable natural features.

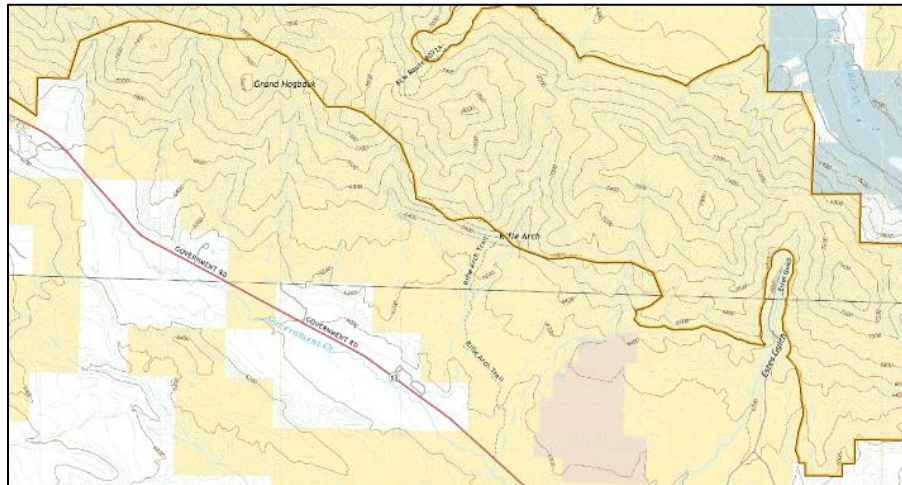


Figure 11 - Boundary created using a free-hand boundary

Figure 11 includes a number of “free hand drawn” boundaries that are not tied to PLSS or any recognizable natural or human-made features. These hand drawn boundaries cross ridges, side-hills, drainages, etc. These boundaries would be extremely difficult and expensive to approximate with a survey and equally as difficult to approximate on the ground to properly sign and manage. Nearby PLSS subdivisions or definable human/natural features can be used to approximate these boundaries and meet the intent of the proposed legislation.

4. Wilderness Specific Considerations

i. Cherrystems

Cherrystems are vehicle routes that are excluded from wilderness but allow nearby vehicular access for recreation, administration, or other non-wilderness uses. The ROW boundaries and the end point of these routes should be clearly annotated (i.e., on the legislative map, in the legal boundary description, the congressionally-required map, and sometimes on the ground with the placement of a monument, etc.) so that there is no ambiguity or “route creep” after wilderness designation. Consideration should also be given to end them at defensible locations (e.g., at narrow points in canyons, etc.) to facilitate the placement of barriers to restrict vehicle encroachment into wilderness where possible.

a. Cherrystems & Non-Federal Land

Note that non-federal land excluded from wilderness at the end of cherrystems will remain outside the wilderness area if later purchased by the BLM (*see* the area labeled A in the figure below). By contrast, non-federal lands within the wilderness boundary would become part of the wilderness if purchased by the BLM (*see* the area labeled B in the figure below). Congressional staff members

should be made aware of this distinction as well as the long-term implications of the depiction of non-federal lands on legislative maps. In either case, the owner of the inholding is not restricted in the use of their property.

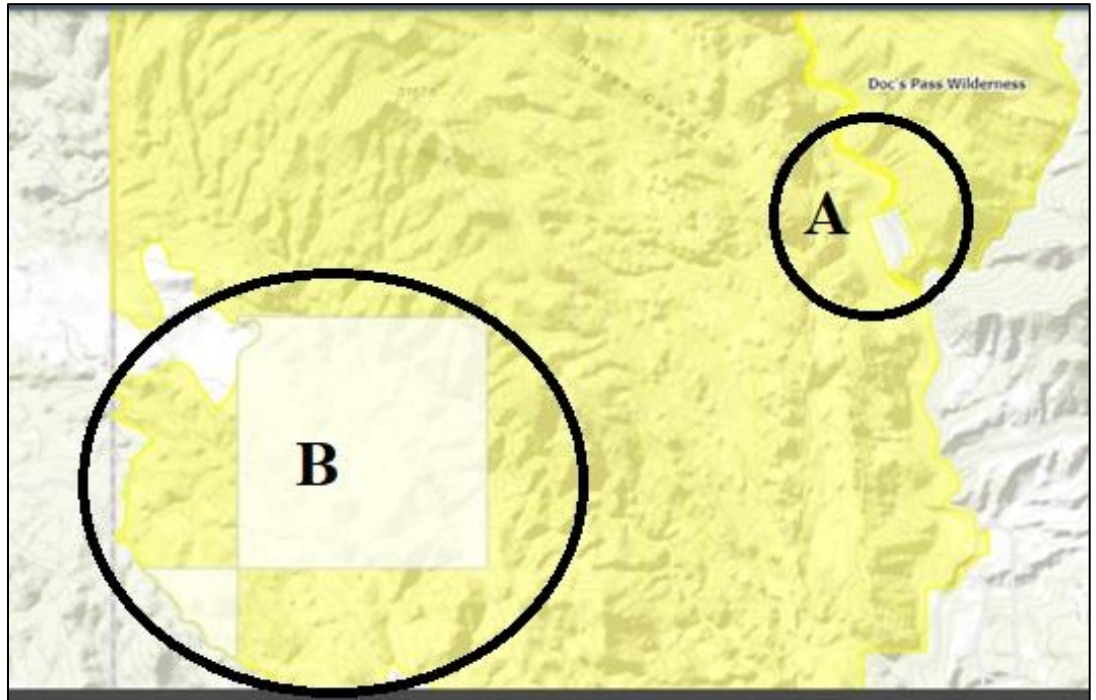


Figure 12 - Private land inholding – (A) non-federal land excluded from the wilderness boundary, (B) non-federal land not excluded from the wilderness boundary

b. Cherrystems & WSAs Designated as Wilderness

Particular care should be given to cherrystems in WSAs under consideration for designation as wilderness. If Congress desires to create a cherrystem over WSA lands to facilitate a non-wilderness use, then legislative text releasing the lands within the cherrystem is necessary. Otherwise, the cherrystem will remain a WSA.

For example, if Congress seeks to allow vehicular access to a boat ramp in a WSA following designation as a wilderness, this can be accomplished by 1) creating a cherrystem over the area to allow for the non-wilderness use; *and* 2) the addition of legislative text releasing the cherrystemmed area from WSA status.

ii. Addressing Non-Conforming Features in Legislative Text vs. Boundaries

Legislative text can be an effective tool for addressing non-conforming or temporary uses in wilderness legislation. Rather than creating a permanent boundary line to exclude a non-conforming use, legislative text can provide for the use to continue even though it is located in wilderness. For example, P.L. 101-628 designating the Mount Nutt Wilderness includes a provision allowing an existing water pipeline to be

operated, maintained, and upgraded. This can be an effective way to address minor impacts or uses.

Congress has also designated “potential wilderness” for all or a portion of an area where a major non-conforming use exists, especially when it is expected to terminate in the future. If or when the existing conditions cease, the area becomes wilderness. P.L. 109-362 directed Elkhorn Ridge be managed as a potential wilderness area until historic logging roads could be restored because of the anticipated need to use motorized earth-moving equipment. In January 2011, the Department affirmed that the incompatible conditions had been restored, and the area became the Elkhorn Ridge Wilderness.

iii. Boundary Offsets or Setbacks

Congress may apply a setback to any boundary line feature. For example, rather than following the BLM property line as defined through the PLSS, a setback can be applied to the PLSS to accommodate other land management needs. For example, the existence of a housing development on the edge of BLM managed lands may warrant the use of a boundary setback to facilitate fuels treatments for fire protection. However, absent site-specific needs, setbacks are unnecessary and could be undesirable. Except for boundary roads, no setbacks are applied unless specified in the text of the enabling legislation or printed on the map (notations of setbacks in the GIS metadata are not sufficient). For example, to exclude historic structures, instructions may be printed on the legislative map to set the boundary back 1,000 feet from the centerline of a road running through the townsite. A standard setback of 30, 100, or 300 feet from centerline (as determined by the level of road development), or a ROW, is applied to roads, unless the legislation identifies a different setback. See BLM Manual 6340, Management of Designated Wilderness Areas, 1.6 D (1) for further direction.

5. Considerations for Digital Map Layers

Legislative designations will reference dated maps. Sometimes these maps are at a scale that make certain boundary segments extremely difficult or impossible to accurately interpret (absent new legislation correcting the issue). Metadata within GIS data should annotate features as they were provided from or approved by congressional staff during map preparation so as to provide a companion reference for subsequent map interpretation.¹⁴ Though metadata is not authoritative, it can be informative when the legislative map is later reviewed or the congressionally-required map and legal boundary description are prepared.

¹⁴ It is important to maintain a record of the source of the data and the date it was received.

III. Post Enactment Guidance for Boundary Modification

A primary goal of these best management practices is to prevent the need for post enactment boundary modifications. Effective communication throughout the legislative map making process reduces the ambiguities and confusion that can lead to errors in legislative maps that create the need for post enactment boundary modifications. Nevertheless, given the complexities and short deadlines of legislative maps, post-enactment errors may be discovered even on the most carefully developed legislative maps.

This section provides guidance on resolving ambiguities in legislative maps after the legislation is passed but *before* the congressionally-required map and legal boundary description as provided in the enabling act is transmitted to Congress. (See Appendix 1 for an example of a legal boundary description.) Please note that not all enacting legislation will require maps and/or legal boundary descriptions.

A. BLM Policy on Boundary Modification

When legislation requires the creation of map following a designation (i.e., a “congressionally-required map”) the map is a defined expression of congressional intent as conveyed in the legislation, the legislative map, and the congressional record (for more on this, see MS 6120, Congressionally-Required Maps and Legal Boundary Descriptions for NLCS Designations, .12 Preparing Congressionally-Required Maps and Legal Boundary Descriptions). The GIS data underlying the legislative map represents the boundary but is not the official boundary (MS 6120, .15 GIS Data).

Only Congress may amend designated boundaries; however, the BLM may make minor corrections to congressionally-required maps and legal boundary descriptions. These corrections must not alter the original congressional intent, but correct clerical/minor errors (MS 6120, .16 Revisions and Amendments to Congressionally-required Maps and Legal Boundary Descriptions). Most legislation directing the completion of a congressionally-required map includes explicit language allowing for the correction of these minor clerical and typographical errors. A careful review of the legislation should be conducted to determine if there are explicit allowances for changes beyond these clerical error corrections.

Some of the clerical errors described below have obvious solutions that are easy to interpret and solve. For instance, where a boundary is intended to follow a paved road and waivers from one side to the other due to data layer misalignments, the rationale for the correction is self-evident and no additional documentation is needed. In more complex situations (e.g., a cherrystem in a wilderness missing its intended endpoint), it is strongly recommended that a clear written record of the correction of the clerical error be documented and include the rationale.

When correcting minor clerical and typographical errors in congressionally-required maps, this information should be included in the case file and metadata associated with the

congressionally-required map and legal boundary description. The legal boundary description segment(s) affected should be included so that the location of the change is clear (see appendix 1 for an example legal boundary description). For more complex clerical and typographical errors, this information must be included in the casefile. BLM program specialists should work with Records and other appropriate staff in establishing a case file for each area upon enactment. See MS 6120, Sections .12E., Preparing Congressionally-required Maps and Legal Boundary Descriptions, and .13, Creating and Maintaining Serialized Case Files.

B. Defining What Constitutes a Clerical Correction for Congressionally-Required Maps

For the purpose of preparing congressionally-required maps and legal boundary descriptions, the term “clerical error” is defined to mean:

A feature of the boundary that mistakenly results in an unintentional minor addition or omission in the area, in which no intended congressional outcome will be lost by its modification, and for which evidence of the error is convincing, and so should be readily remedied.

Identification of a clerical error may be made by BLM staff, or may be brought to the attention of the BLM by Congress, state or local officials, constituents or other external sources. The following principles, along with accompanying examples of types of clerical errors, will provide additional direction in implementing this guidance.

- *Under no circumstances will a major change be made to a boundary, or a change that could or would appear to circumvent an outcome of the decision-making process that led to the legislation advanced by Congress and signed into law.*
- *Where a proposed correction may be perceived by an interested party as a deviation from the intent of Congress, it cannot be viewed as a clerical error and the boundary correction can only be made by a future act of Congress.*
- *Some boundary changes may seem like an improvement from a resource or visitor management perspective. However, if no evidence can be identified that the boundary was intended to be different than depicted, it cannot be viewed as a clerical error, even if it would result in more efficient resource management. The BLM should make clerical corrections sparingly and not make broad assumptions without a clear understanding of congressional intent.*

C. General Clerical Errors

1. Boundary is Not Anchored in any Feature

Completely ambiguous boundary lines that travel cross country have to be aligned with something that can be described in the congressionally-required maps and

legal boundary description. The BLM has a legal requirement to provide congressionally-required maps and legal boundary descriptions for most enacted legislation affecting specific parcels of federal land. In cases where the legislative map is completely ambiguous, the BLM will have to use its best judgement in developing a boundary that approximates the agency's best understanding of the intent of Congress and that is also technically capable of being surveyed. The following will provide necessary guidance in these difficult circumstances.

- The line may be moved to the nearest topographical feature that can be identified in the congressionally required point-to-point (metes-and-bounds) legal boundary description. Try to stay as close to the legislative boundary line as possible.
- Monuments may have to be physically placed on the land, which are then identified in the congressionally required point-to-point legal boundary description.

2. Small Polygon Slivers are Created by Misalignment of Data Layers

Combining different data sources in preparation of the legislative map can cause irregularities. This can occur when some layers are not using or are not based on the most up-to-date and accurate data, or when data is sourced from different administrators using different projections. This can be especially true when using data layers that were created using early generation GIS technology, as is the case with many WSAs. (For more information see Section IV, Legislative Map and Data Management.) In addition, small variances in the actual location of different features may be overlooked during map preparation, and not readily apparent on the legislative map. The result may manifest itself in small slivers or isolated parcels of disconnected lands.¹⁵ This accidental creation of isolated parcels of disconnected lands can easily be overlooked during preparation of the legislative map. For example, in the map below, the initial requested boundary is based on the PLSS land ownership layer, and later modified by intersecting a county roads layer. In this case, the small slivers were not depicted on the final congressionally-required map as wilderness.

¹⁵ When evaluating whether the creation of a small sliver may be unintentional, personnel should consider the overall context creating the sliver.

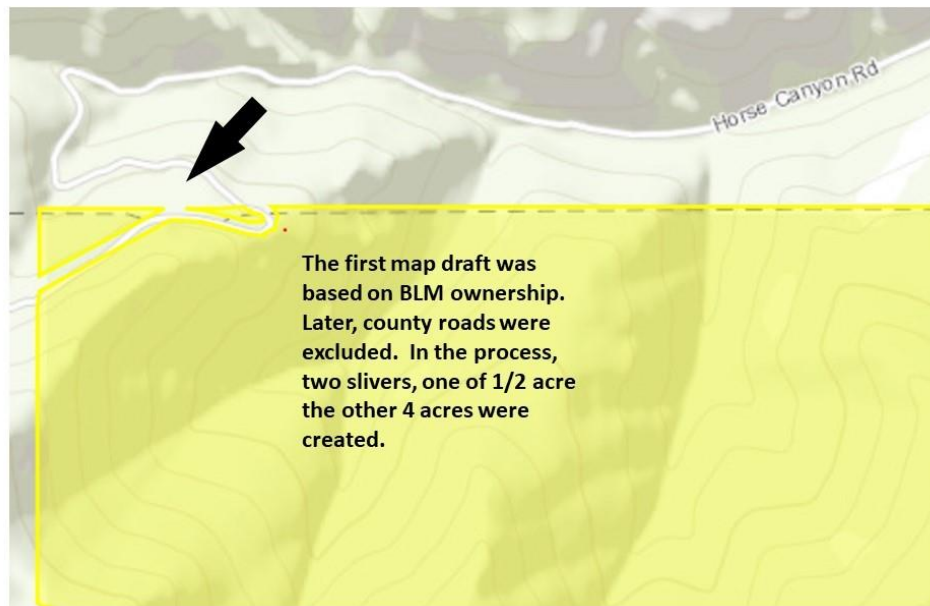


Figure 13 - Proposed boundary created a sliver of wilderness

3. Other Situations Where Congressional Intent is Ambiguous

There will be other situations that are not explicitly covered in the clerical error types above where the reviewer will need to follow a similar process and document a reasoned conclusion regarding the interpretation of congressional intent of a particular boundary. In Figure 14, a communication site and the last portion of the only vehicle route accessing the site for maintenance were excluded from the wilderness. However, an earlier portion of the same route crosses into the wilderness where the boundary follows PLSS lines. In this situation, a reasonable conclusion is that the intent was to exclude the entire access road to the communication site and communication site itself from the wilderness designations. The segments crossing into wilderness were the result of a clerical error and the boundary can be adjusted to exclude the road.

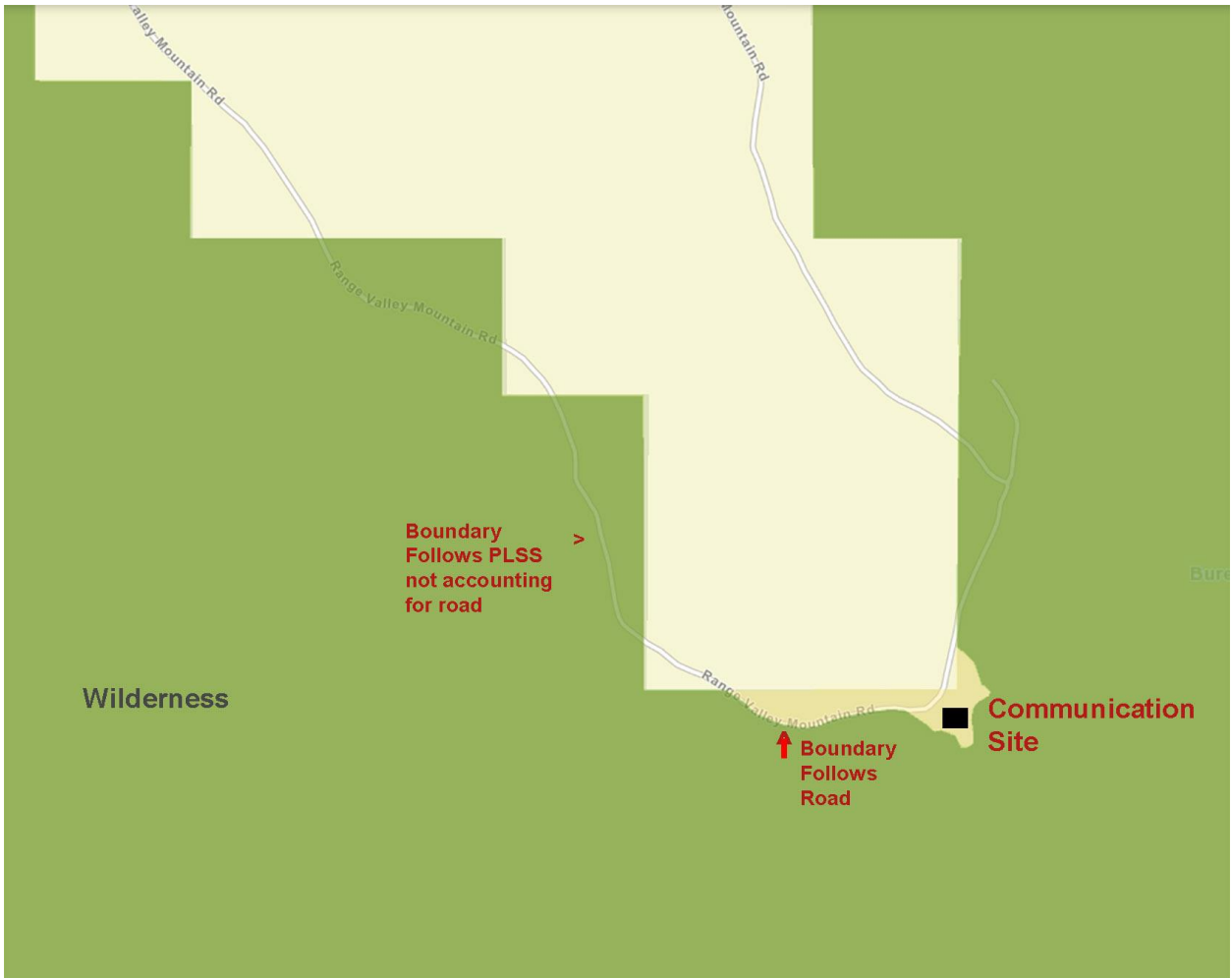


Figure 14 - Boundary created by PLSS lines crosses access roads

4. Graphical Clerical Errors

Graphical clerical errors occur when a feature on a legislative map is depicted in the wrong location or displayed in the wrong color, hatching, etc. as the result of inaccurate data sets. These graphical clerical errors may be corrected in the final congressionally-required map.

5. Guidance for Developing Metes and Bounds Boundary Segments along Natural Features and Contour Lines

When legislative maps contain boundary segments that follow features that are not precisely identifiable on-the-ground (e.g., indistinct bluffs, ridgelines, or contour intervals), or otherwise lack specificity, the BLM must interpret the boundaries in order to develop a congressionally-required map and legal boundary description. When identifying angle points for metes-and-bound boundary segments for a proposed designation, one should not select points that will: 1) exclude features of value from the proposed designation, or 2) add incompatible features that were intended to be left out of the proposed designation.

D. Types of Wilderness-Specific Clerical Errors

1. Boundary Line Fails to Follow an Unambiguous Feature

Where a boundary line is unambiguously following a feature of a road, stream, a PLSS line, etc., the boundary line should remain accurate to the feature.

- **Boundaries should not be adjusted for convenience**
 - For example, if a line is “following” a township line, and the township line passes through a stock reservoir, the intent of the boundary remains to follow the township line in its entirety, unless the boundary is clearly drawn to deviate from the township line.
- **Boundaries should be adjusted to reflect intent**
 - For example, if a line is “following” a road, do not assume that if the boundary line wavers over the same road that the intent was to close a portion of the road. Draw and describe the boundary line in the congressionally-required map and legal boundary description to consistently follow the center line or ROW of the road at the appropriate offset. *See example in Figure 15 below.*

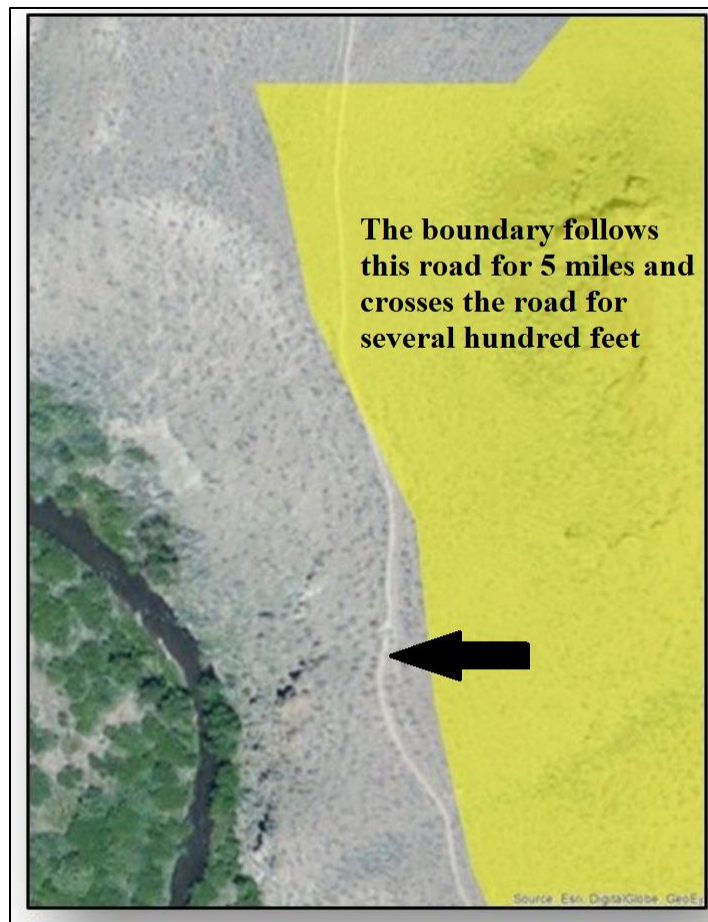


Figure 15 – Proposed wilderness boundary crosses a road

2. “Cherrystem” Misses the Feature (i.e., the Cherry)

A cherrystemmed road is a dead-end road where the boundary of the wilderness extends up one side of the ROW around its terminus, and down the other side of the ROW. Be discerning of the “cherry” at the end of a “cherrystem” road.

Normally, such a road is intended to exclude the features at its terminus from the wilderness as well as the access route to those features. If the depicted line ends short of or past the features, draw and describe the boundary in the congressionally-required map and legal boundary description to end at the features of its intended terminus.

- Terminal features must be close to the end of the cherrystem drawn on the legislative map. It may be reasonable to conclude ¼ mile of error, but more than ½ mile of error may not be reasonable.
- Typical terminal features include wind turbines, structures, radio facilities, trailheads, etc. The cherrystem boundary should be adjusted to include all reasonably associated features of the intended terminus.

3. Full ROW Not Excluded

If a boundary feature also has a ROW, the ROW boundary, not the feature itself, will be mapped and described in the congressionally-required map and legal boundary description.

- For example, where a powerline is the intended boundary, and the legislative map is drawn on the centerline of the powerline, the congressionally-required map and legal boundary description should be corrected to exclude the entire powerline feature by placing the boundary on the ROW boundary line.
- Many ROWs incorporate an associated road which provides maintenance access to the ROW. The final congressionally-required map and legal boundary description should be drawn/written to exclude the associated maintenance road from the wilderness, i.e., along the road ROW or a setback distance from the road ROW.

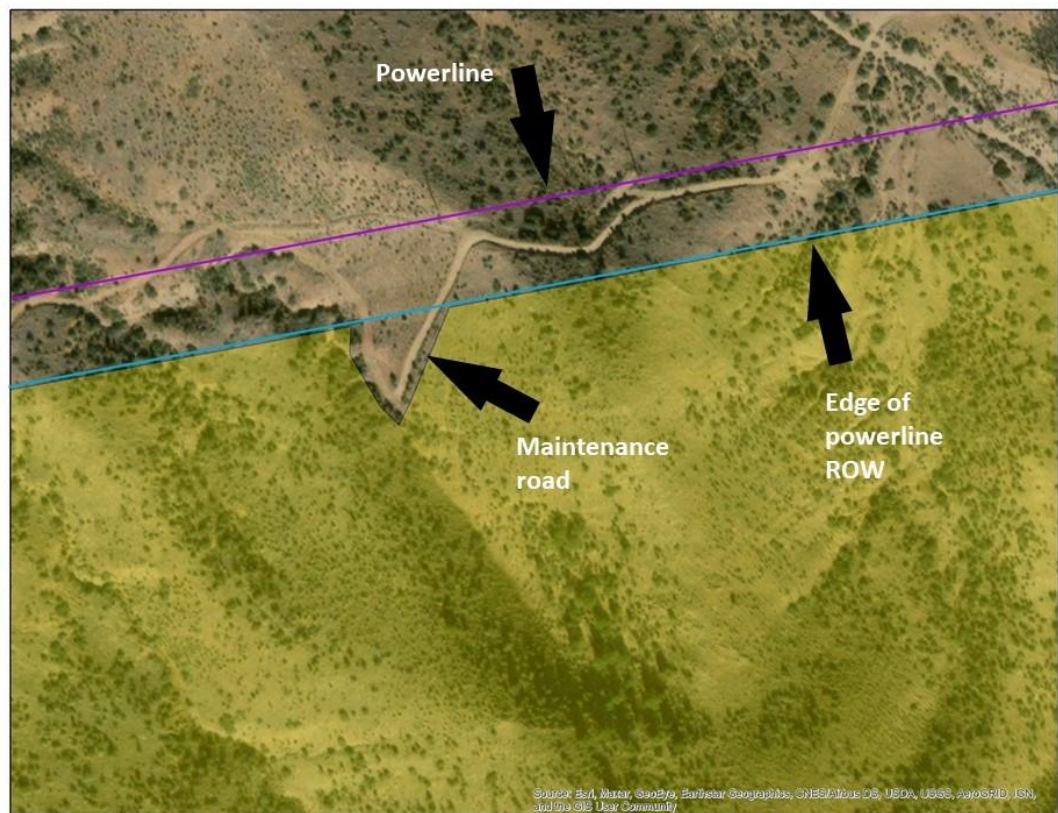


Figure 17 - The wilderness boundary should exclude maintenance roads associated with a linear right-of-way.

E. Sources of Clarifying Guidance

During the preparation of the legislative map, notes or other records of communication with congressional staff may have been documented. There also may be metadata describing boundaries associated with the GIS layer. These sources can be informative in resolving ambiguous boundaries, but they are not definitive. These records are not a legal component of the enabling act. Only the legislative map identified in the enabling act, the boundary line provided on the map, text on the map, and the text of the act are definitive. Ambiguities in the boundary should be addressed using all sources of relevant information, including the guidance provided above. Legislative history, including congressional reports, prior map versions, and the Congressional Record, can also be used to address ambiguities. Legislative history can be readily accessed on Congress.gov and ProQuest (an electronic database available to DOI employees through the DOI Library).

F. Congressionally-Required Map Finalization

1. Surveying

Survey of an entire legislative map's boundary may be cost prohibitive, and furthermore is not necessary as encroachments and use conflicts typically arise on only a small percentage of boundary segments. Therefore, a risk management approach should be used in identifying segments that may require monumenting or a cadastral survey (see 600 DM 5, Standards for Federal Lands Boundary Evidence, and H-9600-1, Cadastral Survey Handbook, Chapter I). These segments can be flagged on maps/notes in the permanent case file and used to identify priority boundary segment survey (via a Management of Land Boundary Plan) needs as funding becomes available. The Cadastral Surveyor completing the congressionally-required maps and legal boundary description should review each congressionally-required map/legal boundary description with realty, minerals, and lands staff members to identify higher risk boundary segments that may cause issues in the future – i.e., those segments that are difficult to identify on the ground, have higher risk of adjoining uses encroaching on boundary, etc.

2. Filing with Eastern States Office after Receipt by Congress

Once the congressionally-required map and legal boundary description for the legislated area are finalized, the BLM State Office sends the package (congressionally-required map, legal boundary description, and congressional transmittal letters) to BLM Headquarters for review and surname/clearance. See MS 6120, Congressionally-required Maps and Legal Boundary NLCS Designations, for detailed step-by-step instructions on the clearance, delivery to Congress, and filing process with Eastern States Office.

Note: BLM HQ Legislative Affairs or a BLM State Office may, prior to final submittal to Congress and filing with Eastern States Office, then share the proposed congressionally-required map and legal boundary description with the sponsor of the

legislation and with congressional committee staff for a final check to ensure any BLM corrections of clerical errors have been made in accordance with congressional intent.

G. Preparing Public Maps Pending the Congressionally-Required Map and Legal Boundary Description

One of the highest priorities for BLM staff following a new designation is to review the new boundaries and identify any areas of public concern requiring visitor use maps and signage. Visitor use maps are an invaluable communication tool for notifying the public of the new designation and providing notice of acceptable land uses. Visitor use maps are often required well before the congressionally-required map is available.

For example, new wilderness areas are closed to motor vehicles immediately upon enactment of the enabling law. However, the congressionally-required map may not be completed for several months. In these cases, visitor use maps can help promote compliance well before the congressionally-required map is complete. Similarly, visitor uses designated through RMPs or travel management decisions are communicated to visitors through signage and clear visitor information, including maps, rather than through detailed legal boundary descriptions.

Any interim changes in visitor use maps, diverging from the legislative map, should be completed using the guidance above. Interim changes to GIS boundaries used on public visitation maps should be made only where public use concerns exist, and it is clear the issue is a clerical error. For example:

- The boundary line of the legislative map appears to incorporate segments of a boundary road within a wilderness.
- The cherrystem in a wilderness around a developed recreation site appears to incorporate a portion of the site within the wilderness.

The BLM District or Field Manager, depending on state processes, must approve interim changes prior to publishing a visitor use map. See MS 6120, National Landscape Conservation System Management, Section .13.

IV. Legislative Map & Data Management

Employing data management during the legislative map making process provides a framework to collect, store, and use data securely and efficiently. Managing data in a manner that is coherent and consistent allows for quick identification and retrieval of data during the initial request and during any follow up requests.

A. Access & Security

Per BLM policy (PIM 2013-169), maps prepared for congressional offices are strictly confidential and associated data and products are highly controlled. All GIS project directories for legislative map requests should be organized within a single, secured network folder location. The permissions on the folder should be set so only GIS, legislative affairs staff, and appropriate subject matter experts who need access to the data and documents can read and modify the folder contents. All maps, data, and documentation related to the project should be stored in a project specific directory within the secured network folder.

Altering folder permission to create a properly secured folder should always be done in coordination with BLM Information Technology (IT) staff. Assistance should be requested via an IT Helpdesk Remedy ticketing system. If changes in folder permissions are done on an ad hoc basis or improperly without awareness of IT, changes made to secure folders may be inadvertently reversed to their original settings. In other cases, crucial backups of data in secured folders may be missed.

Prior to being introduced in legislation, the data and products are confidential. Requests for GIS data or copies of maps that were prepared for a congressional office should be referred to that congressional office or to HQ-620, Legislative Affairs. Following the formal introduction of the bill for consideration of the House or Senate, the maps cited in the bill can be shared freely.

B. Standard Map Elements

In the context of this BMP document, map elements refer specifically to the text and graphic elements that surround and complement a map frame, rather than the data themes depicted on the map or their labelling and symbolization (see the *Map Features and Templates* section below).

1. Required Map Elements

Per BLM policy (IM 2013-169), maps prepared at the request of congressional offices should always include the following map elements:

- Title

- Date (see *Map Identification* section outlining that every map is unique and no two maps may be produced with both the same date and title).
- Text indicating the congressional office for whom the map is being made, including the statement, "This map was prepared at the request of Senator or Representative [Name]".
- Scale (see *Notes on Map Scale* below).
- North arrow.
- A small locator map.
- A brief disclaimer.
- [Standardized Disclaimer Statements for BLM](#) following applicable state or national guidance.

2. Suggested Map Elements

Consider including the following additional map elements, some of which are listed in the Attachment 1 of PIM 2013-169:

- Scale bars.
- Authorship identification (i.e., text identifying, the BLM office responsible for creating the map).
- Map projection and reference datum.
- A comprehensive legend.
- A common scale indicator (1:##.###), along with a statement that the map is intended to be plotted at __ x __ (most commonly 34 x 44).
 - Note: It is always preferable to use *scalebars* as indicators of scale on maps that could be plotted with scaling applied. If a congressional office specifically requests showing verbal scale or a representative fraction on a map, the statement indicating the intended plotting size should also note that the given scale is *only* valid when the map is plotted at the intended size *without scaling* (e.g., *This map is intended to be plotted at 34 x 44 inches, the given scale of 1:24,000 is only valid when the map is plotted at 34 x 44 inches without scaling applied*).
- Source layer credits.
 - A brief text description of the source and currency of data layers depicted on the map. This can be especially important in cases where the data may have originated with an outside agency or entity.
 - If applicable, prominent text indicating the “draft” status of a map.
 - The number of the bill for which the map is being produced (e.g., H.R. 823). This will sometimes be included within the title of the map.

- The date and time the map document was last saved and/or exported.
- The full file path, including document name of the map project from which the map was produced, is recommended for draft maps.

C. Map Features and Templates

There is significant benefit to maintaining a consistent look and feel to the legislative maps produced out of any single BLM office responding to such requests. As an office produces more legislative maps to the same set of standards, or from the same set of map templates, the maps will become recognized by the congressional delegation as a standard product and congressional staff will have a reasonable expectation of what any requested maps will ultimately look like. Having a robust set of legislative map templates that includes a symbolized set of standard map features (see *Standard data layers below*) and, to the extent possible, that are prepopulated can significantly decrease the amount of time BLM offices spend responding to legislative map requests.

1. Standard Data Layers

According to PIM 2013-169 and the Appendix 1 - Model Map Guidance from WO Legislative Affairs to State Legislative Staff attachment, the following data layers should be included on legislative request maps:

- Land status (BLM standard colors).
 - Note: “Land Status” is the term used in the original legislative mapping IM to refer the GIS layer that is now more commonly referred to as Surface Management Agency or SMA. Where text has been copied directly from PIM-2013-169 in this document the original IM text will not be altered and the term “land status” will continue to be used when referring to surface management agency.
- Township, Range, and Principal Meridian indicators.
 - Also, section lines and some section numbers if feasible at the scale of the map.
- Major roads, cities and towns, streams, reservations, state boundaries, and county boundaries.
- Topography lines or shaded relief should only be shown if requested.
- Any special designations should be identified using standard colors, including NPS units, National Forests, designated wilderness, National Conservation Lands units, etc.

Several important data layers were not mentioned in PIM-2013-169, including:

- BLM Land Tenure Corporate Data Layers, including Public Land Survey System Dataset (PLSSDS), Surface Management Agency (SMA), and official survey data. Note: As outlined above, PIM 2013-0169 made reference to these datasets while not using official or updated nomenclature for the datasets.
- The proposed feature or features, including proposed wilderness, other National Conservation Land areas, mineral withdrawal areas, and more. These features will usually be the primary legislative map feature(s). Specialists should make sure to proof the map export to ensure the features are displayed clearly (see Standard Symbology below), completely, and without error (see Section I Sub-section 4 Completing the Map).
- “Inholdings” are non-federal lands within the designation’s boundary perimeter line that would become part of the wilderness area should they be acquired. Depicting these lands on maps and within the map legend as a distinct map layer may be especially important if the text of the legislation itself describes or mentions them.
- “Edgeholdings” are non-federal lands contiguous to, but outside the designation’s boundary perimeter line that would or would not become part of the wilderness area should they be acquired. There may be allowances, such as access, provided to an edgeholding within the text of the legislation. If so, depicting these lands on maps and within the map legend is important.
- Pending or proposed land tenure changes (e.g., exchanges, acquisitions, transfers) in and around the proposed wilderness area or National Conservation Lands features, especially potential “edgeholdings” and “inholdings.”
- Data layers depicting inholdings, edgeholdings and land tenure changes may not be delivered to BLM. It may be necessary for a GIS specialist to coordinate with Legislative Affairs, Cadastral Survey and/or other subject matter experts to develop these layers based on legislative text and BLM or other agency corporate data, e.g., surface management agency (SMA), Public Land Survey System Dataset (PLSSDS) and official survey data. *See Appendix 5, Inholding and Edgeholding Examples*, for additional clarification on inholdings and edgeholdings.

GIS, Legislative Affairs staff, Cadastral Survey and cartographers should work together to develop an agreed upon set of standard symbology and labeling for the data layers listed above, along with any other base data layers (not listed above) commonly depicted on legislative maps by the responding office. Once agreement has been reached about a starting point for the depiction of base data layers on legislative maps, that symbology should be stored and recorded within the office’s legislative map request templates. This legislative intent is very important for development of the final congressionally-required maps and should be addressed specifically in the map guidance when developing the legislative map. If the intent is to include the non-federal lands as part of the wilderness in the future (via donation, exchange or willing seller), then the line weight of the non-

federal parcel should be different than the exterior boundary of the wilderness area. If the intent is to exclude the non-federal lands from future inclusion, then the line weight should be equal to the exterior boundary of the wilderness area.

2. Standard Symbology

- Surface Management Agency (referred to as “Land Status” in PIM 2013-169) and wilderness should be displayed on maps according to the standards outlined in Appendix 6, Map Color Reference Sheet originally published in H-1553, Publication Standards Handbook.
- It is strongly recommended that BLM offices responding to legislative map requests adopt a standard symbol set for proposed area boundaries and apply that symbology consistently to all legislative request maps for that state.
 - Legislative map requests frequently focus on proposed wilderness areas, proposed wilderness additions or other proposed National Conservation Lands units. GIS staff should work with Legislative Affairs staff to develop a standard set of symbology for proposed wilderness areas, and to the extent possible not deviate from that symbology when creating legislative maps.
- Proposed feature (e.g., wilderness area) symbology should be easily identifiable on the map and within the map legend.
- Boundary lines for proposed features should be distinctly colored and portrayed with a thicker line weight than most of the other line or boundary features on the map.
- The labels for proposed feature areas should also be prominent and where possible colored in a way to match the color scheme used for proposed feature boundaries.
- Adding a unique fill color or pattern to the map to portray the area of a proposed legislative map feature may also improve map readability, especially in instances where the proposed feature boundary is complex. However, it is recommended to assure there is always a perimeter line that is only used to depict the full extent of the feature (e.g., wilderness area) boundary.
 - Standard symbology should also be developed for any additional proposed features an office regularly depicts on legislative maps. This could include:
 - Wild & Scenic Rivers
 - Special Management Areas
 - Special Recreation Management Areas
 - Withdrawals
 - “Edgeholdings”, “inholdings”, and land tenure changes.
 - Where needed, these features should be portrayed on legislative maps using a distinctive hollow, or mostly hollow

hashed line or stipple filled polygon feature, allowing the map user to view the current surface management agency information underneath. In any case, the line weight should be different than the exterior wilderness boundary to confirm the non-federal land is included and thus eligible to be part of the wilderness if it is donated, exchanged or purchased from a willing seller.

- Note: Symbology should be stored as GIS layer files in an accessible folder location associated with legislative map requests projects so it can be easily located and used by any GIS staff assigned to complete legislative map requests.

D. Map Identification

PIM-2013-169 stipulates that, “All new versions of a map must display a new date. If revisions and corrections are made to a map, no matter how minor, the map must be given a new date subsequent to the original date. A new date provides a unique identifier for each map version and is critical to maintaining the integrity of our maps.” The map date, typically included somewhere within the title block of the map, is the critical identifier for a legislative map, and is often noted specifically within the text of a bill and commonly used to identify specific map versions within internal communications and communications with congressional offices. Issues may arise in relying on map dates as unique identifiers, when multiple revisions or corrections to a map occur on a single day, or when a single map request may produce a set of several similar maps each necessitating a unique date. In these instances, it may be possible to create a new/unique title for the map (i.e., so if a new version of a map is produced on the same day it will have a unique/different title).

Some offices and programs responsible for responding to legislative map requests have pre-existing systems for assigning unique identifier numbers to map projects (e.g., OR/WA BLM cartography program). Where such systems do not exist, and tracking map update requests or identifying the most recent version of an individual map has proved problematic in the past, an office should consider adopting a numbering and logging system for the legislative map request process.

Appendix 2, Data Organization, of this document outlines in detail an example map identification and logging system for legislative map requests.

E. Updating Maps – Data for Proposed Area Boundaries

As discussed, the data depicted on legislative maps are the property of an external congressional entity, not the BLM. It is not unusual for congressional offices to request BLM staff to create and update the boundaries of a map in development. This process can be iterative, requiring multiple updates to the boundary of proposed features during the course of a single request, and may span multiple weeks, months, or even

years. While deadlines for turning around legislative map requests can be tight, maintaining a clear, coherent, and retrievable record of the specific instructions that led to each boundary adjustment can pay dividends in responding to each subsequent map revision, preventing the future possibility of costly and time-consuming adjudication of the congressional intent related to proposed area boundaries.

Below are guidelines and recommendations for handling initial updates (if required or requested), along with both minimal and preferred best management practices related to handling and recording legislative update instructions for proposed area boundaries.

1. Initial updates

Legislative map requests will typically include a GIS file of a proposed area's boundary to be depicted on a legislative map. These GIS data are often created by outside entities lacking access to the most updated versions of BLM's corporate data (for example, surface management agency and PLSS survey data).

Consequently, the proposed area boundary may not be aligned accurately. This issue could manifest itself in small slivers or gaps between the proposed area boundary and surface management agency and/or PLSS legal subdivisions such as township, section, or section subdivision lines. This can also cause inconsistent boundary offsets from road or other features. In Figure 18 below, the proposed wilderness boundary is misaligned to the PLSS and vertically integrated surface management agency data.

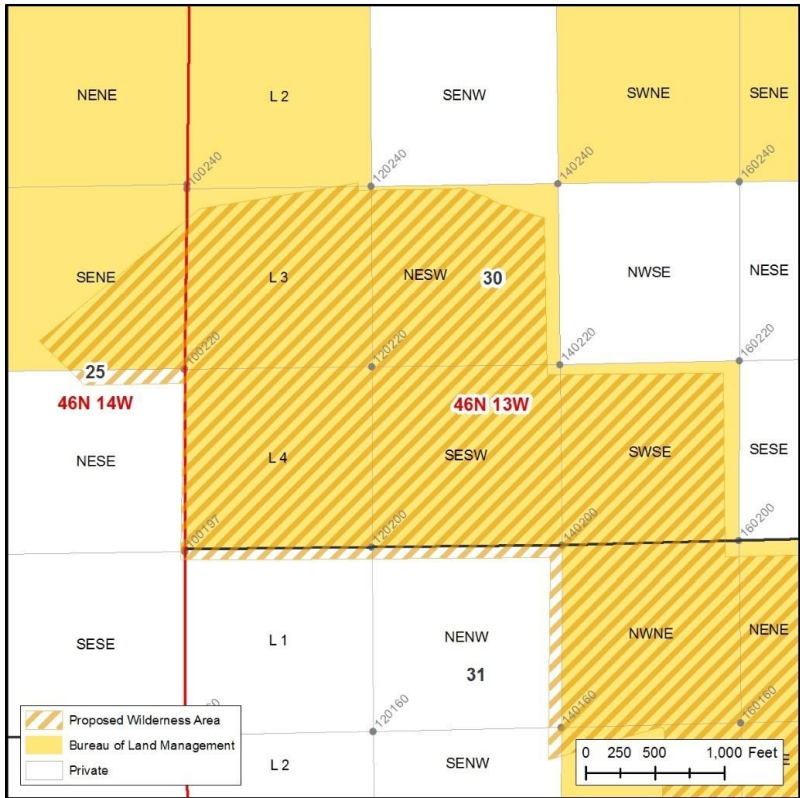


Figure 18 - Proposed wilderness boundary misaligned to PLSS and vertically integrated surface management agency data

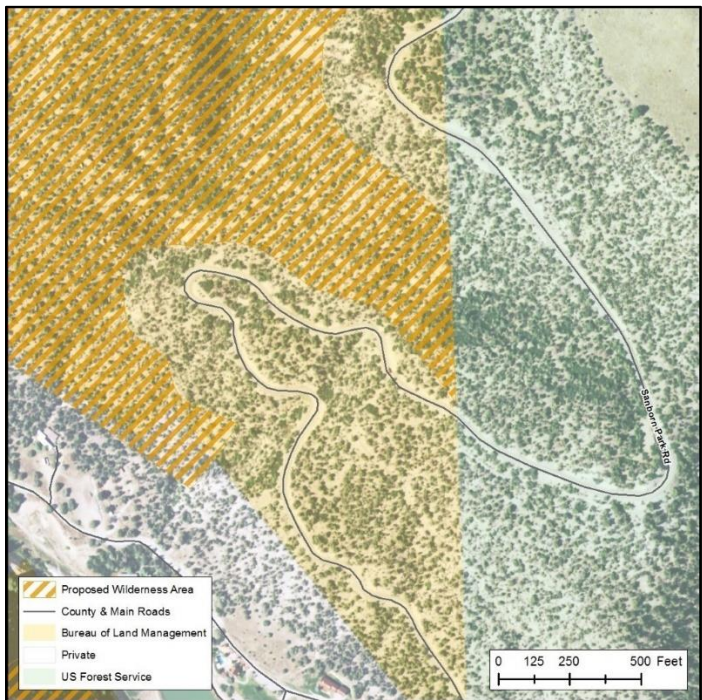


Figure 19 - Inconsistent offset of proposed wilderness area boundary from Sanborn Park Rd.

Upon initially receiving a proposed area boundary feature GIS file, a GIS specialist should identify any potential issues related to the feature's misalignment with BLM corporate datasets or other authoritative datasets. Coordination with the Cadastral Survey program is advisable. This initial analysis does not involve identifying any potential use conflicts between a proposed area and existing uses (e.g., oil and gas leases), rather the GIS specialist should identify portions of boundary that appear to be inconsistently aligned with the features from which they are likely supposed to be derived (see Figures 18 & 19 above). These boundary issues should be brought to the attention of BLM Legislative Affairs who will review the data and images provided and coordinate any necessary consultation with congressional staff. It is recommended to bring these boundary issues to the attention of cadastral survey for additional guidance. Where possible, maps or screen captures illustrating these issues can be extremely helpful in discussions and should be provided to HQ Legislative Affairs staff. Decisions to bring the feature boundary into alignment with BLM corporate and/or other authoritative data should be authorized by HQ Legislative Affairs in writing, and recorded either with a backup copy of the GIS data as originally delivered or within arc feature-level metadata for the proposed boundary feature.

2. Best Management Practices for GIS Staff

At a minimum, GIS staff should capture a backup copy of each iteration of the proposed area feature boundary prior to making any edits or adjustments. The backup file should be date and time stamped to indicate what the boundary data looked like at the time prior to the boundary adjustment being received (see Capturing Backups of Data and Projects above). Moreover, documentation of the specific instruction for the boundary adjustment (e.g., a pdf copy of email correspondence, map guidance document, or simple text file explaining who requested the change and when in the case of verbal instructions) should be stored alongside the backup data or within the project file system and named or marked in a way so that it can be tied with the date-stamped backup copy of the pre-adjustment data. This is important because congressional offices may request changes to a map depicting previous boundaries or information.

Numerous BLM national data standards for geospatial datasets utilize what is known as "feature level metadata" for the boundary, represented as lines or arcs that define the edges of polygon or area features. Feature level metadata allows detailed information to be captured for individual sections of an area's feature boundary. This is information that cannot be efficiently captured within the attributes of a proposed area feature itself. As outlined in the Feature Level Metadata Domains Reference Guide, the data captured with the standard implementation of arc feature level metadata fields and domains consists of coordinate source (the general category for the origin of the location coordinate(s)) and defining feature (category for the actual physical or mapping characteristics (features) from which the arcs are derived) information.

Depending on the deadline associated with a legislative map request, creating and maintaining a boundary arc feature level metadata dataset for a proposed area boundary may not always be practical or desirable. However, for requests that will involve frequent or iterative adjustments to proposed area boundaries, feature level metadata will be the best mechanism to track detailed information about what proposed area boundary features represent, and the specific instruction or communications from congressional staff that were used to inform the creation or update of any given section of boundary.

The four attribute fields and associated domain values outlined in the reference guide are a good starting point for feature level metadata. Both the Coordinate Source Code and Defining Feature Code domain lists are optional and can be adjusted to suit a specific set of user needs. In addition to these four standard fields, feature level metadata boundary arcs should include attributes that capture the following:

- If possible, the exact language of the instruction from congressional staff should be used to update or create the section of proposed area boundary. This can also be captured as an attachment of a request document or email correspondence if attachments are enabled on the feature level metadata boundary arcs;
- The date the boundary update instruction was received from congressional staff and the date the instruction was implemented within the proposed area boundary dataset; and
- A brief textual (“map label”) description of that portion of proposed area boundary (e.g., “300 ft offset from the centerline of Dry Gulch Rd. BLM 2081, west section-line boundary of sections 3, 10, 15 and 22 in T47N R6W 23rd. Principal Meridian.”)

F. Data Management for Non-map (Informational) Legislative Requests

Some legislative requests from Congress require GIS staff involvement but are not for the production of legislative maps. For example, a congressional office may want to know the number of acres of both leased and unleased split/estate (private surface overlaying federal mineral interest) within their congressional district. The product of such a request will be a simple table or spreadsheet. Below are some data management considerations for such requests.

- Project directories for informational legislative requests should be stored in the same centralized, secured network folder location used to store legislative map requests.
- The project directory name should follow any legislative map project naming conventions that have been established by the responding office.
- The final project directory should include:
 - **Frozen or “snapshot” copies of all corporate and non-corporate data used in the analysis:** BLM corporate datasets are not static. Layers such as land status, PLSS, water boundaries, and roads & trails will change over time as

more accurate data becomes available or other adjustments occur. To ensure the results of a requested analysis can be reproduced exactly, it is recommended that copies of all corporate data input into an analysis request be made and stored in the analysis project folder. This includes any authoritative source data from agencies other than the BLM (such as the USFS or USGS) used in the analysis.

- Frequent snapshots of statewide or regional datasets can be impractical from a storage and backup standpoint. Data snapshots, where practical, should be clipped or extracted to the specific area of interest (AOI) for a given analysis project.
- **Geoprocessing scripts or models used for the analysis processes:** These serve as a powerful form of documentation as they save in file form the exact tools, sequence of operations, and specific parameters used to complete a GIS analysis project. These include:
 - Intermediate and final data products, and
 - Any supporting documentation.
- If a follow up request for the same information is made after significant time has passed, or the context of the request changes significantly, it is best to establish a new project directory (including snapshot data copies) in the centralized, secured network folder location.
- If any consultation with other BLM resource specialists at the state or field level regarding either the GIS analysis process or its result is required, that consultation should be coordinated through Legislative Affairs staff.
- As with legislative maps, any data sharing of analysis results with outside agencies or partners is done strictly with the approval of HQ Legislative Affairs in coordination with the requesting congressional office.

Appendix 1 - Example of Legislative Map and Resulting Congressionally-Required Map/Legal Boundary Description:

The legislative map below for the Beauty Mountain Wilderness in CA is referenced in the Omnibus Public Lands Management Act of 2009 (P. L. 111-11) Subtitle L Riverside County Wilderness, California (b) (E) *Beauty mountain wilderness.—In accordance with the Wilderness Act (16 U.S.C. 1131 et seq.), certain land administered by the Bureau of Land Management in Riverside County, California, comprising approximately 15,621 acres, as generally depicted on the map titled “Beauty Mountain Proposed Wilderness”, and dated April 3, 2007, is designated as wilderness and, therefore, as a component of the National Wilderness Preservation System, which shall be known as the “Beauty Mountain Wilderness”.*

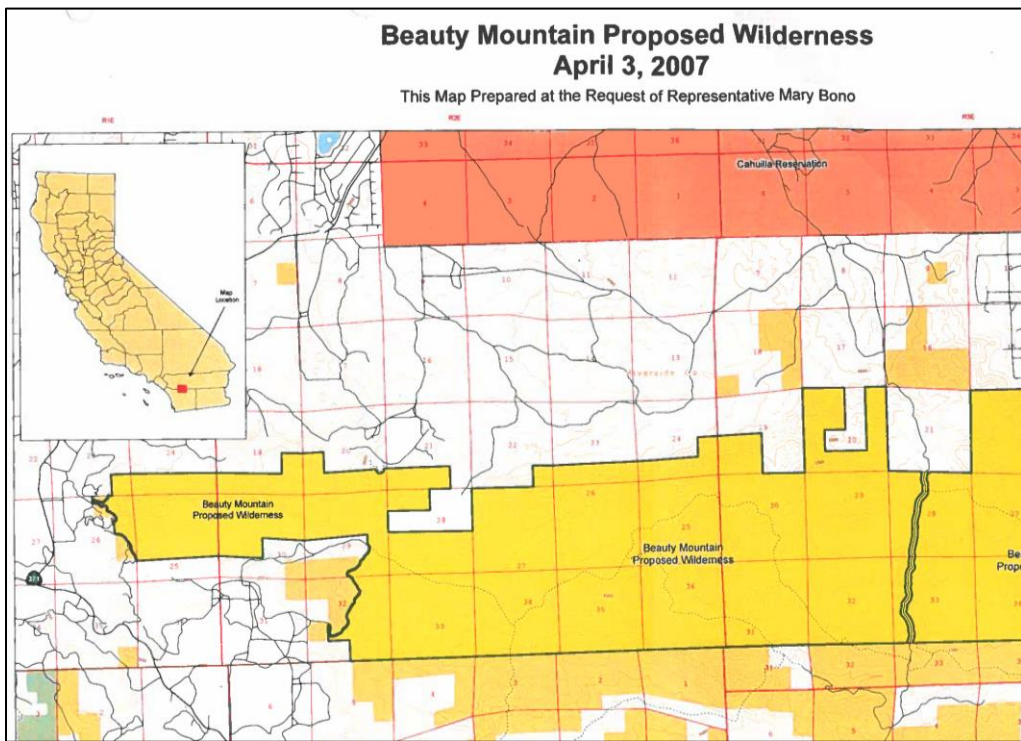


Figure 17 - Beauty Mountain Proposed Wilderness

The congressionally-required map and legal boundary description were developed by CASO Cadastral Survey in coordination with the state office wilderness specialist and required consultation with field and state office resources and realty staff. The legal boundary description is a point-by-point description of the entire boundary completed in a manner that can be surveyed if necessary.

Excerpt of Final Written Legal Boundary Description for Beauty Mountain Wilderness, CA:

Ul- Line 20-21

thence northerly on a line parallel with and 30 feet easterly of said centerline of road to point 21, the intersection of a line parallel with and 30 feet southwesterly of the centerline of a jeep trail;

Ul- Line 21-22

thence southeasterly, changing to northeasterly, on a line parallel with and 30 feet southwesterly, changing to southeasterly of the centerline of said jeep trail to point 22, the intersection of the line between sections 23 and 26;

Ul- Line 22-23

thence easterly between sections 23 and 26 to point 23, the east 1/16 corner of section 23 and 26;

Ul- Line 23-24

thence northerly on the north and south centerline of the southeast 1/4 of section 23 to point 24, the southeast 1/16 corner of section 23;

Ul- Line 24-25

thence easterly on the east-west centerline of the southeast 1/4 of section 23, the east-west centerline of the southwest 1/4 of section 24, and the east-west centerline of the southeast 1/4 of section 24, to point 25, the south 1/16 corner of sections 24 and 19 on the range line between Tps. 8 S., Rs. 1 and 2 E.;

The legal boundary description for Beauty Mountain Wilderness (above) references the associated congressionally-required map below which is annotated with the boundary segment numbers.

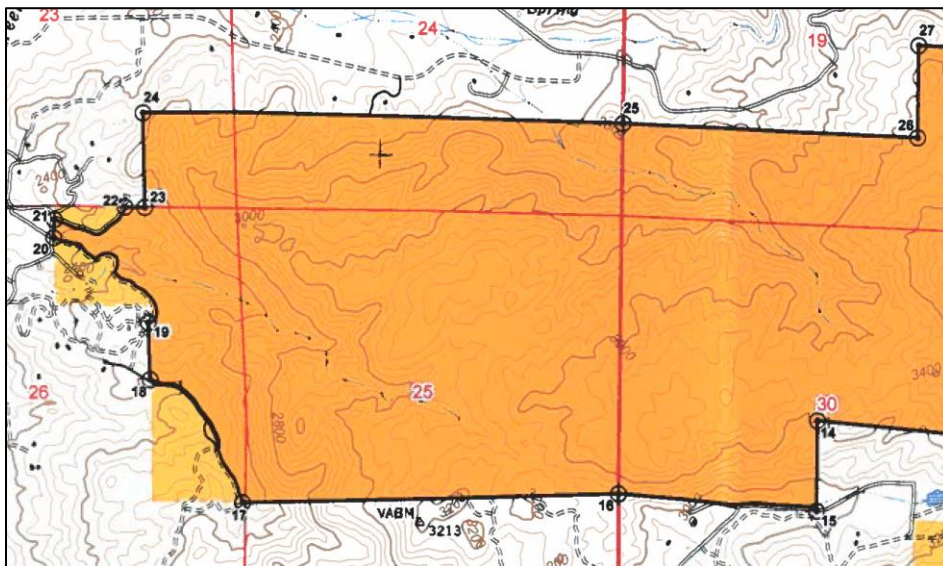


Figure 18 - Congressionally-required map of Beauty Mountain Wilderness

While all boundaries are not surveyed, legal boundary descriptions must be written in a manner allowing boundary segment(s) to be surveyed where required or requested.

Appendix 2 - Data Organization

A. Naming & Structuring Project Level Directories

There is a significant benefit to maintaining a consistent project directory structure for legislative map requests¹⁶. Maintaining a clear, consistent, and repeatable file structure will help ensure legislative map request data is handled and stored in a manner that makes it easily understandable and retrievable for other GIS, and legislative affairs staff members in the future. A well thought out directory structure can also facilitate key processes and practices that should be considered best management practices. A brief description of each one of these key processes is outlined below. More detail on each process, and a suggested legislative map project directory structure can be found in Appendix 3 – Suggested Legislative Map Request Project Directory Structure.

1. Create Back-up Copies of Map Projects and Map Data as Changes are Requested

When a congressional office requests an update to proposed area boundary (see *Updating Data for Proposed Areas Boundaries*) or a significant alteration to a map project depicting that boundary, it is best management practice to make a readily retrievable, back-up copy to the original data or map within the project directory structure.

2. Record when Exported Data and Maps Were Created

When exporting map images (pdfs, jpegs) to send to congressional offices for review, or providing copies of map data for congressional offices or other approved partners, it is a best management practice to either include the export date in the export image or data filename, export it to folder named with the export date, or both.

3. Clearly Mark Congressionally-Required Map Data and Projects

After a project is finalized or update requests are no longer being received, it is a best management practice to ensure final versions of both map projects and the associated proposed area map data area are clearly marked as “final” within the project directory structure and can easily be identified and retrieved by other specialists accessing the project directory in the future.

¹⁶ There are multiple approaches to naming and structuring project level (individual legislative request) directories and data within the secured network folder location designated for legislative map requests (see *Access & Security*). While some BLM offices responding to legislative map requests have successfully implemented data organizations strategies, other offices have approached this challenge in a more ad hoc fashion.

B. Sharing Legislative Map Request Data via “Cloud” Storage Spaces (OneDrive/SharePoint, Google Drive)

For close to a decade, most BLM employees have had the ability to access and share files with one another via cloud storage file sharing platforms such as SharePoint, Google Drive, or Microsoft OneDrive. These platforms allow BLM employees to create secured, collaborative workspaces in which they can host and edit documents and spreadsheets and share files that may be too large to email back and forth.

Certain legislative map requests will require BLM staff to collaborate across organizational offices that cannot access shared network folder workspaces (e.g., HQ Legislative Affairs staff will not have access to the same “S:\” drive folders as Utah State Office public affairs staff). In these instances, it may be beneficial to create a shared, collaborative cloud workspace through which files can be shared and common project related documents edited.

For instance, maps produced by a state office in fulfillment of a legislative map request may be too large or too numerous to share via email with HQ Legislative Affairs staff, or there may be a document or tracking spreadsheet that both HQ and State Office staff will edit and update for a project. In these instances, it makes practical sense to leverage a cloud platform such as SharePoint to share maps and host documents edited by multiple users in different organizational offices.

1. Access & Security

Like any other files produced within the Legislative Affairs mapping process, any files shared or edited via a cloud hosted workspace are considered strictly confidential. When creating a shared cloud hosted workspace, a user is typically given options for setting security and access controls for that workspace. Care should be taken to ensure that the workspace is private within the cloud environment, and only those users who need access to view or edit the files therein are granted access. If need be, staff should work with IT staff to ensure their collaborative workspaces are setup securely.

2. File Structure

Like shared network workspaces, cloud hosted workspaces give users the ability to create a tree of directories within directories. This document does not mandate one legislative map project file structure over another, though it does recommend putting in place a coherent file structure for legislative map request projects and using that structure consistently for each legislative map request received. When using a cloud workspace for a legislative map request, a best management practice is to mirror to the extent necessary the network shared file structure for the legislative map request in the cloud hosted workspace.

For example, an office may use an GIS project folder structure in which pdf map images are exported to a date stamped folder within a **products** sub-directory (e.g., 2020_ProposedWilderness\products\20201127). Within the shared cloud environment, the user would create a top level directory called 2020_ProposedWilderness for the project, a **products** subdirectory, and a date stamped folder beneath that to which to exported maps would be copied from the corresponding network shared directory. This would allow staff working on the legislative map request who do not have access to the same 2020_ProposedWilderness\products\20201127 within a network hosted file directory structure to access those map products.

3. File Retention & Project Closeout

Upon completing a legislative map request project, the user should evaluate all the files within a legislative map request project folder in a cloud hosted workspace and determine which files can be deleted and removed from that environment, and which should be moved to a network storage location for longer term retention.

Generally, files that are being duplicated into the cloud storage space to facilitate sharing (e.g., pdf map files that are too large to email) should be deleted and removed permanently from the cloud storage location so long as a copy of those items exists in the network storage legislative map request project folder. Working files that were actively edited or updated in a collaborative fashion within the cloud storage workspace (e.g., a map version or boundary update request tracking spreadsheet) should be copied from the cloud hosted workspace to the network storage legislative map request project folder, prior to the cloud storage space being decommissioned or deleted.

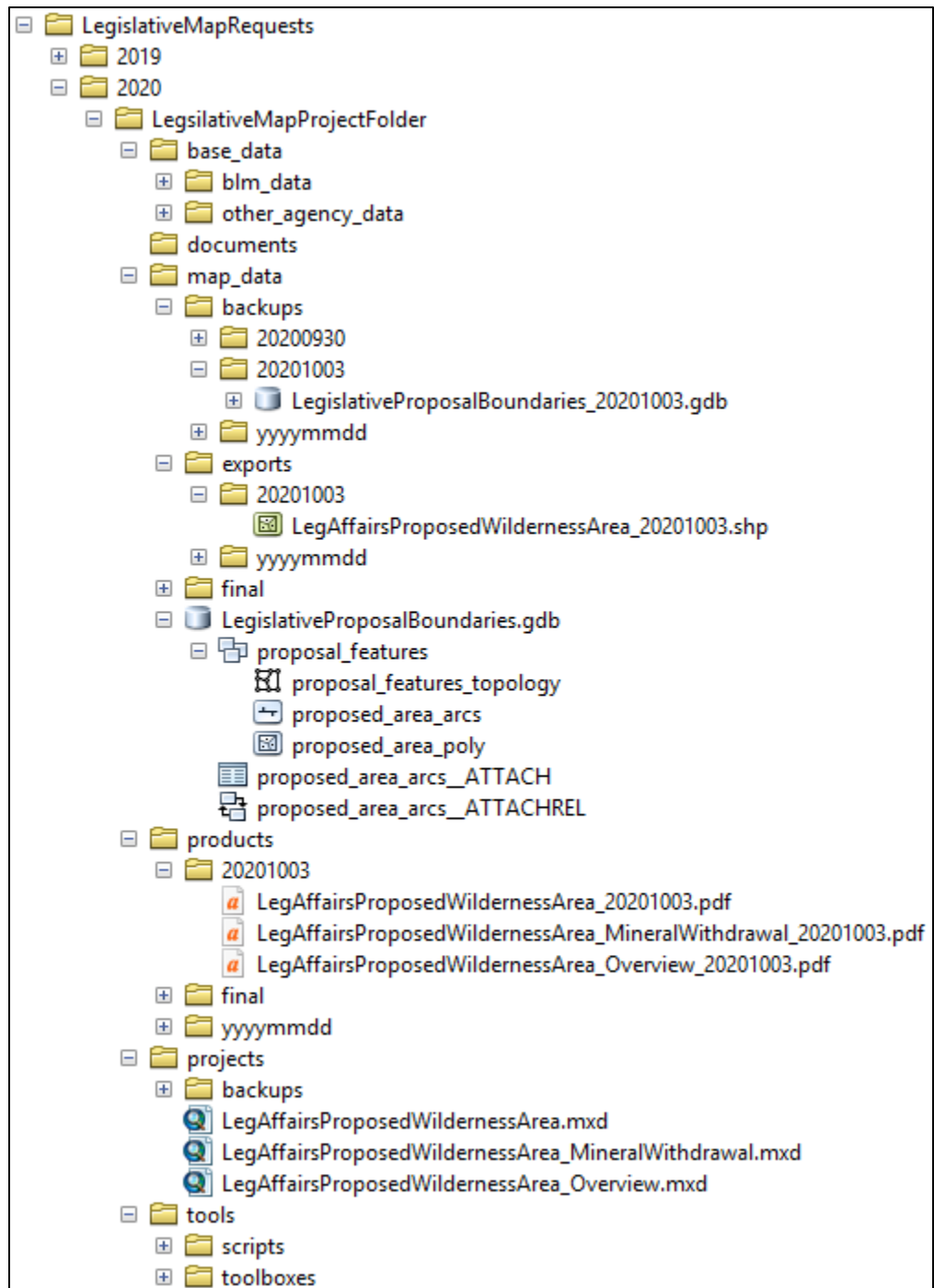


Figure 19 - Example of legislative map project folder

Appendix 3 – Suggested Legislative Map Request Project Directory Structure

Outlined below is an example legislative map request project directory structure. This structure borrows heavily on [Chapter 3](#) of the [National Wildfire Coordinating Group \(NWCG\) – Standard for Geospatial Operations, PMS 936](#). As stated in the NWCG Standard for Geospatial Operations, this approach will “support a consistent directory structure that is clear and repeatable, that promotes efficient use and storage of GIS data, and that ensures a smooth transition between GIS Specialists by making it easy to locate data or products.” As is the case with the Geospatial Operations directory structure, this suggested directory structure (or any variation thereof an office wishes to implement), can be pre-staged along with other GIS tools, map templates, and layer files in a zipped folder, and quickly deployed by simply unzipping a copy of the zipped folder structure and its contents into the proper shared directory location.

A. Specifications

- Folder names must not contain spaces, special characters, or periods.
- The underscore “_” is the only allowable character for delimiting name elements.
- Capital letters may be used to make names easier to understand.
 - First letter of proper names (e.g., Jones)
 - First letter to delimit multiple words (e.g., ThompsonDivide, ProposedWilderness) (often called “CamelCase”)
 - All letters that stand for something (e.g., WSA)
- The format for dates is eight digits in year, month, day order (yyyymmdd).
- The format for time is four digits in a 24-hour format (hhmm).

B. Directory Descriptions

2020 (year in which the map request was received, sits a root level in secured legislative map request folder)

LegislativeMapProjectFolder (file folder for a specific legislative map request e.g., 2019_ColoradoWildernessAct or COSO-20-04)

base_data (agency authoritative datasets)

blm_data (“snapshot” copies of BLM corporate data)

other_agency_data (copies of authoritative data from other agencies or entities used in legislative maps or analysis)

documents (spreadsheets, word documents, email correspondence)

map_data (datasets depicted on the legislative map or created/modified to fulfill the request)

backups (date and time stamped backups of map or analysis datasets)

exports (date and time stamped copies of exported map datasets)

final (when completed, copy of the finalized map or analysis datasets)

LegislativeProposalBoundary.gdb (file geodatabase containing working map data feature classes)

products (GIS map (.jpg, .pdf, etc.) and other product files produced for the request)

[yyyymmdd] (date stamped maps stored in directories named for the day they were produced)

final (copies of all congressionally-required products produced for the request)

projects (GIS product map document (.mxd, .aprx) files)

backups (backup map document files (.mxd, .aprx) copied from master map document files)

tools (extensions, scripts, or other software tools used in the request)

toolboxes (models and toolboxes used in the request)

scripts (geoprocessing scripts used in the request)

While not every office will implement the project directory structure outlined above, there are a handful of important data management processes the structure is designed to help facilitate. Specifically, the structure is designed to capture “snapshot” backup copies of map GIS data and projects (map document files) through time as significant changes are made to both. It is also designed to capture a record of the outgoing products (map image files and copies of map GIS data) produced during the legislative map request. Finally, the **map_dta\final** and **products\final** directories are meant to encourage GIS staff to place a final copy of the legislative map data and legislative maps in a directory (preferably with some metadata) where they can be easily identified as the authoritative, final legislative map request products and retrieved for re-use in future requests or follow up inquiries.

C. Capturing Backups of Data and Projects

At any point during the course of a legislative map request, a congressional office may request updates to the boundary of the proposed area features being depicted on the maps (see **Updating Data for Proposed Areas Boundaries** section), and/or significant changes to map projects from which products have to that point been produced. A typical legislative project may involve a handful of requests to update proposed feature boundaries or the maps depicting those features. Some projects may involve dozens of updates to proposed features and maps.

When updates requests are received, date and time stamped (e.g., _yyyymmdd_hhmm suffix added to end of file names) backup copies of both the map GIS data files and the map projects files (*.mxd or *.aprx) should be created within **map_data\backups\yyyymmdd** and **project\backups\yyyymmdd** directories, respectively, prior *to* any updates or edits being made to the GIS data or map project files. These files are meant to capture the state of the data and/or maps at the time the update request was received and prior to the update request being acted upon.

Any edit to map GIS data files (proposed area boundaries), no matter how minor, should be captured in a date and time stamped backup copy of that GIS data.

Significant updates to map project layouts, such as the addition, removal or major alteration of map elements, or alteration of the display or symbology of map features should also be captured in a backup copy, in a date and time stamped folder.

Consistently creating backup copies of both map GIS data and projects will create a chronological record of how the project request evolved over its course, allowing staff to identify with more precision when map and data changes occurred, and ideally giving staff the ability to tie any change to specific instruction received from a congressional office (*see Updating Data for Proposed Area Boundaries* section below).

D. Capturing a Record of Outgoing Map and Data Products

In addition to capturing a record of map data and project changes, it is prudent, to the extent possible, to capture a chronologically accurate record of product files (both map image files such as PDFs and JPGs as well as proposed area GIS data files such as shapefiles) delivered to a congressional office over the course of a legislative map request project.

When a map product is created to be sent to a congressional office it is recommended that map file itself be stored in a date stamped folder and folder within the **products** folder (e.g., **products\yyyymmdd**) and that the map image file include a date and time stamp within the file name (e.g., **_yyyymmdd_hhmm** suffix added to end of file name).

These similar conventions should be applied to any exported or copied GIS data files (e.g., shapefiles, file geodatabases) sent at the request of the congressional office. Those files should be stored within a date stamped folder within **map_data\exports** directory, and the GIS file should include a date and time stamp within the file name (e.g., **_yyyymmdd_hhmm** suffix added to end of the file name). It may also be beneficial to add information about to whom the file was produced within the file name (e.g., **_to_USFS** suffix added to the end of the file name).

Capturing Final Data and Products: The nature of legislative mapping projects is such that seemingly completed projects may be restarted months or even years after the last project map was exported and sent, or a congressional office may request the latest version of a map or GIS data file two years after that information was initially transmitted to them. In these instances, it is crucial to be able to quickly identify the previous “final” version of both the map GIS data and map image files, to serve as the starting point for the new project.

After a legislative map request project has been completed, GIS specialists should always move a final copy of the map GIS data into the **map_data/final** directory. It is helpful to add a “**_final**” suffix to the names of these files. At a minimum, this data should be documented with a simple “readme” text file answering a few simple questions about the data (e.g., Who? What? Why? Where? When?). Where time allows complete geospatial metadata should accompany the final GIS data files.

Likewise, final copies of the map image files produced for the project should be moved into the **products/final** directory and named with an “**_final**” suffix.

Appendix 4 – Suggested Map Logging and Numbering for Legislative Map Requests

- Adopt a standard for assigning a **base identifier** to each unique legislative map request project.
 - For example, the fourth overall legislative map request being handled out of the Colorado State Office starting in CY2020 could be assigned a base identifier of COSO-20-04, where “COSO” is the office abbreviation, “20” or “2020” is the calendar year the request was received, and “04” indicates that this is the 4th request handled out of this office this fiscal year.
 - Consider using this base identifier as the project folder name within secure network folder location set up for legislative maps or at a minimum incorporating it into the project folder name (e.g., ThompsonDivide_COSO_20_04).

- Each unique map created as part of a legislative request should be assigned a unique sequential **map identifier** that includes base identifier plus a sequential identifier starting at 01. Examples of unique map identifiers include:
 - COSO-20-04-01: Map of the Proposed XXXXX Wilderness Area
 - COSO-20-04-02: Map of the Proposed Mineral Withdrawal within the Proposed XXXXXX Wilderness Area
 - COSO-20-04-03: Map of Current Colorado Wilderness Areas including the XXXXX Proposed Wilderness Area.

- Use a tracking spreadsheet for each map created as part of legislative map request. On the first tab create an entry that includes the map title, map identifier, initial request date, current date portrayed on the map, and relevant comments for each unique map created. Add a spreadsheet tab for each unique map. Name the tab with the map identifier number. Tabs will be used create and track map version identifiers for each unique map revision.
 - For example, the first version of the first example map would be assigned a map version number of COSO-20-04-01-00.
 - A subsequent revision of the map would be assigned the map version number COSO-20-04-01-01, the following revision COSO-20-04-01-02, and so on.
 - Entries for these map revisions within the tracking spreadsheet might appear as follows:

Map Version Number	Revision Date	Revision Explanation
COSO-20-04-01-00	9/24/2020	Initial draft map version.
COSO-20-04-01-01	9/28/2020	Boundary revision. 300 ft buffer cherry-stem removed around Dry Gulch Rd. BLM-2030.
COSO-20-04-01-02	9/30/2020	Labels on all Sections except 1,6,31,36 removed. Proposed wilderness boundary thickened 1.5 pts and moved up in drawing order.

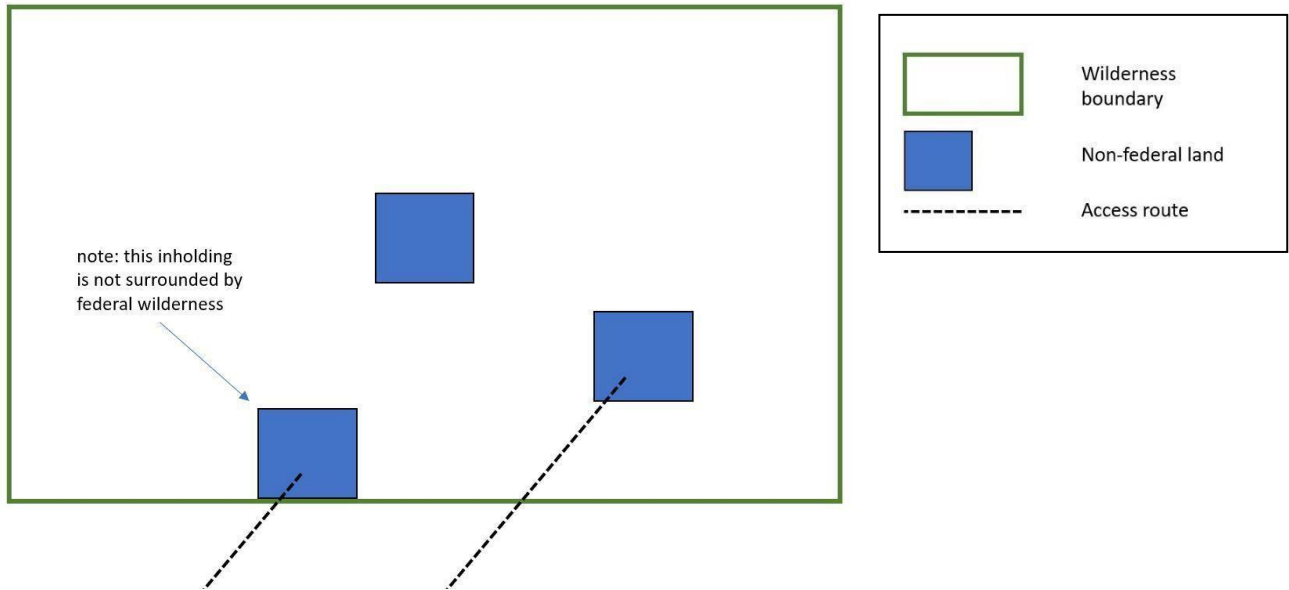
- The most current map version number would be included as a map text element on each revision of the associated Legislative Affairs map.
- The GIS staff responsible for making map updates would also be responsible for creating a new map version number with each revision, tracking that version number within the log, and ensuring the map version number is updated on the legislative map.

If this process is done consistently, transparently, and in coordination with Legislative Affairs staff, a map revision number can become a useful tool in ensuring all parties within the BLM are always referring to and discussing the exact same version of a map in correspondence regarding congressional map request projects. An Excel workbook template outlining the suggested map number and logging system outlined above will be attached to this appendix.

Appendix 5 – Inholding and Edgeholding Examples

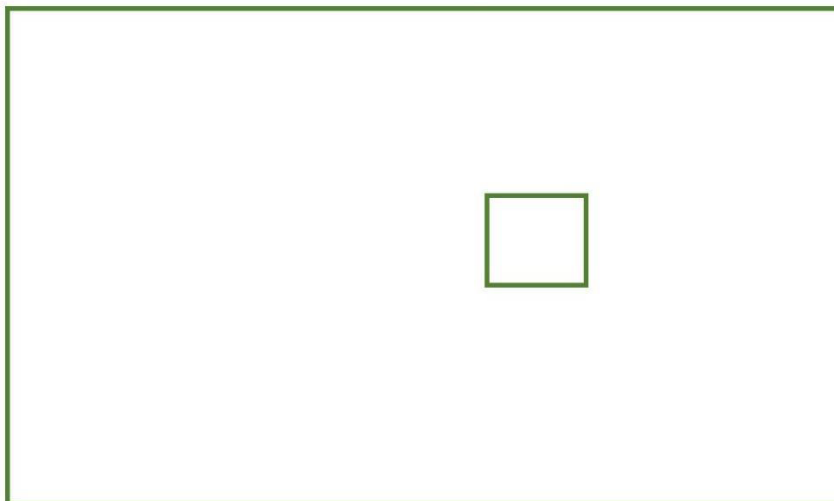
Inholding

An inholding is non-federal land within the boundary of a wilderness area. Some may have established routes that provide access, some may not. Access provisions in Section 5(a) of the Wilderness Act only apply to inholdings that are completely surrounded by federal wilderness lands (see 43 CFR 6305.10). Acquisition provisions apply the same to all inholdings.



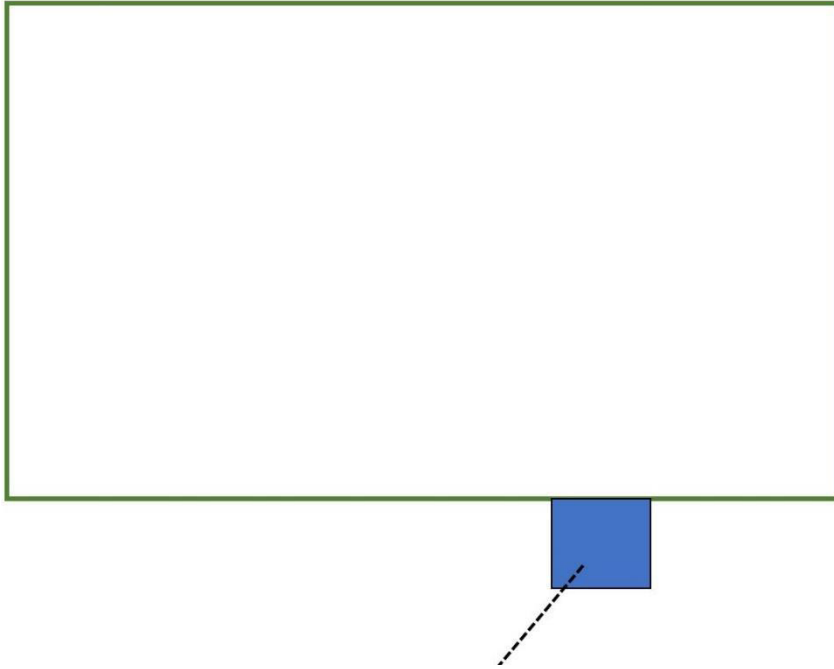
Wilderness exclusion area

A wilderness exclusion area is non-wilderness federal land or non-federal land that is surrounded by wilderness. Although rare, these may exist to exclude uses incompatible with wilderness designation. Access provisions in Section 5(a) of the Wilderness Act apply to non-federal lands, but not to federal lands. If the land is non-federal and later acquired by the agency, it does not become a part of the wilderness.



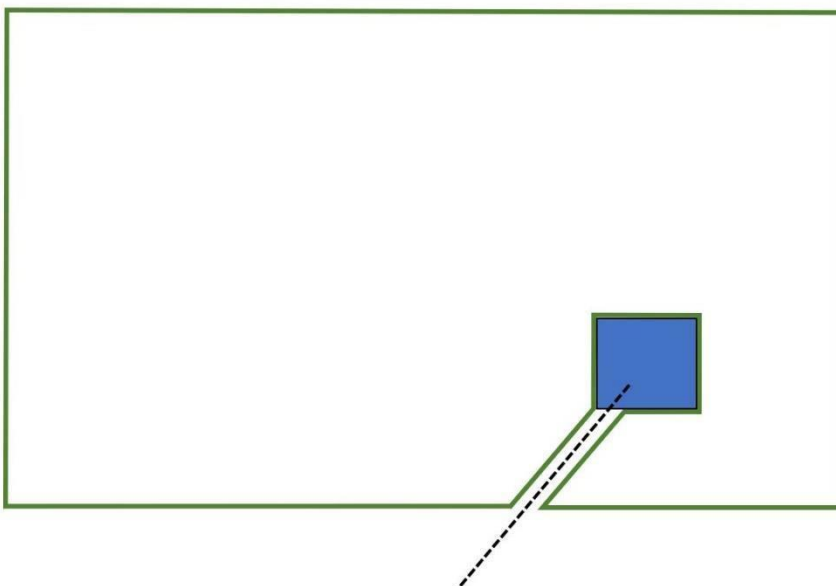
Edgeholding

An edgeholding is non-federal land adjacent to but not within the boundaries of a wilderness area. Unless a special provision in enabling legislation or a ROW exists, access to these properties does not pass over the wilderness. If a acquisition of these properties occurs through donation, the wilderness boundary is modified to include them.



Cherry system Edgeholding

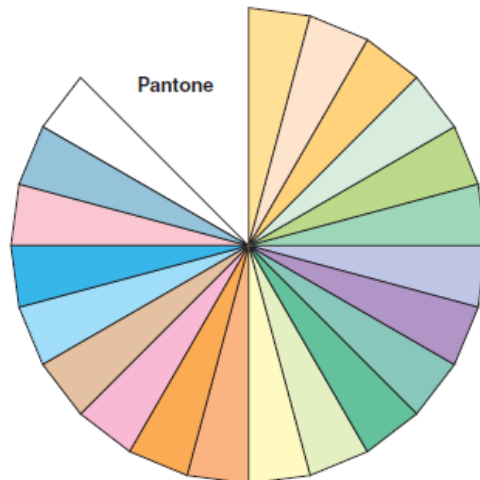
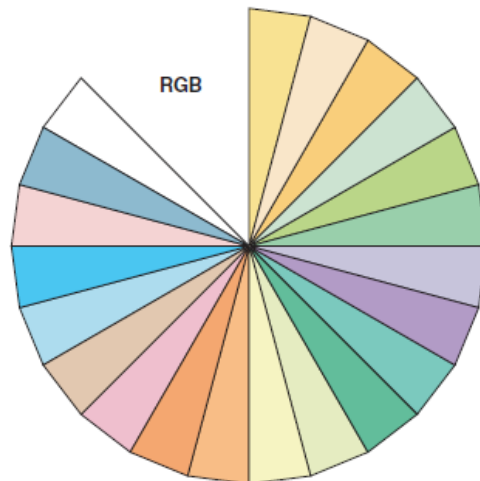
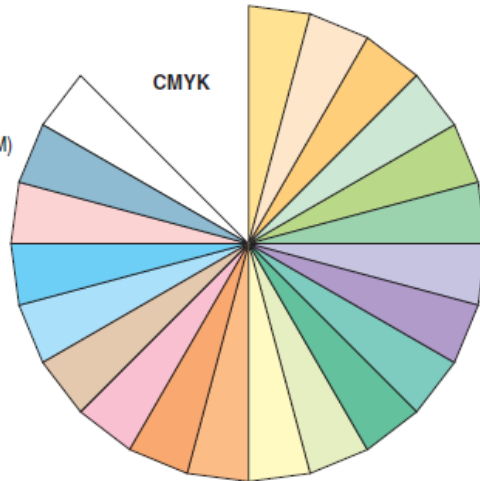
A cherry system edgeholding is an edgeholding that is at the end of a road (or other non-wilderness corridor) that is mostly surrounded by wilderness, except for the non-wilderness corridor. These are managed as all other edgeholdings.



Appendix 6 – Map Color Reference

Map Ownership Matrix

CMYK	RGB (ArcView HSV)	Pantone	
0-10-50-0	254-230-121 (34-134-254)	141C	Bureau of Land Management (BLM)
0-10-20-0	254-230-191 (26-64-254)	475C	BLM Oregon and California Lands (O&C)
0-20-60-0	254-204-92 (29-163-254)	135C	BLM Wilderness Area
20-0-20-0	204-235-197 (77-41-235)	351C	US Forest Service (USFS)
30-0-60-0	179-222-105 (58-134-222)	367C	USFS O&C
40-0-40-0	153-213-148 (82-78-213)	345C	USFS Wilderness Area
20-20-0-0	202-189-220 (188-36-220)	665C	National Park Service (NPS)
30-40-0-0	177-137-193 (201-74-193)	2563C	NPS Wilderness Area
50-0-30-0	127-204-167 (107-96-204)	563C	US Fish and Wildlife (USFW) National Wildlife Refuge
60-0-50-0	102-191-127 (97-119-191)	346C	USFW Wilderness Area
10-0-30-0	230-245-177 (52-71-245)	365C	National Grasslands
0-0-30-0	255-255-179 (42-76-255)	601C	Bureau of Reclamation
0-30-50-0	253-180-108 (21-146-253)	472C	Indian Reservation (IR)
0-40-60-0	253-154-82 (17-173-253)	157C	IR Wilderness Area
0-30-5-0	251-180-206 (240-72-251)	203C	Military Reservations and Corps of Engineers
10-20-30-0	228-196-159 (22-77-228)	4665C	Other Federal
30-0-0-0	179-227-238 (135-63-238)	2975C	State
50-0-0-0	107-207-226 (134-134-226)	2915C	State Wilderness Area
0-20-10-0	252-205-207 (254-47-252)	196C	Bankhead-Jones Land Use Lands
30-0-0-20	143-181-190 (136-63-190)	551C	State, County, City; Wildlife, Park and Outdoor Recreation Areas
0-0-0-0	255-255-255 (0-0-255)		Private



Colors on a printed product may differ from the colors shown above; colors may be affected by any combination of variables inherent to four-color process printing. These variables include, but are not limited to, film and plate registration, plate quality, type and weight of paper stock, different types of process color ink, printing press dot gain, print run color sequence, press color control, and pressmanship.

