

***Ground Water Inventory, Monitoring & Assessment***

***Technical Guide Development***

**Date:** April 10, 2014 (DRAFT)

**Subject:** Core Team Conference Call

**Participants:** Allison Aldous, Joe Gurrieri, Andy Rorick (NRM-METI), Troy Thompson, Paul Inkenbrandt (Utah GS), Casey Giffen (METI), Pete Kilbourne (METI), and Steve Solem (METI).

**Unable to Particpate:** Devendra Amatya, Kate Dwire, vice Trish Carroll, and vice Megan Lang

**Discussion Topics and Action Items**

**Next Core Team Call on July 10, 2014 @ 2:00 ET/12:00 MST**

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

**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 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 next on the schedule.**
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. Attached is a table listing those who commented and where in the document their comments were directed.

Comments 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.

Responses to the 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.

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

Almost all internal reviewers provided detailed edits, but there were suggestions for additional case studies. Other comments noted the need to provide appropriate citations or treatment of references. External reviewers suggested strengthening the incorporation of GIS methods and applicability of GIS into the technical guide.

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.

FS GIS Data Dictionary Comments

Pete Kilbourne has visited with all internal commenters. The majority of comments are focused on the proposed point and polygon layer related to GDEs. Key comment from internal reviewers asked why is this effort being undertaken when there is the National Hydrography Dataset (NHD) and Wetland Inventory. Reviewers expressed concern about needing to manage two sets of data and were also concerned if the data dictionary is a requirement. Reviewers did agree that data dictionary has “richer” attributes and feature classes than NHD. Pete is working on a response to these comments. External reviewers (i.e., Utah Geological Survey) find the feature classes work well.

Pete is working with the Utah Geological Survey and expects comments from them on the proposed GIS Data Dictionary within the next week. Pete invited Paul Linebradt (UGS) to participate in this call.

During the discussion, Paul Inkenbrandt (UGS) mentioned that the process used for developing the aquifer vulnerability map was similar to the process they use for identifying areas vulnerable for unauthorized fossil hunting. Andy Rorick mentioned that the FS paleontology staff use a similar process for identifying areas needing protection. The approach for creating a data dictionary for groundwater is to use an intermediate table to link hydrogeologic unit and aquifer vulnerability tables to geologic map unit feature classes rather than change the existing Data Dictionary for Geologic Map units or to develop a separate feature class.

The group concluded that this confirms the proposed approach is consistent with interpretation of different types of risk assessments constructed from geologic map units resident in NRM and other databases.

Steve Solem asked Pete if there were any comments from TNC reviewers on the proposed Data Dictionary changes as a result of briefing their staff. Pete has not had the opportunity to brief TNC GIS experts and will schedule a call with them through Allison.

FS Application Dependency Assessment

Sarah Hall is pulling user feedback of the SharePoint site and will send the content to Pete for his review and analysis.

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 (which was prepared following the Core Team call) 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. We hope to have the options and preliminary recommendations to the Core Team in late June. We will likely conduct this review via email vs. trying to change the scheduled calls in July, which need to focus on the TG for Managing Groundwater (FS-881) revision.

The 126 technical comments will be reviewed with Joe and Chris to determine whether to proceed with the suggested changes. Chris and Joe may identify some of these comments for 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 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 for resolution to Chris and Joe.

An opportunity for a final CT review will occur in August, but will be limited to two weeks to allow 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 publication.

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| **Action:**  | * Pete Kilbourne will call Allison Aldous about briefing GIS contacts from TNC to review the proposed GIS Data Dictionary changes.
* Steve Solem will provide the Core Team, the detailed comment analysis by May 1 so they can become familiar with the nature and scope of the comments received.
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# Revision of TG for Managing Groundwater Resources

**Steve Solem introduced this segment of the discussion by commenting that the proposed funding for FY15 is being supported at the requested level or possibly a 5% reduction. 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).**

**Core/Steering Team Representation Needed**

**As discuss on the last call, the “management tech guide” will provide guidance on how to manage other activities to protect and conserve groundwater resources. It is important to have representatives from program areas such as mineral operations, range, lands/special uses, and possibly recreation on the Core Team or involved in development of guidance that will be included in the management tech guide. We also have a number of vacancies as a result of retirements and other personnel changes that should be addressed. Attached is the current roster identifying vacant positions on the Steering Team and Core Team and suggestions regarding additional representatives. Joe asked the Core Team members to provide suggested names for filling these slots on the roster.**

**Revision Scope and Requirements Analysis**

**Steve Solem reminded the Core Team that the first step in the revision process is to fame the scope of changes to the management tech guide and identify associated business requirements. Based on comments we received on the IM&A Technical Guide regarding the relationships between different technical guides, Steve Solem suggested the Core Team be cautious about repeating information in the management tech guide that is covered in the IM&A technical guide. Steve suggested that the group maintain the focus 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.**

**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 reviewed the updated outline for the Technical Guide for Managing Groundwater Resources (v2.1 - 4/1/14), which prompted the following discussion associated with each of the proposed sections.**

**Section 1 – Overview and Purpose**

**Steve suggested that the draft outline for Section 1 can be shortened and focus on managing groundwater 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.**

**Andy Rorick and other team members concurred that the management tech guide should focus on how to implement the techniques described in the IM&A technical guide which is about what to do (methods) vs. how to address management issues related to or affecting groundwater.**

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

**Steve suggested that Section 2 include a framework for how to approach problems from a risk assessment standpoint. Steve sees a distinction in the risk assessment process and in the development of management responses to different types of activities. The first step is to understand risk for a particular environment, 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 guidance for understanding the risks in a particular geologic setting that helps frame the subsequent analysis of different proposed activities and uses.**

**Allison Aldous — The foundational pieces that are required for the activity are covered in Section 2. In the methods guide, besides discussing GDE’s (e.g., what is a GDE) Allison suggests also covering key attributes (amount of discharge). Ask how key attributes are affected by proposed activity.**

**Troy Thompson —He agrees that describing the approach, which is to understand the risk for particular environment and then focus on risk factors that relate to a particular activity, makes sense and is consistent with his experience.**

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

**The organization of this section can either revolve around actions with potential effects to groundwater resources (e.g., boreholes and wells) or management activities and uses (e.g., livestock grazing). If the information were organized around actions, users would be required to determine the actions associated with particular proposals and use the information to analyze potential effects. Conversely, if management activities and uses were the organizing principle, the list of potential subjects could get lengthy and be incomplete. The advantage is that the information would be organized to better match the needs of potential users.**

**Feedback from the Core Team confirmed that taking an activity/use organizing approach would be in the best interest of the typical user/target audience. 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 reviewed with the Core 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.**

**Allison Aldous and Troy Thompson supported this approach and suggested that the section address activities and uses typically encountered across the NFS, vs. trying to develop an exhaustive list of uses and activities.**

**As a result, the Core Team was asked to review the list of management actions and uses and to provide feedback on the proposed outline.**

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| **Actions:**  | * Core Team members should provide suggested comments on the content of each Section to Joe and Steve by May 1.
* Joe will review the proposed directives and identify relationships to content in the management tech guide that will need to be maintained.
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# Wrap Up

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

**COMMENT ANALYSIS SUMMARY**

The Deputy Chief for NFS initiated formal review of the Groundwater IM&A Technical Guide (v4.0) on January 6, 2014 by letter to Regional Foresters, Station Directors, WO Staff Directors with a response requested by March 21, 2014. A similar request for review was sent to partners and affiliates.

**Comments Received**

Comments received on the Technical Guide are summarized below by type of comment and section:

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit/Individual Commenting** | **General Comments** | **Response to Review Questions** | **Technical Guide Sections** |
| **1** | **2** | **3** | **4** | **5** | **Tech. Notes** |
| **Internal FS Review Comments** |
| R2-Frank Jackson, GI Registry Manager/Aquatics Data Steward | GIS DD |   |   |   |   |   |   |   |
| R2-Deanna Reyher, Black Hills NF, Forest Soil Scientist |   | X |   |   |   |   |   |   |
| R2-Melissa Dempsey/Karl M. Emanuel Black Hills NF |   | X | X | X | X | X | X |   |
| R4-Regional Comments (MLNF-Boyer, BTNF-Simon) | X |   | X | X | X | X | X | X |
| R5-Barry Hill, Regional Hydrologist (Joey Keely, LTBMU) | X | X |   |   |   |   |   |   |
| R6-David W. Salo, Wallowa-Whitman NF |   | X |   |   |   |   |   |   |
| R9-Regional Comment Summary and Forest Comments | X | X | X | X | X | X |   |   |
| NRM-Kathy Slavin, Project Management Office |   |   | X | X | X | X |   |   |
| NSAEC-David Levinson, Program Leader (Levinson, Merritt, Roper) | X |   | X |   | X | X |   |   |
| **Partner/Affiliate Review Comments** |
| Janice Staats, Hydrologist, BLM National Riparian Service Team |   | X | X | X | X | X |   |   |
| Mark Gonzalez, \_\_\_\_\_\_\_\_\_, BLM National Riparian Service Team |   |   | X | X | X | X | X |   |
| Larry Martin,National Park Service | X |   |   |   |   |   |   |   |
| James LaBaugh, USGS Office of Groundwater | X | X | X | X | X | X | X | X |
| Pat Tucci, USGS Hydrogeologist (Retired)/METI Consultant |   |   |   |   |   |   |   | X |
| Paul Linenbrandt, Project Geologist, Utah Geological Survey |   | X |   | X |   |   |   |   |
| Eric J. Henry, University of North Carolina, Wilmington |   | X |   | X |   | X | X |   |
| Ivan Gall, Oregon Department of Water Resources (Mike Zwart) | X |   |   |   |   |   |   |   |

Comments were also received on the proposed changes to the FS GIS Data Dictionary and FS Application Dependency Assessment. Comments on the FS GIS Data Dictionary and responses will be developed in coordination with the reconciliation of comments on the Technical Guide. The Geospatial Management Office maintains the record of comments and responses within their management system. The results of the FS Application Dependency Assessment will be used to develop program requirements associated with any requested modifications to corporate database applications and those segments of the Technical Guide that address relationships between the language in the Technical Guide and these systems.

Comment Analysis Process

Comments were reviewed and categorized as being:

1. “**Substantive**” comments requiring Core Team (CT) recommendation/Steering Team (ST) 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 CT 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.

Comment analysis results resulted in the following breakdown by Technical Guide Section:

|  |  |  |  |
| --- | --- | --- | --- |
| **Technical Guide Section** | **Substantive** | **Significant** | **Technical** |
| General | 0 | 3 | 0 |
| 1 – Introduction | 0 | 0 | 15 |
| 2 – Foundations of GW IM&A | 0 | 5 | 19 |
| 3 – GW and GDE Inventory | 0 | 3 | 40 |
| 4 – Monitoring of GW and GW Systems | 0 | 2 | 11 |
| 5 – GW Evaluation and Assessment | 0 | 0 | 2 |
| Technical Notes | 0 | 1 | 2 |
| **Totals** | **0** | **14** | **89** |
| Notes: Significant comments are often repeated in multiple locations and are only tallied once. Editorial comments were not tallied for this analysis. |

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

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