

***Groundwater Technical Guide Development Program***

**Date:** May 1, 2014 (DRAFT)

**Subject:** Steering Team Conference Call

**Participants:** Leslie Bach, Tony Crump, Tony Erba, Joe Gurrieri, Dave Levinson, Katherine Smith, Linda Spencer, Pete Kilbourne, and Steve Solem

**Unable to Participate:** John Allen, Chris Savage, and Casey Giffen

**Discussion Topics and Action Items**

**Next Steering Team Call on July 24, 2014 @ 2:00 ET/12:00 MST**

# ****Project Overview**** Project Schedule

**Joe opened the discussion by thanking team members for accommodating the rescheduling of this call. He also highlighted that his role as acting National Groundwater Program Leader while Chris Carlson is on a LEGIS assignment will end on May 17. Troy Thompson will then be acting for 4 months or when Chris returns from his assignment. Joe and Troy will meet in DC to transition during the week of May 19.**

**While acting program manager, Joe has been involved in release of the FSM directives that outline the FS national groundwater policy. After numerous attempts, it now looks like the draft FSM directives will be published in the Federal Register the week of May 5. There will be a 90-day comment period. After comments are reviewed, the final FSM directives should be published later this CY. Because of the references made to the Technical Guide for Managing Groundwater Resources (FS-881), the evolution of these directives may affect the scope of the revision for the “management technical guide”.**

 **Steve Solem discussed key tasks coming up in the project schedule (04/04/14) and their status:**

* **The Internal FS Review (Task 4.60) and Partner/Affiliate Review (Task 4.70) concluded on March 21, 2014.**
* **Task 4.80 Review Comments/Reconciliation is the next major task related to the Groundwater IM&A Technical Guide (IM&A Technical Guide). Analysis of Internal/external reviewer comments began at the end of March.** By June 1, version 5.0 of the Technical Guide will be ready to incorporate edits related to significant/technical comments. Proposed edits will be reviewed by the CT following the July call and will be completed for final copy/edit by the end of August. Submission of the IM&A Technical Guide to the Office of Communications is scheduled for the end of the FY.
* **Scope of the Revision of Managing GW Resources Technical Guide (FS-881) and our approach for handling revisions will be the next priority on the schedule.**

***Steering Team Discussion:***

***Leslie Bach – Expressed confusion over references to the two technical guides and asked that they be consistently referred to during our conversations. Steve Solem responded and noted that we would reference the Groundwater Inventory, Monitoring, and Assessment Technical Guide as the “IM&A Tech. Guide” and that the Technical Guide for Managing Groundwater resources would be referred to as the “Management Tech. Guide”. Steve thanked Leslie for raising this point and asked members of the group to speak up if there was any confusion during the remainder of the call.***

1. **Internal FS and Partner/Affiliate Review Process**

Steve Solem reviewed the Internal FS and Partner/Affiliate Review Process. Comments were received on all sections and on Technical Notes. Only Regions 4 and 9, and National Stream and Aquatic Ecology Center submitted consolidated comments. A number of individual comments were received and are included in the analysis. However, these comments may not necessarily represent the view of the individual Forest or staff group. A comment analysis summary was provided to the Steering Team prior to the call.

*Note: All comments received are filed in: Dropbox\GW I&M Technical Guide 1\4.0 Evaluation and Review\4.5 Internal FS-Partner Review. Separate folders are used for FS Comments and Partner Comments. Comment analysis and reconciliation records are filed in the same folder in 4.6 Comment Reconciliation.*

*A copy of the detailed comment analysis (without reconciliation options and recommendations) is available at:* [*https://www.dropbox.com/s/z9ik2j1y3drmt1s/GW%20IM%26A%20TG%20v4.0%20FS-Partner%20Comment%20Summary%20%20%28v1.4%29.docx*](https://www.dropbox.com/s/z9ik2j1y3drmt1s/GW%20IM%26A%20TG%20v4.0%20FS-Partner%20Comment%20Summary%20%20%28v1.4%29.docx)

Responses to the NFS Deputy Chief’s Review Questions

Internal and partner reviewers were asked to respond to four review questions outlined in the NFS Deputy Chief’s letter requesting review. The following is a summary of the responses we received:

1. *Is the overall structure and flow of information presented in the technical guide useful and intuitive? Are there any major flaws?*

Responses highlight the need to be clearer on relationship between IM&A Tech Guide (methods) and Management Guide (where to apply methods); revisit/address the organization of Section 2; some comments noted the cut/paste approach from other groundwater documents; and external reviewer comments indicate that the IM&A Technical Guide will be useful as a reference document

1. *Does the technical guide adequately describe the relationships between agency business requirements and the proposed methods described?*

Both internal and external reviewer responses found the connections to agency business requirements to be adequately described. Internal comments were provided regarding the regulatory/legal framework and relationships between surface water-related statues and groundwater requirements.

1. *Are there changes to the technical guide that should be considered? Are there missing components?*

Almost all internal reviewers provided detailed edits, which will be addressed as part of the detailed comment review.

1. *What impacts to your organization may result from using the technical guidance?*
	1. *Benefits/Consequences: What benefits to partnerships, data sharing, and improved efficiency do you envision? Do you foresee any unintended consequences as a result of applying these procedures?*
	2. *Transition Costs: Are there changes or adaptations needed to information systems or inventory/monitoring systems to make them compatible with the guidance?*
	3. *Capacity of Personnel to Understand and Use: Are the skills and training of potential users adequate to understand and apply the guidance? What training opportunities would help users?*

Key topics from internal reviewers included such topics as data sharing. Comments on training/implementation costs are topics to consider as we move towards implementation and development of the Technical Guide for Managing Groundwater Resources.

***Steering Team Discussion:***

*Linda Spencer – Commented that a new NRM project regarding data sharing and exchange for water-related applications has just begun and may provide a broader solution to this need. Steve commented that as part of the IM&A Improvement Strategy implementation effort, Frank Sapio and others were leading a team focused on this issue. He also pointed out that external reviewers had raised the same issue in review of the Existing Vegetation Technical Guide effort. A briefing paper was prepared and presented to the Sustainable Landscape Board of Directors. A similar briefing paper will be prepared for discussion during the July Core and Steering Team calls.*

*Dave Levinson – Suggested that OGC review the discussion in Section 1 on the legal/regulatory framework. Joe responded by noting that the content was extracted from materials presented by OGC at the national groundwater course. He noted there is a disagreement between OCG attorney advisors regarding this material, but agreed that a review by Lois Witte, the lead OGC attorney for water-related litigation would be advisable.*

FS GIS Data Dictionary Comments

Pete Kilbourne has worked with the Geospatial Management Office (GMO) complete a review of proposed changes to the FS GIS Data Dictionary. Pete is also engaged with representatives from The Nature Conservancy regarding their review of the proposal.

Two sets of changes are proposed:

1. Those related to geology layers, specifically: (1) use of geologic map units to classify them for hydrogeology units (aquifers and confining units) and (2) identification of aquifers vulnerable to management activities and pollutants.

The main issue here is the need to update geology map units in NRM, which is not easy for data stewards to address. We proposed creating a linking table to hold geologic map unit interpretations. This does not require modification of the FS geologic map unit layers and in fact enables the use of any geology layer, internal or external as a source for geologic units to be reclassified as aquifers and confining units.

1. Point and polygon feature classes (layers) for springs and wetlands that can be used as a repository for all information on these features for use in planning and NEPA and are linked to the GDE database for selected inventory attributes collected during GDE Level I or II inventories.

This proposal is the direct result of feedback from participants from this year’s national groundwater training course who asked that this option be pursued to better support project NEPA analysis business needs at the Forest and District level.

Many positive comments were received, including those from the Utah Geological Survey. The majority of comments are focused on the proposed point and polygon feature classes (layers) related to GDEs. Pete is working on a response to these comments in partnership with NRM and groundwater program staff. Key comments from reviewers include:

* A technical issue regarding identification administrative units.

Preliminary Response: This issue can be resolved using the same solution used in addressing this same concern for the Existing Vegetation Technical Guide FS Data Dictionary changes.

* Redundancy between the proposed data dictionary feature classes for springs and wetlands with NHD, NWI, NRM-Terra sample points, and the NRM-Aquatic Survey application and need to manage multiple data sets.

Preliminary Response: The purpose of these feature classes is to identify the needed attributes for this type of data and to standardize data needed to support project-level NEPA analyses. This will be an advantage when NRM application solutions to address this issue are developed.

With respect to comments that we should just use NHD and NWI, we point out that those datasets are very incomplete or absent in many areas, necessitating the creation of these layers that can be used to collect information on these features and provide consistent feedback to improve the NHD and NWI by using attributes and data standards that match NHD and NWI. We also pointed out that NRM data dictionary interaction is being assessed in a separate effort.

FS Application Dependency Assessment

Sarah Hall provided feedback of the SharePoint site and set to Pete for his review and analysis. We also have some comments on NRM application relationships in the comments on the Technical Guide that will be addressed in this process.

Pete and Joe will discuss the GIS Data Dictionary proposal and resolution of comments and the NRM application dependency assessment and to review the draft data dictionary responses with Martin Ferwerda, Callie McConnell, and Andy Rorick on an upcoming call.

***Note:*** *As a result of this call we became aware of a new NWI that was just released that may result in a change regarding this proposal. Pete did a quick comparison of the data sets he developed similar to our proposal on the Manti-La Sal National Forest and the new NWI data and found there was general agreement, but a number of differences. There may still be a need to consistently capture information of these features at the Forest level that can be incorporated into both the NHD and NWI update processes.*

Detailed Comment Analysis Summary

Detailed comments provided on each of the Technical Guide sections in “track changes” or separate documents were reviewed, classified, and organized into the following groups:

1. “**Substantive**” comments requiring Core Team recommendation/Steering Team decision or concurrence. These comments affect the entire Technical Guide or multiple sections.
2. “**Significant**” comments that need to be clarified and discussed with the Core Team before proceeding with technical editing. These comments are generally confined to a single section.
3. Designates **technical comments** that warrant review and discussion with Chris Carlson and Joe Gurrieri and those making the comment before making technical edits or changes.
4. **Editorial comments** and suggestions on style/presentation made by reviewers that will be addressed as during the general editing process.

The following table provides a summary of the comment analysis results by Technical Guide section:

|  |  |  |  |
| --- | --- | --- | --- |
| **Technical Guide Section** | **Substantive** | **Significant** | **Technical** |
| General | 0 | 3 | 0 |
| 1 – Introduction | 0 | 0 | 17 |
| 2 – Foundations of GW IM&A | 0 | 5 | 28 |
| 3 – GW and GDE Inventory | 0 | 3 | 41 |
| 4 – Monitoring of GW and GW Systems | 0 | 2 | 17 |
| 5 – GW Evaluation and Assessment | 0 | 0 | 7 |
| Technical Notes | 0 | 1 | 16 |
| **Totals** | **0** | **14** | **126** |
| Notes: Significant comments are often repeated in multiple locations and are only tallied once. Editorial comments were not tallied for this analysis. |

Significant and technical comments are being consolidated into a single document and indexed by Section/Sub-Section.

Reconciliation Process

Options for reconciliation of the 14 significant comments will be provided to the Core Team for review and recommendation to the Steering Team before proceeding with editing. Steve provided a brief overview of these comments. Options for resolution of these comments and preliminary recommendations will be provided to the Core Team in late June. Review the options and recommendations will be addressed during the July Core Team and Steering Team calls.

The 126 technical comments will be reviewed with Joe and Troy to determine whether to proceed with the suggested changes. Joe and Troy may identify some comments that require Core Team review and discussion before proceeding with editing. Reconciliation of these comments will occur in June and July.

There are literally hundreds of editorial comments. Casey Giffen will review suggested edits for consistency with the Government Printing Office Style Manual and Office of Communication editorial direction. Many of these comments can be resolved by this review. The remaining edits will be made by Casey in consultation with Steve and may be elevated to Joe and Troy for resolution.

An opportunity for a final CT review of the final edited version of the IM&A Technical Guide will occur in August. It will be limited to two weeks to allow sufficient time for a final copy/edit review, updates to graphics, and preparation of publication files for the Office of Communication during September.

The final package is scheduled for delivery to the Office of Communication by the end of September for technical editorial review, design/layout, and publication. A .pdf version of the IM&A Technical Guide should be available in January 2015. Hard copy versions will be available about two months later.

***Steering Team Discussion:***

*Leslie Bach – Expressed concern over the resolution of the significant comment regarding adoption or a standard classification approach for GDEs. Leslie was concerned that the adoption of a standard classification would not foster working across landscapes and with different partners. Steve Solem responded by noting that contrary to the suggestion by the reviewer, the IM&A Technical Guide could not establish policy or standards – the FS directives system is used to establish policy and requirements. He also noted that the discussion of different classification systems was included because there are varying business needs addressed by each classification and that the user should elect to use the classification that best meets their needs. This information will be included in the proposed reconciliation of this comment. Leslie was in agreement with this approach.*

*Tony Erba – Offered that the comment analysis well done and appreciated the information and approach for addressing comments.*

*Dave Levinson – Echoed Tony’s comments regarding the comment summary and thought it was very informative and provided good information for the Steering Team regarding the comments received.*

|  |  |
| --- | --- |
| **Action:**  | * Steve Solem will prepare a briefing paper regarding data exchange/sharing for discussion during the July Core and Steering Team calls. (Due July 1.)
* Joe Gurrieri will coordinate review of Section 1’s discussion of the regulatory and policy framework with Lois Witte, OGC.
* Pete Kilbourne will continue to work with the GMO and NRM staff on the response to the GIS Data Dictionary Proposal and synthesizing the FS Application Assessment results. He will provide a status report during the July Core and Steering Team calls.
* Joe Gurrieri and Steve Solem will develop options for reconciliation of the 14 significant issues and recommendations that will be discussed during the July Core and Steering Team calls. (Due July 1.)
* Casey Giffen will proceed with review of editorial comments and suggestions and develop an updated “base” version (v5.0) of the IM&A Technical Guide. (Due June 1.)
 |

# Revision of TG for Managing Groundwater Resources

**Steve Solem introduced this segment of the discussion and noted that as work winds down on the IM&A Technical Guide, the focus of the Core Team will shift to the effort to revise the Technical Guide to Managing Groundwater Resources (FS-881).**

***Note: This portion of the discussion was abbreviated because we were nearing the end of the scheduled call time. These notes include information that was not specifically discussed with the Steering Team and is intended to more completely describe the management technical guide revision scope.***

***The July 24 Steering Team call will address this information in greater detail and include additional information on the Core Team’s recommended approach.***

**Revision Scope and Requirements Analysis**

**Steve Solem reminded the Steering Team that the first step in the revision process is to fame the scope of changes to the management technical guide and identify associated business requirements. Based on comments we received on the IM&A Technical Guide regarding the relationships between different technical guides, the Core Team concluded that:**

* **The content of the management technical guide should be focused on the management tech guide on how to apply the methods and techniques described in the IM&A technical guide to the management of uses and activities affecting groundwater resources.**
* **The relationships between the two technical guides should be clearly described.**
* **Content overlap between the two technical guides should be minimized.**

**Joe Gurrieri commented that the FS policy on groundwater in the directives references guidance in FS-881 with respect to processing special use permits and management of other uses, so we will need to ensure that the relationships between the proposed directives and the management technical guide are maintained. Within this vein, the relationship between the management tech guide and appraisals for land exchanges and valuation of groundwater and ecosystem services were discussed as examples.**

**Steve provided an overview of the basic outline for the revised management technical guide based on the Core Team’s discussion relative to the 4/1/14 version of the draft outline for the technical guide.**

**Section 1 – Overview and Purpose**

**Section 1 can be shortened and focus on managing groundwater and groundwater resources on NFS lands and potentially how the program is organized. There is no need to repeat information on Data Management (proposed section 1.5), the Roles and Responsibilities (proposed section 1.3) discussion should focus on management related activities, not inventory and monitoring activities, and the Statutory and Regulatory Framework (proposed section 1.2) should address only management of activities and conservation and protection of groundwater resources.**

**Section 2 – Managing Groundwater and Groundwater Systems**

**The Core Team is in agreement that this section should provide users a framework for how to approach problems from a risk assessment standpoint. The first step is to understand risk for a particular environment associated with different activities and uses, then focus on risk factors that relate to a particular activity. Steve referred to a risk assessment Joe developed for a mining proposal in northwest Montana as an example. This process provides an example of how to develop an understanding the risks in a particular geologic setting that helps frame the subsequent analysis of different proposed activities and uses.**

**At this point three main components would be involved in the risk assessment process:**

1. **Aquifer vulnerability as developed using the DRASTIC model (see IM&A TG, Section 2.6) and supporting GIS results (see Figure 2-2 and the Data Dictionary discussion),**
2. **Significance assessment of GDEs and supporting GIS layers (see the Spring Mountains Springs Stewardship Framework – Coles-Ritchie, et. al., 2014 [in press]) and the Data Dictionary discussion of hydro-ecosystem layers), and**
3. **An assessment within an area of interest or planning area of the relationship of groundwater resources, GDEs, and surface water systems (see IM&A TG, Section 2.8 and TNC’s Methods Guide – Brown 2007).**

**Section 3 – Managing Activities Affecting Groundwater and Groundwater Systems**

**The organization of this section would revolve around groups of actions or management activities and uses (e.g., livestock grazing) with similar management authorities. This approach will organize the information to better match the needs of potential users. This approach would also allow for inclusion of how design and mitigation measures could be put in place through authorizing documents/permits and their associated procedures.**

**Steve provided an over view of a possible approach using “management response frameworks” for consistently organizing the information for activities and uses. A spreadsheet that demonstrated the approach was shared with the Steering Team. Using information from the risk assessment process described in Section 2, users would then scale potential design and mitigation measures to address the risk. This approach was used in the Spring Mountains NRA to develop springs stewardship program needs and priorities and to develop stewardship/restoration proposals for individual springs.**

**The advantage of this approach is to combine experience with different uses and activities in multiple locations to provide best practices for avoiding or mitigating effects to groundwater resources. This is important in that may units do not encounter or deal with some uses on a routine basis and may not be familiar with available options for managing these uses.**

**Core/Steering Team Representation Needed**

**Joe highlighted that the representation on the Core and Steering Teams will need change to have representatives from program areas such as mineral operations, range, lands/special uses, and possibly recreation on the Core Team. As a minimum we need to have representatives involved in developing any content or guidance related to management of these uses and activities that will be included in the management technical guide.**

**Joe noted that Bob Thompson from the minerals group has agreed to be on the Core Team and will provide a connection point with the leasable and locatable minerals program staff.**

**We also have a number of vacancies as a result of retirements and other personnel changes that should be addressed on both the Core and Steering Teams. Attached is the current roster identifying vacant positions on the Steering Team and Core Team and suggestions regarding additional representatives. Joe asked the Steering Team members to provide suggested names for filling these slots on the roster.**

|  |  |
| --- | --- |
| **Action:**  | * Joe will review the proposed FSM directives and identify relationships to content in the management tech guide that will need to be maintained.
 |

# Wrap Up

Joe wrapped up the call thanking those members who were able to participate for the involvement and input during the call.

***Groundwater Program Technical Guide Development Team***

**Steering Team**

|  |  |  |
| --- | --- | --- |
| **Name** | **Organization/Position** | **Phone Number/Email** |
| **Chris Carlson**Team Leader | WO-M&G/WFWRP, National Groundwater Program Leader, Washington, DC | 202-205-1481/703-605-4634ccarlson@fs.fed.us |
| **Tony Erba** | Region 9, Director PlanningMilwaukee, WI | 715-762-5177aerba@fs.fed.us  |
| **Tony Crump** | Region 8, Regional HydrologistAtlanta, GA | 414-297-1341mcrump@fs.fed.us  |
| **Leslie Bach** | TNC OregonPortland, OR | 503/230-1221lbach@tnc.org  |
| **Dave Levinson** | National Stream Aquatic Ecology CenterFort Collins, CO | 970-295-5986dlevinson@fs.fed.us  |
| **Katherine Smith** | National Aquatic Ecology Research Program Coordinator, R&D, Arlington, VA | 703-605-4184klsmith@fs.fed.us  |
| **(Vice) Chris Savage** |  |  |
| **(Vice) John Allen** | Region 6, Forest SupervisorDeschutes NF, Bend, OR | 541-383-5512jpallen@fs.fed.us  |
| (Vice) **Barry Burkhardt** | Assistant Director, M&G Management Centralized National Operations, Denver, CO | 303-275-5147bburkhardt@fs.fed.us  |
| **Linda Spencer?** | Range Management Representative (WO)Juneau, AK | 907-586-9311lindaspencer@fs.fed.us  |
|  | Lands/Recreation Program Manager |  |

**Core Team**

|  |  |  |
| --- | --- | --- |
| **Name** | **Organization/Position** | **Phone Number/Email** |
| **Joe Gurrieri**Team Leader | Hydrogeologist, M&G Management Centralized National Operations, Denver, CO | 303-275-5101jgurrieri@fs.fed.us |
| **Allison Aldous**  | TNC OregonPortland, OR | 503-802-8142aaldous@tnc.org  |
| **Kate Dwire** | Research Riparian Ecologist, Rocky Mountain Research Station, Fort Collins, CO | 970-498-1016kadwire@fs.fed.us  |
| **Troy Thompson** | Region 9, Regional HydrogeologistMilwaukee, WI | 414-297-3622trthompson02@fs.fed.us  |
| **Andy Rorick** | Geologist, Natural Resource Manager Liaison, METI, Inc., Sandy, OR | 503-347-8676andrewrorick@fs.fed.us  |
| (Vice) **Trish Carroll** | Region 6, Regional Water Resources Program Manager, Portland, OR | 503-808-2905tcarroll@fs.fed.us  |
| **Bob Thompson (?)** | M&G – Locatable Minerals/Leasable Minerals Representative |  |
| **Mary Manning (R-1)?** | Range – Regional Rangeland Ecologist/Conservationist |  |
|  | Lands/Special Uses |  |
|  | Vegetation Management/Fire Ecology |  |
| **Devendra Amatya** | Southern Research Station, Center for Forested Wetlands Research, Cordesville, SC | 843-336-5612damatya@fs.fed.us  |
| ~~(Vice)~~ **~~Megan Lang~~** | ~~Research Ecologist, Northern Research Station~~~~Beltsville, MD~~ | ~~301-504-5138~~~~mwlang@fs.fed.us~~ |

**Project Support Team (METI, Inc.)**

|  |  |  |
| --- | --- | --- |
| **Name** | **Organization/Position** | **Phone Number/Email** |
| **Steve Solem**Project Manager | Senior Advisor, Natural Resources Planning and Inventory, Missoula, MT | 406-546-6826steve.solem@gmail.com  |
| **Dave Morgan** | HydrogeologistPortland, OR | 503-860-7973dave18134@gmail.com  |
| **Pat Tucci** | HydrogeologistDenver, CO | 303-279-5504pattucci@comcast.net |
| **Marc Coles-Ritchie** | Vegetation EcologistSalt Lake City, UT | 801-485-2343colesritchie@yahoo.com |
| **Casey Giffen** | Communication SpecialistYork, MA | (207) 451-3212cgiffen@maine.rr.com  |
| **Luke Boehnke** | Graphics ArtistMissoula, MT | 773-314-3191 luke.boehnke@gmail.com  |

**Science Advisors**

|  |  |  |
| --- | --- | --- |
| **Name** | **Organization/Position** | **Phone Number/Email** |
| **Tim Callahan** | Associate Professor, College of Charleston, Charleston, SC | 843-953-8278callahanT@cofc.edu  |
| **Abe Springer** | Professor, College of Engineering, Forestry, and Natural Resources, Northern Arizona University, Flagstaff, AZ | 928-523-7198abe.springer@nau.edu  |
| **Lawrence E. Stevens** | Stevens Ecological Consulting, Flagstaff, AZ | 928-380-7724farvana@aol.com  |