

Science and Adaptive Management Committee Meeting

May 30, 2023

Meeting Materials:

[Agenda](#)

[Minutes](#)

[SAMC Charter \[read-ahead\]](#)

[Client Cloud Instructions \[read-ahead\]](#)

[Revised By-Laws Section 7.1 \[read-ahead, draft\]](#)

[Draft MRGESCP 2023 Multi-Year Plan \[read-ahead, draft\]](#)

[Memo to EC regarding Workshop on Management of Vegetated Islands and Bank-attached Bars \[read-ahead, draft\]](#)

[Draft MRGESCP Long-Term Plan Project Evaluation Criteria \[read-ahead, draft\]](#)

[Results of SAMC Pilot Run of Long-Term Plan Project Evaluation Criteria \[read-ahead\]](#)

[List of Program Portal Data Sets \[read-ahead\]](#)

GSA RiverEyes Mapper [visit at <https://reyes.gsanalysis.com/>]

[Revised SER Recovery Wheel Ad Hoc Charge \[read-ahead, draft\]](#)

[Draft Restoration Compendium Ad Hoc Charge \[read-ahead, draft\]](#)

Lawrence et al. (2021) Methods Paper [not included]

[Link to full Meeting Materials List](#)

Science and Adaptive Management Committee Meeting May 30, 2023

See the following meeting material on the page below:

Agenda



Middle Rio Grande Endangered Species Collaborative Program

Est. 2000

Science and Adaptive Management Committee (SAMC) Meeting Agenda

May 30, 2023; 9:00 AM – 1:00 PM

Location: Zoom

<https://west-inc.zoom.us/j/8983593120?pwd=bU54V3NGeG93bXVlSlJFcElzcE9wZz09>

Call-In: +1-669-900-6833

Meeting ID: 898-359-3120; Passcode: 1251

Meeting Objectives:

- Virtual meet and greet and orientation with new SAMC members
- Hear updates from the December Executive Committee (EC) meeting
- Hear update on action items from memo on management of vegetated islands and bank-attached bars
- Review results of pilot run using the Long-Term Plan (LTP) Project Evaluation Criteria
- Hear updates on Program Portal data sets and Science & Adaptive Management Information System (SAMIS)
- Hear updates on current and proposed Science & Technical (S&T) and Hybrid Ad Hoc Groups
- Review and discuss updates for October 2023 Climate Futures Planning Workshop
- Discuss plans for December 2023 MRGESCP Science Symposium

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|-------------|--|--|
| 9:00 – 9:10 | Welcome, Guest Introductions, Agenda Review ✓ Decision: Approval of May 30, 2023 Agenda | Catherine Murphy, Program Support Team (PST) |
| 9:10 – 9:15 | February Meeting Minutes and Action Item Review ✓ Decision: Approval of February 22, 2023 SAMC meeting minutes Read-Ahead: <input type="checkbox"/> DRAFT February 22, 2023 SAMC Meeting Minutes | Catherine Murphy, PST |
| 9:15 – 9:45 | New SAMC Membership and Orientation <ul style="list-style-type: none">• New member introductions• Review SAMC purpose, operations and modes of engagement• Client Cloud instructions ✓ Decision: Does the SAMC propose any modifications to SAMC Charter? ➤ Action Item: PST will draft memo to EC regarding proposed revisions to SAMC Charter, if needed Read-Ahead: <input type="checkbox"/> SAMC Charter <input type="checkbox"/> Client Cloud Instructions | Group discussion |

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|---------------|---|--|
| 9:45 – 10:05 | Updates from March 2023 EC meeting <ul style="list-style-type: none"> • Changes to By-Laws Section 7.1, re: SAMC Membership • Science review of 2023 Multi-Year Plan ✓ Decision: How would the SAMC like to proceed with the science review of the 2023 Multi-Year Plan? ➤ Action Item: PST will prepare materials for the science review by the SAMC <p>Read-Ahead:</p> <ul style="list-style-type: none"> <input type="checkbox"/> REVISED By-Laws Section 7.1 <input type="checkbox"/> DRAFT MRGESCP 2023 Multi-Year Plan | Debbie Lee, PST |
| 10:05 – 10:25 | Management of Vegetated Islands and Bank-Attached Bars <ul style="list-style-type: none"> ➤ Review recommendations from memo ➤ Hear updates and discuss next steps on action items ✓ Decision: Which recommendation(s) would the SAMC like to prioritize? ➤ Action Item: PST will follow-up on priority recommendation(s) <p>Read-Ahead:</p> <ul style="list-style-type: none"> <input type="checkbox"/> SAMC Memo to EC – Recs for Mgmt of Vegetated Islands Bars | Facilitated discussion |
| 10:25 – 10:40 | Long-Term Plan (LTP) Project Evaluation Criteria <ul style="list-style-type: none"> • Review results from pilot run on candidate projects • Discuss feasibility of applying LTP project evaluation criteria ✓ Decision: What changes would the SAMC like to make regarding how the criteria are applied? ➤ Action Item: PST will prepare materials for application of the criteria to projects in the LTP <p>Read-Ahead:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Results of SAMC Pilot Run of LTP Project Evaluation Criteria <input type="checkbox"/> DRAFT MRGESCP LTP Project Evaluation Criteria – Feb2023 | Facilitated discussion |
| 10:40 – 11:00 | Program Portal Data and SAMIS Updates <ul style="list-style-type: none"> • Review list of data sets to be updated <ul style="list-style-type: none"> ◦ Discuss new GeoSystems Analysis, Inc. (GSA) RiverEyes mapper • Protocols for updating Portal data and interactive map • SAMIS developments and relevance to SAMC ✓ Decision: Which data sets does the SAMC recommend for the interactive map on the Program Portal? | Catherine Murphy and Angela Medina-Garcia, PST |

- **Action Item:** PST will continue working with USGS to update data sets and map layers

Read-Ahead:

- ☐ List of Program Portal Data Sets 2023
- ☐ GSA RiverEyes Mapper (*visit at <https://reyes.gsanalysis.com/>*)

11:00 – 11:10 **BREAK**

11:10 – 11:50 **Hybrid and Science & Technical (S&T) Ad Hoc Groups**

*Catherine Murphy
and Angela Medina-
Garcia, PST*

- Hybrid Ad Hoc group
 - Information & Data Quality Standards Ad Hoc
- S&T Ad Hoc groups
 - RGSM CEM Development Ad Hoc
 - RGSM Hypothesis Development Ad Hoc
 - Strategic Planning for River Drying Ad Hoc
 - **Revised:** Society for Ecological Restoration (SER) Recovery Wheel Ad Hoc
 - **Proposed:** Restoration Compendium Ad Hoc
- ✓ **Decision:** Does the SAMC approve the proposed conceptual approach regarding the SER Recovery Wheel and Restoration Compendium Ad Hocs?
- **Action Item:** SAMC will review charges for these two groups
- **Action Item:** PST will revise charges, finalize, and convene groups

Read-Ahead:

- ☐ REVISED SER Recovery Wheel Ad Hoc Charge
- ☐ DRAFT Restoration Compendium Ad Hoc Charge

11:50 – 12:35 **October 2023 Workshop on Climate Futures Planning**

*Catherine Murphy
and Angela Medina-
Garcia, PST*

- Collaboration with South Central Climate Adaptation Science Center (SC CASC)
- Review purpose, proposed approach and intended outcomes regarding workshop
- Discuss resources cited and small planning group activities
- Previous SAMC commitments to small planning group
 - Active: Friggens, Winter, Posner
 - Passive: Moore, Conway
- ✓ **Decision:** Does the SAMC approve the approach presented for the Climate Futures Planning Workshop
- **Action Item:** PST will organize small planning group and begin workshop preparation

Read-Ahead:

- ☐ Lawrence et al. (2021) methods paper (*for reference only*)

12:35 – 12:45 **MRGESCP December 2023 Science Symposium**

Group discussion

- Discuss planning needs for symposium and SAMC involvement
- Volunteers to participate in a small planning group
- **Action Item:** PST will coordinate Science Symposium planning

12:45 – 1:00 **Action Items, Next Steps, and Announcements** *PST*

- **Upcoming events:**
 - Van Horn seminar: *Water Quality and Ecosystem Processing in the MRG*; June 8, 10-11am
 - EC Meeting – June 29, 1-4 pm, (hybrid) TBD
- **Publication release:**
 - Final Report on RGSM Population Monitoring during 2022 (Dudley et al. 2023)
- **Next Meeting:** August 2023

1:00 **Adjourn**

[Link to full Meeting Materials List](#)

Science and Adaptive Management Committee Meeting
May 30, 2023

See the following meeting material on the page below:

Minutes



Middle Rio Grande Endangered Species Collaborative Program

Est. 2000

Science and Adaptive Management Committee (SAMC) Meeting Minutes

May 30, 2023; 9:00 AM – 1:00 PM

Location: Zoom

Decisions:

- ✓ Approval of the May 30, 2023 SAMC meeting agenda
- ✓ Approval of the February 22, 2023 SAMC meeting minutes

Action Items:

| WHO | ACTION ITEM | BY WHEN |
|--|--|-----------|
| Program Support Team (PST) | Reach out to contacts with Sustainable Rivers Program regarding a potential seminar | 5/30/2023 |
| PST | Draft a memo to the Executive Committee (EC) regarding discontinuation of updates of the RiverEyes data on the Program Portal and recommendation to provide a link to the GSA RiverEyes mapping tool | 6/8/2023 |
| PST | Revise the charge for the <i>Information & Data Quality Standards Hybrid Ad Hoc Group</i> for SAMC review via Client Cloud | 6/8/2023 |
| PST | Send a survey to SAMC to gauge interest in types of SAMC activities between quarterly meetings | 6/9/2023 |
| Ondrea Hummel, Ara Winter, Ari Posner, and Aubrey Harris | Send reports/links and metadata to PST re: findings and data relating to recommendations from vegetated islands/bars memo to the EC | 6/9/2023 |
| PST | Organize materials on the Client Cloud for re-run of pilot exercise on <i>LTP Project Evaluation Criteria</i> | 6/9/2023 |
| PST | Find out if SAMC members can upload documents to the Client Cloud | 6/9/2023 |
| PST | Revise the charges for the <i>SER Recovery Wheel S&T Ad Hoc Group</i> and <i>Restoration Compendium S&T Ad Hoc Group</i> for SAMC review via Client Cloud | 6/9/2023 |
| SAMC | Review and provide edits (via Client Cloud) to memo to EC re: RiverEyes data on Program Portal | 6/15/2023 |
| SAMC | Review the revised charge for the <i>Information & Data Quality Hybrid Ad Hoc Group</i> | 6/15/2023 |
| SAMC | Respond to survey about additional SAMC activities between quarterly meetings | 6/16/2023 |
| SAMC | Review the revised charges for the <i>SER Recovery Wheel S&T Ad Hoc Group</i> and <i>Restoration Compendium S&T Ad Hoc Group</i> | 6/16/2023 |
| SAMC | Review <i>DRAFT MRGESCP 2023 Multi-Year Plan</i> , flag items that need further review, and provide additional references/resources, where appropriate | 6/21/2023 |

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| PST | Draft memo to EC regarding proposed revisions to SAMC Charter (SAMC roster expansion; decision consensus documentation) | 6/22/2023 |
| SAMC | Independently review and complete pilot exercise on <i>LTP Project Evaluation Criteria</i> | 6/23/2023 |
| PST | Compile SAMC feedback on <i>DRAFT MRGESCP 2023 Multi-Year Plan</i> and organize the Science Review activity for the SAMC | August SAMC meeting |
| PST | Continue background work and drafts for recommendations (in order) from the vegetated islands/bars memo to the EC | August SAMC meeting |

Next Meeting: August 2023

Meeting Minutes

Meeting Objectives:

- Virtual meet and greet and orientation with new SAMC members
- Hear updates from the December Executive Committee (EC) meeting
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- Discuss plans for December 2023 MRGESCP Science Symposium

| | | |
|---|---|--|
| 9:00 – 9:10 | Welcome, Guest Introductions, Agenda Review ✓ Decision: Approval of May 30, 2023 Agenda | Catherine Murphy, Program Support Team (PST) |
| The May 30, 2023 agenda was approved by the attending SAMC members. | | |
| 9:10 – 9:15 | February Meeting Minutes and Action Item Review ✓ Decision: Approval of February 22, 2023 SAMC meeting minutes | Catherine Murphy, PST |
| The Draft February 22, 2023 SAMC Meeting Minutes were approved. | | |
| 9:15 – 9:45 | New SAMC Membership and Orientation <ul style="list-style-type: none"> • New member introductions • Review SAMC purpose, operations and modes of engagement • Client Cloud instructions ✓ Decision: Does the SAMC propose any modifications to SAMC Charter? ➤ Action Item: PST will draft memo to EC regarding proposed revisions to SAMC Charter, if needed Read-Ahead: <ul style="list-style-type: none"> <input type="checkbox"/> SAMC Charter <input type="checkbox"/> Client Cloud Instructions | Group discussion |
| <p>New SAMC members introduced themselves and shared highlights about their expertise and experience.</p> <p>Members sit on the SAMC, not as representatives of their respective organizations, but as subject matter experts. SAMC members need to speak candidly about science and science-related issues. For the sake of transparency, if you have to speak on behalf of your organization, please acknowledge that at the time so that it can be documented properly in the administrative record.</p> <p>The SAMC Charter states that the SAMC is a non-decision-making body, but the committee does need to make decisions regarding its science and adaptive management efforts, review of deliverables, recommendations and protocols. The SAMC Charter needs to be amended to reflect that decisions required for the SAMC meeting agenda will be recorded as consensus or non-consensus, and that the SAMC member limit will be increased to 8-10 members. All members in attendance agreed to these changes. No additional amendments to the SAMC Charter were proposed by attending members.</p> | | |

Regarding use of the Client Cloud, this platform was selected to allow SAMC members to access each others' comments for group reviews. The Client Cloud will be used heavily, particularly for ad hoc group charges and deliverables. Please let the PST know if you have any problems accessing it. The PST can provide files via email, if needed. Thus far, no SAMC members in attendance have experienced Client Cloud access issues.

The attendees discussed shortening the duration of SAMC quarterly meetings by introducing different types of engagement between formal meetings, such as one-on-one's with Catherine M., brief check-in meetings with other SAMC members, coffee get-togethers, and/or forming sub-committees. Catherine M. pointed out that there is a general limit of 15 hours per month that SAMC members can be asked to work. Dave M. estimated that his time commitment thusfar has not exceeded 10 hours per month. He also emphasized the importance for all SAMC members to attend the meetings. Catherine M. asked about the value of in-person versus virtual meetings. Due to previous COVID restrictions and committee members who work out-of-state, the SAMC has only ever met virtually. Perhaps hybrid meetings could be a compromise and potential step towards improving group dynamic.

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| 9:45 – 10:05 | <p>Updates from March 2023 EC meeting</p> <ul style="list-style-type: none"> • Changes to By-Laws Section 7.1, re: SAMC Membership • Science review of 2023 Multi-Year Plan <p>✓ Decision: How would the SAMC like to proceed with the science review of the 2023 Multi-Year Plan?</p> <p>➤ Action Item: PST will prepare materials for the science review by the SAMC</p> <p>Read-Ahead:</p> <ul style="list-style-type: none"> <input type="checkbox"/> REVISED By-Laws Section 7.1 <input type="checkbox"/> DRAFT MRGESCP 2023 Multi-Year Plan | <i>Debbie Lee, PST</i> |
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Debbie L. asked the SAMC to provide input for the upcoming EC meeting agenda. She covered the purpose of this section of the agenda, and gave some background on the rather ambitious "Multi-Year Plan." This plan was derived from the compiled outcomes of the Collaboratory and is not prescriptive, but is meant to provide a suite of options. Once the list has been reviewed and reconciled with current and planned science efforts within the Collaborative Program, it can be incorporated into the Long-Term Plan for Science and Adaptive Management. Catherine M. opened the floor for discussion and suggestions on how to conduct this science review.

The attending members discussed potential options within a science review, such as suggestions for ad hoc groups, proposal of project ideas; review of the feasibility and timing of line items, etc. Debbie L. went over the five priority focus areas from the Multi-Year Plan. Aubrey H. asked if we are coming up with strategies to execute this plan.

Ari P. asked why the Rio Grande silvery minnow was the only species called out for priority focus. Catherine M. and Debbie L. offered that, although other species are not explicitly called out, they are covered (to some extent) by the other focus areas. The members in attendance suggested to flag this for the EC meeting. Also, regarding the section on water operations, have we been able to describe the role of the Collaborative Program? Is it to explore the available science to justify changes to water operations? Ari P. proposed that the science behind recommendations should be all that the SAMC needs to provide. Aubrey H. noted that the U.S. Army Corps of Engineers (USACE) Sustainable Rivers Program (SRP) conducts workshops on this topic and might be able to provide a seminar. Suggested speakers included Andrew Hautzinger (Valencia County Soil and Water Conservation District Director) and/or Brian Zettle (Senior Biologist/Tribal Liaison at USACE Tribal Nations Technical Center of Expertise). USACE has also developed some related role-playing exercises at the Institute of Water Resources (IWR). Aubrey offered to provide an email introduction to Brian Zettle.

Catherine M. encouraged feedback from SAMC members on the scientific validity of the ideas presented in the Multi-Year Plan. Mick P. suggested the need for a retrospective on habitat restoration projects to include lessons learned, etc. Catherine M. responded that this is being accomplished via the Restoration Compendium, currently under development.

Catherine M. pointed out that, unfortunately, there is not enough time during the quarterly SAMC meetings to discuss in-depth the topics presented in the Multi-Year Plan. So the SAMC is being asked to review the plan, flag potentially problematic items, and suggest resources for any items with which they are familiar.

Debbie L. shared that the EC had agreed to add an education and outreach objective for the program.

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| 10:05 – 10:25 | <p>Management of Vegetated Islands and Bank-Attached Bars</p> <ul style="list-style-type: none"> ➤ Review recommendations from memo ➤ Hear updates and discuss next steps on action items ✓ Decision: Which recommendation(s) would the SAMC like to prioritize? ➤ Action Item: PST will follow-up on priority recommendation(s) <p>Read-Ahead:</p> <ul style="list-style-type: none"> ➤ SAMC Memo to EC – Recs for Mgmt of Vegetated Islands Bars | <i>Facilitated discussion</i> |
| <p>The March 2023 memo to the EC on Management of Vegetated Islands and Bank-Attached Bars provided useful outcomes and next steps from the October 2022 workshop. Catherine M. recapped the critical question from the memo, as well as the SAMC recommendations, which need to be prioritized. Recommendations seem to be logical and the first two bullets are foundational for the rest. Ari P. and Mick P. think the order they are listed matches the order of priorities. Aubrey H. thinks that these recommendations will inform each other, so they are not necessarily a “sequence.” The recommended conceptual model is likely to evolve into an ecosystem-level model for the Middle Rio Grande. Beginning this effort with a more specific application (i.e., vegetated islands) will help increase the viability of the conceptual model.</p> <p>SAMC members suggested resources to address the second recommendation in the memo regarding the identification of data sets and data gaps:</p> <ul style="list-style-type: none"> • Mick P. asked about the AgDat data; • Ondrea H. - Heritage Program has evaluated some of the islands and bars; <ul style="list-style-type: none"> ○ Also, what about the geospatial and other data sets on our Program Portal? • Ara W. - NMISC conducted projects approximately 20 years ago on the islands; <ul style="list-style-type: none"> ○ BEMP conducted several projects last year, and are planning more to study island vegetation and fuel load • Mick P. - With a catalogue of available LiDAR, we may be able to do some spatial analyses with long enough datasets <ul style="list-style-type: none"> ○ Ari P. - Report by Nathan [Schroeder] included LiDAR, identified Habitat Restoration (HR) sites, and looked at changes in HR sites. ○ Reclamation’s geomorphic reach reports accounted for island changes • Aubrey H. - Revision suggestion for third memo recommendation: Acknowledge that we’re already making management decisions contributing to the creation of bars. • Catherine M. will compile a list based on this feedback, but the PST will need more assistance from the SAMC to address this recommendation. Please provide links or reports for these resources. <p>The first recommendation (i.e., glossary of relevant technical terms) is in progress and will be posted to the Client Cloud for SAMC review. This glossary will likely be rolled into a general glossary of technical terms for the program.</p> | | |

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| 10:25 – 10:40 | <p>Long-Term Plan (LTP) Project Evaluation Criteria</p> <ul style="list-style-type: none"> • Review results from pilot run on candidate projects • Discuss feasibility of applying LTP project evaluation criteria <p>✓ Decision: What changes would the SAMC like to make regarding how the criteria are applied?</p> <p>➤ Action Item: PST will prepare materials for application of the criteria to projects in the LTP</p> <p>Read-Ahead:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Results of SAMC Pilot Run of LTP Project Evaluation Criteria <input type="checkbox"/> DRAFT MRGESCP LTP Project Evaluation Criteria – Feb2023 | <i>Facilitated discussion</i> |
| <p>Catherine M. gave an overview of the LTP project evaluation criteria and assignment for the SAMC from last meeting (to provide context for new members). This exercise was not based on fully-scoped projects, only limited information was available. There were only two responses to the pilot exercise. If no more responses are received, the SAMC needs to decide to move the criteria forward or go another direction. Attending members were not opposed to providing additional responses.</p> <p>Debbie L. stressed the importance of these evaluation criteria. All projects in the Science and Adaptive Management Information System (SAMIS) project bank will need to be evaluated. How will the SAMC proceed? We understand this request is a heavy lift, but it has the potential to make the LTP much more useful to signatories with funds to spend. Materials will be posted on the Client Cloud.</p> | | |
| 10:40 – 11:00 | <p>Program Portal Data and SAMIS Updates</p> <ul style="list-style-type: none"> • Review list of data sets to be updated <ul style="list-style-type: none"> ◦ Discuss new GeoSystems Analysis, Inc. (GSA) RiverEyes mapper • Protocols for updating Portal data and interactive map • SAMIS developments and relevance to SAMC <p>✓ Decision: Which data sets does the SAMC recommend for the interactive map on the Program Portal?</p> <p>➤ Action Item: PST will continue working with USGS to update data sets and map layers</p> <p>Read-Ahead:</p> <ul style="list-style-type: none"> <input type="checkbox"/> List of Program Portal Data Sets 2023 <input type="checkbox"/> GSA RiverEyes Mapper (visit at https://reyes.gsanalysis.com/) | <i>Catherine Murphy and Angela Medina-Garcia, PST</i> |
| <p>Catherine M. and Angela M. gave an overview of available data sets served on the Program Portal. SAMC discussion raised the following questions for consideration:</p> <ul style="list-style-type: none"> • Which data sets (if georeferenced) need to be included on the Portal’s Interactive Mapper? • Which ones might we be able to remove? <ul style="list-style-type: none"> ◦ Re: RiverEyes – Given the new and improved GSA map tool for RiverEyes data, should the Collaborative Program remove the RiverEyes layer from our mapper? ◦ Mick suggested to provide a link to the GSA tool and stop updating the Portal data. <p>Catherine M. asked the SAMC to share their personal experiences with the Portal data sets. She noted that USGS will be able to track web traffic on the Portal pages, which could inform these decisions.</p> | | |

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| <ul style="list-style-type: none"> • Re: Vegetation data <ul style="list-style-type: none"> ○ Debbie L. - we need to find out how frequently the Hink and Ohmart data are updated. ○ Ondrea H. mentioned a related project – PST needs more information to follow up ○ Reclamation conducted a 2022 update of vegetation data • Mick shared his experiences with the Portal data updates that he has been part of <ul style="list-style-type: none"> ○ Updating the RioRestore will be very useful ○ He suggests identifying high priorities for management and combining in the mapper ○ Relate to vegetated islands and bars efforts via RioRestore • Question: As develop the vegetated islands/bars conceptual model, are there any spatial data that would be useful to add to the Portal's Interactive Mapper? | | |
| 11:00 – 11:10 BREAK | | |
| 11:10 – 11:50 | Hybrid and Science & Technical (S&T) Ad Hoc Groups <ul style="list-style-type: none"> • Hybrid Ad Hoc group <ul style="list-style-type: none"> ○ Information & Data Quality Standards Ad Hoc • S&T Ad Hoc groups <ul style="list-style-type: none"> ○ RGSM CEM Development Ad Hoc ○ RGSM Hypothesis Development Ad Hoc ○ Strategic Planning for River Drying Ad Hoc ○ Revised: Society for Ecological Restoration (SER) Recovery Wheel Ad Hoc ○ Proposed: Restoration Compendium Ad Hoc <p>✓ Decision: Does the SAMC approve the proposed conceptual approach regarding the SER Recovery Wheel and Restoration Compendium Ad Hocs?</p> <p>➤ Action Item: SAMC will review charges for these two groups</p> <p>➤ Action Item: PST will revise charges, finalize, and convene groups</p> <p>Read-Ahead:</p> <p><input type="checkbox"/> REVISED SER Recovery Wheel Ad Hoc Charge</p> <p><input type="checkbox"/> DRAFT Restoration Compendium Ad Hoc Charge</p> | Catherine Murphy and Angela Medina-Garcia, PST |
| Update on Information & Data Quality Standards Hybrid Ad Hoc Group <ul style="list-style-type: none"> • Debbie L. – There has been a shift in this group's charge, in part due to lack of engagement, but also because of a determination that the primary task was not feasible. <ul style="list-style-type: none"> ○ Rather than develop data standards for the Collaborative Program, the group will develop a form template to be attached to each project that summarizes Quality Assurance and Quality Control (QA/QC) protocols, as well as basic information about the analyses performed. ○ An updated charge will be provided soon. • SAMC feedback: <ul style="list-style-type: none"> ○ Need to specify, under the task and deliverables, the fields, definitions and justifications ○ Mick P. – Focus on data integrity is leaving out an important concept - shift in interpretation <ul style="list-style-type: none"> ▪ Ara W. shared: https://www.whitehouse.gov/wp-content/uploads/2023/01/01-2023-Framework-for-Federal-Scientific-Integrity-Policy-and-Practice.pdf ▪ Ari P. – There is an important distinction between these two issues: data and interpretation of data. We have some say over the first, the second is more difficult to manage. ○ Ari P. - What will be the purpose of the template? | | |

- Debbie L. – One purpose is to help the PST to update the SAMIS. The template will provide a quick snapshot of data protocols that are being applied to projects.
- Ara W. – It helps summarize information quality standards for organizations.

Update on development of conceptual models:

- Aubrey H. can provide relevant documents and resources for ad hoc use
 - PST - Check to make sure SAMC members can upload documents to the Client Cloud
- Aubrey H. - Do we have consensus on the driving questions for the conceptual models?
 - Catherine M. – We would like to develop a modular model so we could zoom in on specific aspects for more detail. It would be really nice if these different efforts could inform each other.
 - Aubrey H. volunteered to lead the conceptual ecological modeling effort.
- RGSM Genetics/CEM Refinement Ad Hoc
 - This group finished their tasks and gave new content for Catherine M. to incorporate into the revised model. Angela M. will assist with this task. Original group will provide final revisions and then product will be ready for peer review.

Update on RGSM Hypothesis Development Ad Hoc:

- Catherine M. is facilitating this group. There has been some discussion about possibly updating the integrated population model (IPM) with feedback from Collaborative Program users. Catherine M. needs to discuss with NMISC/Charles Y. and the Ad Hoc group before presenting ideas for updates and disambiguation (of the IPM and other models) to SAMC.
 - For potential research hypotheses, this group will revisit and evaluate the previously selected focus areas. Mick P. is putting data together for a mesohabitat hypothesis.

Update on Strategic Planning for River Drying Ad Hoc:

- This group drafted a summary report on current responses to river drying. The draft report was thoroughly reviewed by members of the group and by additional experts within their respective management agencies. The draft summary report was provided to the EC as an interim deliverable. No comments were received from the EC.
 - Need to reconvene and finalize report. Specifically, review is needed of the list of preliminary recommendations, to make sure those are the ones they want to submit to the SAMC.
 - Public outreach ad hoc will use recommendations from this group to develop potential public messaging for consideration.
 - The PST has also worked on a decision-support tool based on group discussions and report.

Update on Restoration-related Ad Hocs:

- Zoë Rossman presented a seminar on how to use the SER Recovery Wheel to help determine ecological restoration success/progress in the MRG
- Two initial ad hoc groups will be:
 - SER Recovery Wheel – developed by and customized for the Collaborative Program
 - Compendium of HR resources within and informative to the MRG
- SAMC discussion:
 - Aubrey H. mentioned Engineering With Nature (ERDC Program) as a related resource.
 - Ari P. would like to see an iterative process in the flow chart depicting how these groups inform each other and additional restoration guidance. Seems like the wheel is going to be informed by the compendium.
 - Maybe have these two groups check in with each other and the SAMC before moving to the next steps for monitoring guidance.
 - That last piece won't happen for a while. The PST is just conceptualizing for the SAMC where these efforts are meant to lead.

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| | <ul style="list-style-type: none"> ○ Mick P. - A suggestion for standardized restoration monitoring is a system wide review following high spring runoff events like this year. It would support identifying how fluvial geomorphology affects sites. <ul style="list-style-type: none"> ▪ Need to validate ideas. Which features work better at high-flow conditions? ○ NOTE: The SER annual conference is being held in Santa Fe this November. ○ Ari P. – Re: SER recovery wheel – I would need to see things put together to fully appreciate the utility of the tool. ○ Mick P. - 1-2 interim demonstrations applying the draft wheel tool to the Rio Grande would support rapid development. ○ Development of a baseline condition “pre-wheel” is not documented in the ad hoc charge. <ul style="list-style-type: none"> ▪ Need to be explicit about what value this adds to other related efforts. ▪ Include as deliverable – provide justification. ○ Ari P. – It would be useful to make sure that there are case studies included on how the wheel is developed and applied. <ul style="list-style-type: none"> ▪ Catherine M. pointed out the Flatlick Stream Case Study (<i>see Rossman seminar</i>) ○ Question: How are ad hoc members chosen? <ul style="list-style-type: none"> ▪ PST compiles list of suggested individuals to request participation, but also puts out a call for volunteers. ○ SAMC needs to complete these reviews as soon as possible so we can finalize the groups and get them started. | |
| 11:50 – 12:35 | <p>October 2023 Workshop on Climate Futures Planning</p> <ul style="list-style-type: none"> • Collaboration with South Central Climate Adaptation Science Center (SC CASC) • Review purpose, proposed approach and intended outcomes regarding workshop • Discuss resources cited and small planning group activities • Previous SAMC commitments to small planning group <ul style="list-style-type: none"> ○ Active: Friggens, Winter, Posner ○ Passive: Moore, Conway ✓ Decision: Does the SAMC approve the approach presented for the Climate Futures Planning Workshop ➤ Action Item: PST will organize small planning group and begin workshop preparation <p>Read-Ahead:</p> <p><input type="checkbox"/> Lawrence et al. (2021) methods paper (<i>for reference only</i>)</p> | Catherine Murphy and Angela Medina-Garcia, PST |
| | <p>Climate Futures Planning Workshop</p> <ul style="list-style-type: none"> • We are coordinating with climate scientists and planners with the South Central Climate Adaptation Science Center (SC CASC), so far supportive of the approach. • Approach found in Lawrence et al. paper (shared) for the first task of the workshop. <ul style="list-style-type: none"> ○ PST placed a document on the Client Cloud outlining the approach/process for planning the workshop. <ul style="list-style-type: none"> ▪ Selection of climate futures ▪ List of tasks for small planning group to determine ▪ Workshop activities and expected outcomes ○ Set expectations at an appropriate level – The focus of this workshop is not to predict the future. Rather, we want natural resource managers and scientists to come together, share their knowledge about habitat needs of the listed species, consider how they might be affected by the climate futures, and collaborate to develop adaptive management strategies. <ul style="list-style-type: none"> ▪ Collaborative AM is the ultimate goal. | |

| | | |
|---|---|-------------------------|
| <ul style="list-style-type: none"> Angela M. presented overview slides about the workshop approach. <ul style="list-style-type: none"> Aubrey H. - Need to determine how much existing condition is covered the potential range captured by the climate futures. Also facing geomorphic change – disconnected floodplain, incising river channel. Are those going to be incorporated? <ul style="list-style-type: none"> The activities at the workshop will address those because they describe ecosystem functions. Mick P. - Add workshop follow-up to future collaboratory’s agenda, so we can leverage the workshop outcomes for a successful 2024 Collaboratory. Debbie L. and Catherine M. discussed further the value of focusing on Whitfield Wildlife Conservation Area (for purposes of the “thought exercise” at workshop). SAMC members in attendance approved workshop approach. | | |
| 12:35 – 12:45 | MRGESCP December 2023 Science Symposium <ul style="list-style-type: none"> Discuss planning needs for symposium and SAMC involvement Volunteers to participate in a small planning group <p>➤ Action Item: PST will coordinate Science Symposium planning</p> | <i>Group discussion</i> |
| Debbie L. gave an overview of the plan for this year’s MRGESCP Science Symposium and encouraged SAMC members to participate in the small planning group. | | |
| 12:45 – 1:00 | Action Items, Next Steps, and Announcements <ul style="list-style-type: none"> ➤ Upcoming events: <ul style="list-style-type: none"> Van Horn seminar: <i>Water Quality and Ecosystem Processing in the MRG</i>; June 8, 10-11am EC Meeting – June 29, 1-4 pm, (hybrid) TBD ➤ Publication release: <ul style="list-style-type: none"> Final Report on RGSM Population Monitoring during 2022 (Dudley et al. 2023) <p>Next Meeting: August 2023</p> | <i>PST</i> |
| SAMC meeting extra: <ul style="list-style-type: none"> The group watched a video of the recent floodplain inundation. <ul style="list-style-type: none"> Ari P. sent 26 discrete videos taken from a plane over different locations. May 18 videos were shot heading north-bound; May 19 videos were taken south-bound. Videos shot 500-1,000 ft above ground level. Recommends watching these videos in their entirety. PST has been given copies to archive. Debbie L. will look into uploading to the Client Cloud. Ari P. will check if they can be publicly shared. <p>Announcements:</p> <ul style="list-style-type: none"> Reclamation is planning to build a fish passage at San Acacia and Isleta over next two years. Understanding what that means for the population very important. <p>Debbie L. recapped action items from this meeting.</p> | | |
| 1:00 | ADJOURN | |

Meeting Participants

| SAMC Member | Role |
|-----------------------------|---|
| Alison Hutson | Aquatic Ecology Expert |
| Ara Winter | Statistics/Modeling Expert |
| Ari Posner | Geomorphology Expert |
| Aubrey Harris | Hydrology Expert |
| Meaghan Conway | Ecosystem Function Expert |
| Michael (Mick) Porter | Aquatic Ecology Expert |
| Ondrea Hummel | Watershed Resource Planning/Regulatory Expert |
| S. Dave Moore | Terrestrial Ecology Expert |
| Program Support Team | Role |
| Catherine Murphy | SAMC Facilitator |
| Angela Medina-Garcia | Support |
| Debbie Lee | Support |
| Guests | Organization |
| Lynette Giesen | U.S. Bureau of Reclamation |
| Miranda Butler-Valverde | Audubon Southwest |
| Stephanie Jentsch | U.S. Army Corps of Engineers |

[Link to full Meeting Materials List](#)

Science and Adaptive Management Committee Meeting May 30, 2023

See the following meeting material on the page below:

SAMC Charter [read-ahead]



Middle Rio Grande Endangered Species Collaborative Program

Est. 2000

Middle Rio Grande Endangered Species Collaborative Program Science and Adaptive Management Committee Charter

Approved by the Executive Committee on October 27, 2020

Revised to Align with the By-Laws Adopted on July 28, 2021

I. Overview

The Middle Rio Grande Endangered Species Collaborative Program (MRGESCP) By-Laws state that the Executive Committee (EC) may establish committees and ad hoc groups to carry out activities that further the MRGESCP's mission and goals. Upon approval of this charter, the EC establishes the Science and Adaptive Management Committee (SAMC).

The SAMC will operate under defined schedules, objectives, and tasks established in coordination with the EC. Methods for accomplishing established activities will be identified by the SAMC. The science coordination lead and program coordination lead will coordinate with the SAMC to ensure that objectives and work products are clearly defined, assigned tasks are completed, and schedules are met.

The SAMC is a non-decision-making body. It will synthesize scientific findings, translate results into recommendations, cite appropriate evidence, and include rationale for any supported differences of opinion within the MRGESCP. Products of the SAMC will be delivered to the EC for approval and next steps. The EC continues to hold decision-making authority for the MRGESCP.

II. SAMC Purpose

The SAMC will coordinate the implementation of MRGESCP-related science initiatives and signatory efforts by defining and delegating tasks to Science & Technical (S&T) Ad Hoc Groups; compiling results from scientific studies, modeling, and monitoring efforts; and translating scientific findings into recommendations for best management practices in the Middle Rio Grande.

III. Responsibilities

The SAMC will be directed by the EC to implement the MRGESCP's Science & Adaptive Management (S&AM) Plan and Long-Term Plan (LTP). SAMC responsibilities include:

- Coordinating with the science coordination lead and other PST staff to ensure the completion of MRGESCP-related science initiatives
- Convening and coordinating S&T Ad Hoc Groups to complete tasks in support of the S&AM Plan
- Reviewing results from MRGESCP-related studies, models, and monitoring activities and translating findings into management recommendations

- Working with the Fiscal Planning Committee (FPC) to support EC-recommended activities (e.g., research, restoration, modeling)
- Reporting to the EC the progress of S&AM Plan implementation, including a summary of updates to MRGESCP science objectives and strategies, and modifications to conceptual ecological models, with associated scientific justifications
- Providing updates at each EC meeting, which includes:
 - Discussing proposed work and the status of in-progress work products
 - Informing the EC of the formation of S&T Ad Hoc Groups with assigned tasks and deadlines
 - Informing the EC of the disbanding of S&T Ad Hoc Groups
 - Proposing implementation schedules for MRGESCP science and adaptive management initiatives for EC approval
 - Suggesting amendments to the S&AM Plan
 - Documenting the range of SAMC opinions with associated scientific justifications for EC review and consideration of next steps
 - Providing evidence-based recommendations for scientific research and management alternatives
 - Recommending research questions for independent peer review, as needed

IV. Membership

The SAMC shall consist of no more than eight (8) subject matter expert members appointed by the EC. These positions will include:

- Four (4) specified subject matter experts with the following areas of expertise:
 1. Aquatic ecology
 2. Terrestrial ecology
 3. Ecosystem function
 4. Hydrology
- Up to four (4) flexible subject matter experts selected based on science-related needs, as determined by the EC. The SAMC may provide input on which areas of expertise would benefit the group, but the final decision will be made by the EC.

An individual may not hold more than one position on the SAMC at one time.

One (1) EC member shall serve in an *ex-officio* advisory capacity to the SAMC. This position will not count towards the eight (8)-count membership, and will not participate as a subject matter expert.

The SAMC will be chaired by the MRGESCP science coordination lead and supported by the Program Support Team (PST). Neither the science coordination lead nor members of the PST will count towards the eight (8)-count membership.

a. Application Process

The EC, in coordination with the science coordination lead and program coordination lead, will oversee and administer the application process. Interested individuals shall submit a formal

application to the science coordination lead. Individuals may apply for more than one SAMC position and must submit one application per position. Applications will be accepted from experts both internal and external to the MRGESCP.

The EC will review, or delegate review of, submitted applications and each EC representative will cast one vote per SAMC position no later than the last EC meeting of the calendar year. The EC will nominate EC members for the *ex-officio* position and vote to fill the position. The EC has final decision-making authority on SAMC membership.

b. Membership Terms

SAMC members shall be appointed by the EC for staggered two (2)-year terms. Sitting SAMC members may apply for one (1)-year term limit extensions. Individuals may serve on the SAMC for no more than four (4) consecutive years, except as authorized by the EC.

c. Membership Vacancies

If a vacancy on the SAMC occurs mid-term, it will remain open unless the EC, in coordination with the SAMC, determines a need to fill the position. Upon a determination, the EC may appoint an individual for the remainder of the term.

V. Roles

The up to eight (8) subject matter expert members will:

- Be chosen based on their technical qualifications and will serve as subject matter experts in their respective fields
- Not represent a signatory or organization as members of the SAMC
- Safeguard and support the scientific rigor of MRGESCP investigations and initiatives

The EC *ex-officio* position will:

- Serve in an advisory capacity to the SAMC on policy
- Provide the larger MRGESCP perspective
- Ensure topics and recommendations are within the scope decided by the EC
- Provide direction for completion of summary documents to the EC

The facilitator (science coordination lead) will:

- Coordinate meetings
- Facilitate the SAMC administrative functions, including:
 - Drafting S&T Ad Hoc Group charges
 - Coordinating with the FPC, S&T Ad Hoc Groups, and any independent peer reviewers
 - Relaying updates and recommendations to the EC

VI. SAMC Meeting Operations

The SAMC will hold meetings as necessary to conduct its business. At a minimum, the SAMC shall meet once each annual quarter, and may meet more frequently, as needed. Meetings will be

facilitated by the science coordination lead. Formal agendas will be drafted for review and approval at each meeting. The PST will announce SAMC meetings on the Program Portal event calendar and will include draft agendas and read-aheads for download. Meeting agendas and read-aheads will be made available to SAMC members no later than seven (7) calendar days in advance of the meeting date, with the exception of materials under nondisclosure or confidentiality agreements, materials pertaining to closed portions of meetings, or materials declared confidential by the law.

SAMC meetings shall be open to an audience of non-committee members. Only SAMC members may participate in meeting deliberations. Prior to the meeting, the SAMC may invite ad hoc group leads and/or outside experts to participate on specific agenda items, as needed. At each meeting, time will be included on the agenda for non-member comment. Non-members that wish to provide comment will have up to three (3) minutes to speak during this time, unless included on the agenda or at the specific request of the SAMC. Non-members may submit written comments to the science coordination lead prior to SAMC meetings.

The PST shall record formal meeting minutes that will be used to document meeting deliberations and communicate activities to MRGESCP members and external interested parties. Finalized agendas, read-aheads, and minutes will be included in the MRGESCP Annual Administrative Record and stored on the Program Portal.

VII. Establishment of Science & Technical Ad Hoc Groups

The SAMC may establish S&T Ad Hoc Groups to carry out tasks necessary for implementing the S&AM Plan and LTP. S&T Ad Hoc Groups will operate according to specific schedules, objectives, and scopes of work developed through coordination with the SAMC. These tasks include:

- Addressing specified scientific uncertainties
- Conducting literature reviews and writing summaries to delineate alternative hypotheses regarding critical uncertainties, as needed
- Developing, refining, and updating conceptual ecological models
- Developing scopes of work to test research hypotheses and/or collect necessary data
- Compiling and synthesizing the results of field or laboratory studies, monitoring, and modeling to develop recommendations
- Analyzing existing data to address hypotheses linked to scientific uncertainties
- Proposing updates to the S&AM Plan as new information becomes available and new questions emerge

a. Formation of Science & Technical Ad Hoc Groups

The SAMC shall develop a charge for any S&T Ad Hoc Group it wishes to form. The charge will clearly define:

- Task(s) assigned
- Qualifications for ad hoc group membership
- Nominees for ad hoc group membership
- Nominee for ad hoc group lead
- Any attendance requirements or guidelines to achieve sufficient participation

- Deliverable(s)
- Schedule, including anticipated sunset date

SAMC members may sit on S&T Ad Hoc Groups as technical experts, but may not serve as ad hoc group leads.

b. Review of Science & Technical Ad Hoc Groups

The SAMC shall receive progress updates from the science coordination lead (or ad hoc group leads) regarding active S&T Ad Hoc Groups at each meeting. The SAMC may, as necessary, revise a S&T Ad Hoc Group's charge, schedule, or membership, or decide to disband the S&T Ad Hoc Group early.

c. Disbanding Science & Technical Ad Hoc Groups

A S&T Ad Hoc Group shall be disbanded upon the completion of its charge, or at the discretion of the SAMC. If the SAMC determines the need for additional work that is not included in the original charge, a new S&T Ad Hoc Group charge shall be developed.

VIII. Recommendations to the EC

The SAMC will not be a decision-making body. When bringing evidence-based recommendations to the EC, the SAMC will strive to operate by consensus. In a report or memorandum to the EC, the SAMC will include:

- (If consensus was reached) The consensus recommendation with scientific justification
- Considered alternatives to a recommendation
- (If consensus was not reached) Documentation of competing positions with associated scientific justifications

Ultimately, the EC determines the final recommendations of the MRGESCP.

If there is no consensus recommendation from the SAMC, the EC may:

- Direct the SAMC to form a S&T Ad Hoc Group to investigate the issue in more detail
- Determine, in coordination with the SAMC, that there is a need for independent peer review

IX. Annual Update and Evaluation of the SAMC by the EC

The science coordination lead shall provide a formal annual update to the EC that summarizes:

- Accomplishments from the past year
- Status of the SAMC Work Plan
- Updates to MRGESCP science and adaptive management tools (e.g., conceptual ecological models, geospatial mapper, etc.)
- Any recommended amendments to the S&AM Plan or LTP, including MRGESCP science objectives

As part of the annual update, the EC shall evaluate SAMC membership. If there are empty seats on the SAMC, the EC may choose to seek applicants. The EC may also review requests for (1)-year term limit extensions or extensions past the limit of four (4) consecutive years.

X. Conflict of Interest

SAMC members will abide by all federal, state, tribal, and local agency rules and regulations regarding conflict of interest. SAMC members are required to recuse themselves when they identify a potential financial conflict of interest.

XI. Amendment of the SAMC Charter

This charter may be revised and amended as deemed appropriate by the MRGESCP By-Laws. Potential amendments will be open to input from the SAMC and must be approved by the EC.

[Link to full Meeting Materials List](#)

Science and Adaptive Management Committee Meeting May 30, 2023

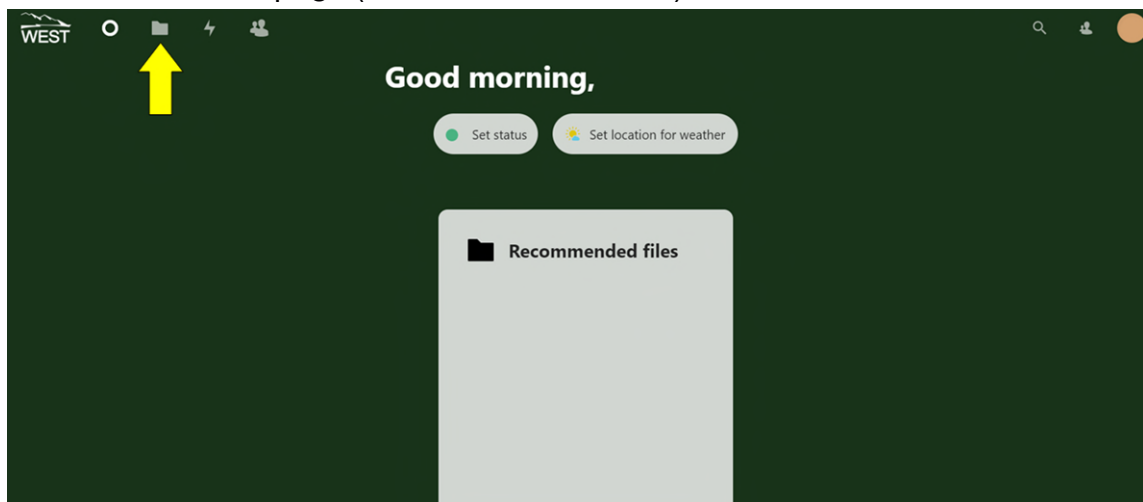
See the following meeting material on the page below:

Client Cloud Instructions [read-ahead]

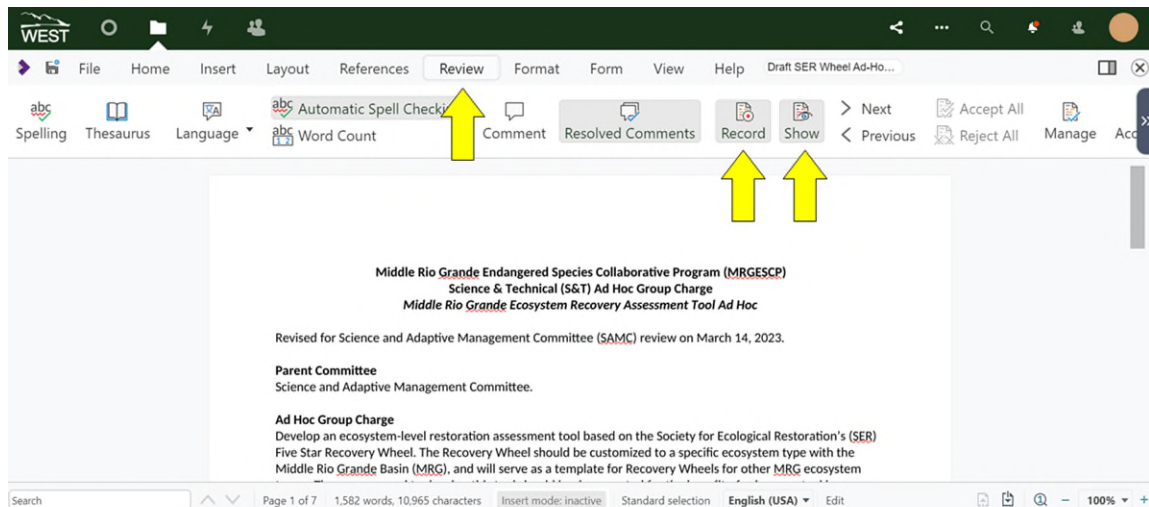
The SAMC requested a way to see each other's review comments while editing documents. The Client Cloud provides a platform to collaboratively edit documents such as charges and memos, where committee members can view each other's edits and comments in real time and edit simultaneously.

Instructions for accessing and using the Client Cloud:

1. Access the Client Cloud using the following link: <https://clientcloud.west-inc.com/>
2. Log in using your credentials. If you have forgotten your password, you can reset it on this page. If you have any issues logging in, please contact Michelle Tuineau (mtuineau@west-inc.com) for assistance.
3. Once you have logged in, access "Files" by clicking on the icon in the upper left hand corner of the page (see screenshot below).



4. After clicking files, you will have access to the MRGSCP folder. Within this folder, as SAMC members, you will have access to the Committee_Science and Adaptive Management Committee folder.
5. You will be able to view all SAMC-related memos, charges, and other documents requiring your edits and comments within this folder.
6. After opening a document, you can edit with track changes. In order to do this, select the "Review" tab, and then make sure you've selected both the "Record" and "Show" tabs in order to track and view your changes (see screenshot below).



7. As soon as you provide edits or comments, they are saved automatically and can be viewed by other SAMC members, as well as members of the Program Support Team.

If you have any issues accessing documents once you are logged in to the Client Cloud, please contact the Program Support Team.

[Link to full Meeting Materials List](#)

Science and Adaptive Management Committee Meeting
May 30, 2023

See the following meeting material on the page below:

Revised By-Laws Section 7.1 [read-ahead, draft]

[Link to full Meeting Materials List](#)

Science and Adaptive Management Committee Meeting May 30, 2023

See the following meeting material on the page below:

Draft MRGESCP 2023 Multi-Year Plan [read-ahead, draft]

MRGESCP Multi-Year Plan (2023-2027)

On December 6-7, 2022, the Collaborative Program hosted its first biennial Collaboratory. Over the course of the two days, participants identified priority issues to inform a multi-year planning effort in service of the Collaborative Program's mission. Two overarching themes emerged from these priority issues:

1. A need for climate scenario planning to manage adaptively in the face of increasing uncertainty; and
2. A need to organize endangered species management under an ecosystem approach within the Middle Rio Grande (MRG) Basin.

These two themes provide a framework for all of the topical areas that are included in the multi-year plan. Careful consideration of both themes will ensure the continued relevance of Collaborative Program initiatives and activities to the management priorities of its signatories.

Five critical focus areas identified from Collaboratory conversations were:

- Habitat restoration planning and assessment
- Management of vegetated islands and bank-attached bars
- Rio Grande silvery minnow (RGSM) management and science
- Water operations and flexibility
- Strategic planning for river drying in the MRG

These focus areas, in addition to climate scenario planning, organized and pursued under the ecosystem approach, inform the Collaborative Program's planned direction for the next five years and beyond. Climate scenario planning, while an overarching theme that addresses each of the critical focus areas, will require significant effort from the Collaborative Program to undertake. The multi-year planning approach seeks to forecast the priority management issues and critical scientific questions that have the potential to support future management decisions.

The multi-year plan is organized into: 1) immediate priorities (to be addressed in 2023), 2) short-term priorities (to be addressed over the next 2-4 years), and 3) long-term priorities (to be addressed over five or more years). The levels of certainty and detail for the immediate and short-term priorities are greater than those for the long-term priorities. The end goal(s) of each focus area are stated in the sections below. Details for each focus area, as well as priorities regarding climate scenario planning, are organized in the tables below.

Each item in the tables is assigned an identification code. The first part of the code indicates to which focus area the item belongs. The second part of the code indicates whether the priority is immediate (I), short-term (ST), or long-term (LT). The codes are as follows:

- Focus area
 - CS: Climate Scenario Planning
 - HR: Habitat Restoration Planning, Design, and Assessment
 - SM: Rio Grande Silvery Minnow Management and Science
 - WO: Water Operations and Flexibility
 - RD: Strategic Planning for River Drying in the Middle Rio Grande
- Timing
 - I: Immediate (2023)
 - ST: Short-Term (2024-2026)
 - LT: Long-Term (2027 and beyond)

The multi-year plan is a means to organize complex initiatives that require longer implementation times and are interrelated. The multi-year plan will be supplemented by the Biennial Administrative Schedule and each year's Annual Work Plan. The multi-year plan will be revisited after each biennial Collaboratory and revised, as needed, to ensure the Collaborative Program remains responsive to the signatories' evolving needs and management priorities. The multi-year plan items will be linked to existing guiding principles (i.e., mission, goals, objectives, and strategies) and subsequently incorporated in the SAMIS following a scientific review. This review will assess the feasibility of each item and the linkages to existing Program efforts in order to inform new project development.

Climate Scenario Planning

As the climate continues to change in New Mexico, impacts to the ecosystems in which listed species exist are apparent and likely to cascade and intensify over time. To that end, the Collaborative Program, in order to recommend management actions that will protect listed species and their habitats under this new paradigm, must cope with the uncertainty of climate change by exploring potential future conditions in the MRG Basin. The main 2023 effort related to this focus area will be a Climate Scenario Planning Workshop, which will inform many of the other activities in the multi-year work plan.

End Goal: Enable the Collaborative Program signatories and other resource managers to deal collectively with uncertainty of future conditions within the basin.

Program Goals Addressed: A-G

| ID | Priority | Informed By | Informs | Related Objectives |
|--------------------------------|--|-----------------------------|---|--|
| Immediate (2023): | | | | |
| CS-I-1 | Develop likely future scenarios by applying current climate data and models to the MRG <ul style="list-style-type: none"> Harness the expertise of regional climate scientists with experience in developing appropriate scenarios | | CS-I-2 CS-ST-2 HR-ST-2 HR-LT-3 WO-I-2 | A-4, A-5.1, B-2, B-3.1, B-3.2, B-3.3, C-1.1, D-1.2, E-1.2, F-1 |
| CS-I-2 | Host a Climate Scenario Planning Workshop designed to: <ul style="list-style-type: none"> Determine which key ecosystem functions are threatened by climate change Identify scientific uncertainties that influence management decisions Begin developing strategies to mitigate impacts of future changes in the system by targeting key ecosystem functions | CS-I-1 | CS-ST-2 HR-ST-2 HR-ST-4 HR-LT-3 WO-I-2 RD-ST-1 | A-4, A-5.1, B-2, B-3.1, B-3.2, B-3.3, C-1.1, D-1.2, E-1.2, F-1 |
| Short-Term (2024-2026): | | | | |
| CS-ST-1 | Continue developing strategies to maintain ecosystem functions under different climate scenarios | CS-I-1 CS-I-2 | | F-1 |
| CS-ST-2 | Consider potential changes in hydrology and geomorphology, and associated impacts to the ecosystem and listed species | CS-I-1 CS-I-2 | RD-ST-1 | A-3, A-4, A-5.1, B-2, C-1.1, D-1.2, E-1.2 |
| CS-ST-3 | Investigate the cultural and socio-economic impacts of the changing ecosystem | | CS-ST-4 WO-ST-5 | |
| CS-ST-4 | Engage the public through outreach and education regarding climate trends and changes in the bosque | CS-I-2 CS-ST-3 RD-I-3 | WO-ST-5 | |

| | | | | |
|-------------------------------------|--|--|--------------------|------------|
| | <ul style="list-style-type: none"> Identify actions that can be carried out by members of the public to help mitigate impacts | | | |
| Long-Term (2027 and beyond): | | | | |
| CS-LT-1 | Continue to update ecological forecasts with latest climate models and data | CS-I-1 CS-ST-2 | | F-1, A-5.1 |
| CS-LT-2 | Refresh recommendations for management strategies to protect and maintain important ecosystem functions | CS-I-1 CS-I-2 CS-ST-1 CS-ST-2 | HR-LT-1 VI-LT-2 | F-1, A-5.1 |
| CS-LT-3 | Develop water conservation strategies | | CS-LT-4 | G-1 |
| CS-LT-4 | Carry out public outreach and education around water conservation strategies | CS-ST-4 CS-LT-3 RD-I-3 | RD-I-3 | G-1 |
| CS-LT-4 | Explore the role of agricultural practices and irrigation returns in implementing strategies to protect MRG ecosystem functions | DR-ST-4 | | Unsure |

Habitat Restoration Planning and Assessment

Habitat restoration is an important conservation action for many Collaborative Program signatories, and will likely increase in importance in the future. Given the forecasted changes to the ecosystem, habitat restoration practices that were effective in the past need to be tested and refined, or replaced in order to preserve key ecosystem functions necessary to support the listed species. The priorities listed below relate to on-going habitat restoration efforts, including outcomes from the 2021 Habitat Restoration Workshop, and also items that address additional Collaborative Program planning and management requests.

End Goals:

- Develop restoration strategies that can provide habitat for listed species, maintain vital ecosystem functions, and contribute to ecosystem recovery.
- Recommend best practices for successful restoration planning, implementation, and monitoring (e.g., proper response metrics, maintenance thresholds, and assessment tools) for the MRG.

Program Goals Addressed: A-F

| ID | Priority | Informed By | Informs | Related Objectives |
|--------------------------------|---|-------------|------------------------------|--|
| Immediate (2023): | | | | |
| HR-I-1 | Develop a standardized framework to guide restoration planning that includes identification of response metrics to measure and track progress/success | HR-I-3 | HR-ST-5 HR-ST-7 | A-5.2, B-3.1, B-3.3, C-1.1, D-1.2, E-1.2 |
| HR-I-2 | Recommend updates to the habitat restoration geospatial database, "RioRestore" | | HR-ST-1 | A-5.2, B-3.1, B-3.3, C-1.1, D-1.2, E-1.2 |
| HR-I-3 | Organize habitat restoration monitoring plans and protocols into a compendium for MRG restoration practitioners | | HR-ST-5 HR-ST-7 HR-I-1 | F-1, E-1.1, D-1.1, C-1.3, B-1, A-1 |
| HR-I-4 | Investigate potential funding opportunities (especially long-term) and partnerships in support of habitat restoration projects | | | A-5.2, B-3.1, B-3.3, C-1.1, D-1.2, E-1.2 |
| Short-Term (2024-2026): | | | | |

| | | | | |
|-------------------------------------|---|---|--------------------|--|
| HR-ST-1 | Update RioRestore | HR-I-2 | | A-5.2, B-3.1, B-3.3, C-1.1, D-1.2, E-1.2 |
| HR-ST-2 | Forecast expected changes to vegetative communities based on the climate scenarios | CS-I-1 CS-I-2 | HR-ST-3 | F-1, F-2 |
| HR-ST-3 | Develop restoration strategies to maintain ecosystem functions, exploring the roles of both native and non-native species | HR-ST-2 | HR-ST-7 VI-LT-2 | F-2 |
| HR-ST-4 | Recommend modifications to habitat restoration practices to incorporate climate scenarios, targeting vital ecosystem functions | CS-I-2 HR-ST-3 VI-ST-3 | HR-ST-7 | F-1 |
| HR-ST-5 | Integrate signatories' wildfire prevention, mitigation and restoration best practices | | HR-LT-1 | Unsure |
| HR-ST-6 | Investigate feasibility and value of disposing or repurposing of post-construction materials, such as vegetation and sediment | | HR-LT-1 | New obj? |
| HR-ST-7 | Develop strategies to adaptively manage habitat restoration | HR-I-1 HR-I-3 HR-ST-3 HR-ST-4 VI-LT-2 | | B-3.1, B-3.3, C-1.1, D-1.2, E-1.2 |
| Long-Term (2027 and beyond): | | | | |
| HR-LT-1 | Continue to update recommendations for habitat restoration best practices based on learning from project implementation and refined future scenario predictions | HR-ST-4 HR-ST-5 HR-ST-6 HR-ST-7 CS-LT-2 | | A-5.2, B-3.1, B-3.3, C-1.1, D-1.2, E-1.2 |
| HR-LT-2 | Explore the value of applying an "integrated vegetation management plan" for the MRG | HR-ST-3 HR-ST-4 | | F-2, B-3.2, B-3.3, C-1.2, D-1.2, E-1.2 |
| HR-LT-3 | Apply the ecosystem approach to habitat restoration projects throughout the MRG | CS-I-2 CS-ST-1 HR-ST-2 HR-ST-3 | | F-1 |

Management of Vegetated Islands and Bank-Attached Bars

In 2022, the Collaborative Program hosted the Workshop on Management of Vegetated Islands and Bank-Attached Bars. While vegetated islands have always been a feature of the MRG ecosystem, changes in hydrology and geomorphology are contributing to changes in their number and permanence. Workshop participants raised questions about the effects these vegetated islands and bars are having on water conveyance and sediment transport processes, as well as the tradeoffs to consider regarding their value to species habitat. At the workshop, participants identified the need for better understanding of where vegetated islands and bars are (or are likely to occur) in the MRG. They also articulated a need for more clarity regarding the relationships between hydrology, ecological functions, and species' responses in order to support management decisions related to island and bar management.

End Goal: Balance the primary management priorities within the MRG (e.g., water delivery, flood control, and ecosystem management) while managing vegetated islands and bank-attached bars in a dynamic river system.

Program Goals Addressed: A-G

| ID | Priority | Informed By | Informs | Related Objectives |
|-------------------------------------|--|--------------------|---|---|
| Immediate (2023): | | | | |
| VI-I-1 | Develop a glossary for terminology related to vegetated islands and bars, to improve communication and collaboration among stakeholders | | VI-I-3 | A-3, A-5.1, A-5.2, B-2, B-3.3, C-1.1, C-1.2 |
| VI-I-2 | Clarify authorities and management roles related to vegetated islands and bank-attached bars | | VI-LT-3 | A-3, A-5.1, A-5.2, B-2, B-3.3, C-1.1, C-1.2 |
| VI-I-3 | Begin developing a conceptual model representing ecosystem functions and physical river conditions related to vegetated islands/bars in order to: <ul style="list-style-type: none"> Account for spatial and temporal successional changes Explore trade-offs regarding habitat formation/loss for different species Characterize trends and conditions Assess management alternatives | VI-I-1 | | A-3, A-5.1, A-5.2, B-2, B-3.3, C-1.1, C-1.2 |
| VI-I-4 | Determine feasibility of developing a map of locations of vegetated islands and bank-attached bars in the MRG, with a plan for regular updates | | VI-ST-2 | A-3, A-5.1, A-5.2, B-2, B-3.3, C-1.1, C-1.2 |
| Short-Term (2024-2026): | | | | |
| VI-ST-1 | Fill in critical data gaps for maps and models, where possible | | | A-3, A-5.1, A-5.2, B-2, B-3.3, C-1.1, C-1.2 |
| VI-ST-2 | Update map of locations of vegetated islands and bank-attached bars in the MRG | VI-I-4 | SM-ST-3 | A-3, A-5.1, A-5.2, B-2, B-3.3, C-1.1, C-1.2 |
| VI-ST-3 | Refine conceptual model of ecosystem functions and physical river conditions related to vegetated islands/bars in the MRG to: <ul style="list-style-type: none"> Inform further scientific research Recommend adaptive management strategies | HR-ST-9 VI-ST-2 | HR-ST-4 VI-ST-4 VI-LT-1 SM-ST-4 SM-LT-2 | A-3, A-5.1, A-5.2, B-2, B-3.3, C-1.1, C-1.2 |
| VI-ST-4 | Investigate the effects of vegetated islands and bank-attached bars on water conveyance and sediment transport processes | VI-ST-3 | | A-3, A-5.1, A-5.2, B-2, B-3.3, C-1.1, C-1.2 |
| Long-Term (2027 and beyond): | | | | |
| VI-LT-1 | Regularly update and revise the ecosystem-level conceptual model | VI-ST-3 | VI-LT-2 | A-3, A-5.1, A-5.2, B-2, B-3.3, C-1.1, C-1.2 |

| | | | | |
|---------|---|--|--|---|
| VI-LT-2 | Revise and update recommendations for management strategies related to vegetated islands and bank-attached bars | CS-LT-2 HR-ST-4 HR-ST-7 VI-LT-1 | | A-3, A-5.1, A-5.2, B-2, B-3.3, C-1.1, C-1.2 |
| VI-LT-3 | Develop recommendations for potential changes to authorities regarding wetlands within the MRG | VI-I-2 | | A-3, A-5.1, A-5.2, B-2, B-3.3, C-1.1, C-1.2 |

RGSM Management and Science

RGSM science and management has always been a focus of the Collaborative Program, and will continue to be a priority in the multi-year plan. With climate change creating more variability in the system and uncertainty in the future, the Collaborative Program's work will focus on tracking RGSM population trends under different climate scenarios, and evaluating and improving the efficacy of management actions into the future.

End Goal: Develop collaborative, multi-year adaptive management strategies for RGSM.

Program Goals Addressed: A-G

| ID | Priority | Informed By | Informs | Related Objectives |
|--------------------------------|---|----------------------------|--------------------|--|
| Immediate (2023): | | | | |
| SM-I-1 | Finalize the revisions to the RGSM conceptual ecological model to include the genetics and propagation/augmentation programs, and undertake a peer review of the revised model | | SM-ST-1 SM-ST-3 | A-1, A-2, A-3, A-4, A-5.1, A-5.2, A-6.1, A-6.2 |
| SM-I-2 | Provide guidance on recently published RGSM population models, including data inputs, model assumptions, and appropriate application of each model | | SM-I-3 SM-ST-1 | A-1, A-2, A-3, A-4, A-5.1, A-5.2, A-6.1, A-6.2 |
| SM-I-3 | Develop a plan to update and refine the RGSM integrated population model based on new data | SM-I-2 | SM-ST-1 | A-1, A-2, A-3, A-4, A-5.1, A-5.2, A-6.1, A-6.2 |
| SM-I-4 | Incorporate the following questions into the climate scenario planning effort: <ul style="list-style-type: none"> How will RGSM habitat availability be affected by climate change? How will forecasted shifts in the hydrograph impact RGSM population trends? | | CS-I-1 | A-3, A-4, A-5.1, A-5.2, G-1 |
| Short-Term (2024-2026): | | | | |
| SM-ST-1 | Use the RGSM population models to evaluate RGSM management actions under different conditions projected for climate scenarios, if feasible | SM-I-1 SM-I-2 SM-I-3 | SM-LT-1 SM-ST-4 | A-6.1, A-6.2, A-2s |

| | | | | |
|-------------------------------------|--|-------------------------------|---------|-----------------------------|
| SM-ST-2 | Consider RGSM management in the development of the ecosystem-level conceptual model for the MRG | | SM-ST-4 | A-1, A-3, A-4, A-6.1, A-6.2 |
| SM-ST-3 | Identify the sites in the MRG to target with habitat restoration for RGSM | VI-ST-2 SM-I-1 | | A-5.2 |
| SM-ST-4 | Identify vital ecosystem functions related to RGSM life history and management strategies | SM-ST-1 SM-ST-2 VI-ST-3 | | A-3, A-4, A-5.1, A-5.2 |
| SM-ST-5 | Investigate the feasibility of a 10(j) population outside the current RGSM range | | SM-LT-4 | A-6.1, A-6.2 |
| Long-Term (2027 and beyond): | | | | |
| SM-LT-1 | Continue to evaluate RGSM management actions as future scenarios and models are updated | SM-ST-1 | | A-2, A-6.1, A-6.2 |
| SM-LT-2 | Recommend adaptive management actions for RGSM, taking into consideration effects of climate change and maintenance of ecosystem functions important to RGSM survival and recovery | VI-ST-3 | | A-2, A-6.1, A-6.2 |
| SM-LT-3 | Investigate the need for a new RGSM propagation facility and, if supported, provide recommendations for design and construction | | | A-6.1, A-6.2 |
| SM-LT-4 | Provide recommendations for implementing a potential 10(j) RGSM population, if determined to be feasible | SM-ST-5 | | A-6.1, A-6.2 |

Water Operations and Flexibility

Given that the Collaborative Program focuses on listed species that utilize the riparian zone, adjacent wetlands, floodplain and mainstem of the Rio Grande, water operations are integral to management of the species and their habitats. With changes in the hydrograph due to increasing variability and uncertainty in snowpack runoff and monsoon precipitation, water operations are already impacted by climate change. The Collaborative Program's focus will be to assess the effects of climate change on water operations and identify opportunities for flexibility.

End Goal: Plan for a water future that balances the needs of all users, including humans and listed species, and maintains ecosystem functions. [Addresses Program Goal G]

Program Goals Addressed: A-G

| ID | Priority | Informed By | Informs | Related Objectives |
|--------------------------------|---|------------------|--------------------|--------------------|
| Immediate (2023): | | | | |
| WO-I-1 | Using the responses from the survey of water managers on their roles in managing drying in Angostura Reach and additional signatory input, document the roles, responsibility, and available flexibility in water operations in the MRG | RD-I-1 | WO-ST-1 | G-1 |
| WO-I-2 | Based on likely climate scenarios, project potential effects on water operations related to changes in the hydrograph | CS-I-1 CS-I-2 | | G-1 |
| Short-Term (2024-2026): | | | | |
| WO-ST-1 | Identify opportunities for coordination and flexibility regarding water operations | WO-I-1 RD-I-1 | WO-ST-2 WO-ST-3 | G-1 |

| | | | | |
|-------------------------------------|---|---|--------------------|-----|
| WO-ST-2 | Identify flexibilities and multiple-use benefits of any changes to water operations | WO-ST-1 | | G-1 |
| WO-ST-3 | Identify research needs regarding conservation improvement to water operations | WO-ST-1 | WO-LT-1 | G-1 |
| WO-ST-4 | Tie Collaborative Program planning efforts into external planning efforts (e.g., 50-Year Water Plan, Rio Grande Basin Study, ABCWUA's 100-Year Plan, NM Water Resources Research Institute) | | WO-ST-5 WO-LT-1 | G-1 |
| WO-ST-5 | Stakeholder and public outreach and education on conservation strategies and benefits of changes to water operations | CS-ST-3 CS-ST-4 WO-ST-4 | | |
| Long-Term (2027 and beyond): | | | | |
| WO-LT-1 | Revise and update recommendations for changes to water operations regarding conservation needs | WO-ST-3 WO-ST-4 RD-ST-3 RD-ST-4 RD-ST-5 | | G-1 |

Strategic Planning for River Drying in the Middle Rio Grande

This focus first emerged in response to drying in the Angostura Reach, which occurred for the first time in nearly 40 years in 2022. Drying has been a regular and common occurrence south of Angostura and the Collaborative Program is working to develop a strategic plan for management of drying in the Angostura, Isleta, and San Acacia Reaches.

End Goal: Develop a multi-reach decision support tool to inform adaptive management related to drying in the MRG.

Program Goals Addressed: A-G

| ID | Priority | Informed By | Informs | Related Objectives |
|--------------------------------|--|-------------------|--------------------|---------------------------|
| Immediate (2023): | | | | |
| RD-I-1 | Describe the decision environment for management of drying in the MRG using the ad hoc group's survey and summary report | | WO-I-1 WO-ST-1 | G-1 |
| RD-I-2 | Identify research questions related to drying in the MRG | | | Unsure |
| RD-I-3 | Develop public messaging strategies related to conservation actions and monitoring during river drying | | CS-ST-4 CS-LT-4 | |
| Short-Term (2024-2026): | | | | |
| RD-ST-1 | Where appropriate, include and update river drying considerations in ecosystem-level and species-level conceptual models | CS-I-2 CS-ST-2 | RD-ST-5 | A-2, A-3, A-4, A-5.1, G-1 |
| RD-ST-2 | Create a decision tool to assess management alternatives regarding drying in the MRG | RD-ST-3 | RD-ST-5 | A-2, A-3, A-4, A-5.1, G-1 |
| RD-ST-3 | Document lessons learned regarding management response to drying, in years when the opportunity arises | | RD-ST-2 WO-LT-1 | A-2, A-3, A-4, A-5.1, G-1 |

| | | | | |
|--|--|--------------------|--------------------|---------------------------|
| RD-ST-4 | Incorporate findings from studies of the use of outfalls and irrigation infrastructure to affect the rate, duration and extent of drying, into recommendations | | WO-LT-1 | A-2, A-3, A-4, A-5.1, G-1 |
| RD-ST-5 | Continue to refine the strategic plan for management of drying | RD-ST-1 RD-ST-2 | RD-LT-1 WO-LT-1 | A-2, A-3, A-4, A-5.1, G-1 |
| <i>Long-Term (2027 and beyond):</i> | | | | |
| RD-LT-1 | Continue to refine the strategic plan for management of drying | RD-ST-5 | | A-2, A-3, A-4, A-5.1, G-1 |

[Link to full Meeting Materials List](#)

Science and Adaptive Management Committee Meeting May 30, 2023

See the following meeting material on the page below:

Memo to EC regarding Workshop on Management of Vegetated Islands and Bank-attached Bars
[read-ahead, draft]



Middle Rio Grande Endangered Species Collaborative Program

Est. 2000

DATE: March 30, 2023

TO: The Middle Rio Grande Endangered Species Collaborative Program (MRGESCP)
Executive Committee (EC)

FROM: The MRGESCP Science and Adaptive Management Committee (SAMC)

RE: Recommendations from October 2022 MRGESCP Workshop on Management of
Vegetated Islands and Bank-attached Bars

Following the October 2022 Workshop on Management of Vegetated Islands and Bank-attached Bars, the SAMC reviewed problem statements, objectives and strategies developed during the breakout sessions, and identified key findings from the workshop. This memo summarizes those findings and recommends to the EC next steps for the MRGESCP regarding this important topic.

First, although the focus of the breakout sessions was management of vegetated islands and bars, participants quickly realized that this management has many implications and requires the balancing of three primary management priorities within the MRG: water delivery, flood control, and ecosystem management. The critical question became: *How do we balance these priorities through collaboration and partnerships in the face of a dynamic river system?*

Importantly, bars and islands are not replacements for the floodplain. Although bars and islands might create habitat for certain species under certain conditions and generate ecosystem services, they also affect important water conveyance and sediment transport processes in the channel. Formulation of a conceptual model is suggested for the vegetated island/bar phenomenon in the Middle Rio Grande. This model should account for spatial and temporal successional changes on islands and bars, as well as potential trade-offs regarding habitat formation/loss for different species. The model will help to characterize trends and conditions, which in turn help to identify management alternatives (e.g., maintaining a mosaic of different habitats within a reach) and potential impacts associated with each.

Finally, a more comprehensive and common understanding of the workshop topic is needed. To address this need, workshop breakout groups proposed strategies for tool development (i.e., maps and models), defining technical terms and relationships relating to this topic, and a summary report to develop consensus among stakeholders. Groups also identified research, planning and management needs, particularly all relevant data sets that are currently available, as well as data gaps. A designated team (or additional workshop) was suggested to carry these efforts forward.

The SAMC, therefore, recommends the following next steps in support of collaborative planning and management of vegetated islands and bars in the Middle Rio Grande:

- Develop common definitions for relevant technical terms relating to vegetated islands and bars
- Identify currently available, relevant data sets and data gaps
- Summarize in a report the research, planning and management efforts and needs regarding management of vegetated islands and bank-attached bars.
- Develop a conceptual model representing the ecosystem functions and physical river conditions of interest and develop management goals around these (e.g., ideal conceptual river cross sections and profiles, functional wetlands).

[Link to full Meeting Materials List](#)

Science and Adaptive Management Committee Meeting May 30, 2023

See the following meeting material on the page below:

Draft MRGESCP Long-Term Plan Project Evaluation Criteria [read-ahead, draft]

MRGESCP LONG-TERM PLAN FOR SCIENCE AND ADAPTIVE MANAGEMENT: EVALUATION CRITERIA FOR PROPOSED PROJECTS AND ACTIVITIES

The overall objective for this evaluation framework is to assess the various MRGESCP projects and activities in terms of their scientific integrity, alignment with the MRGESCP mission and management priorities, and contribution to MRG ecosystem health. Review the SAMIS-generated summary for each Project Bank item to be evaluated. Use the following criteria to evaluate the project DESIGN and level of DETAIL on: **clarity and completeness** (A1-3), **relevance and value to the Collaborative Program mission**, including management and/or science priorities (B1-3), **and vision and utility for adaptive management** (C1-3). For each criterion, select a rating of **Exceptional**, **Adequate**, **Insufficient**, or **Unable to Determine** from the drop-down list provided. Rating scale definitions are provided below. Suggest improvements in the space provided, if needed.

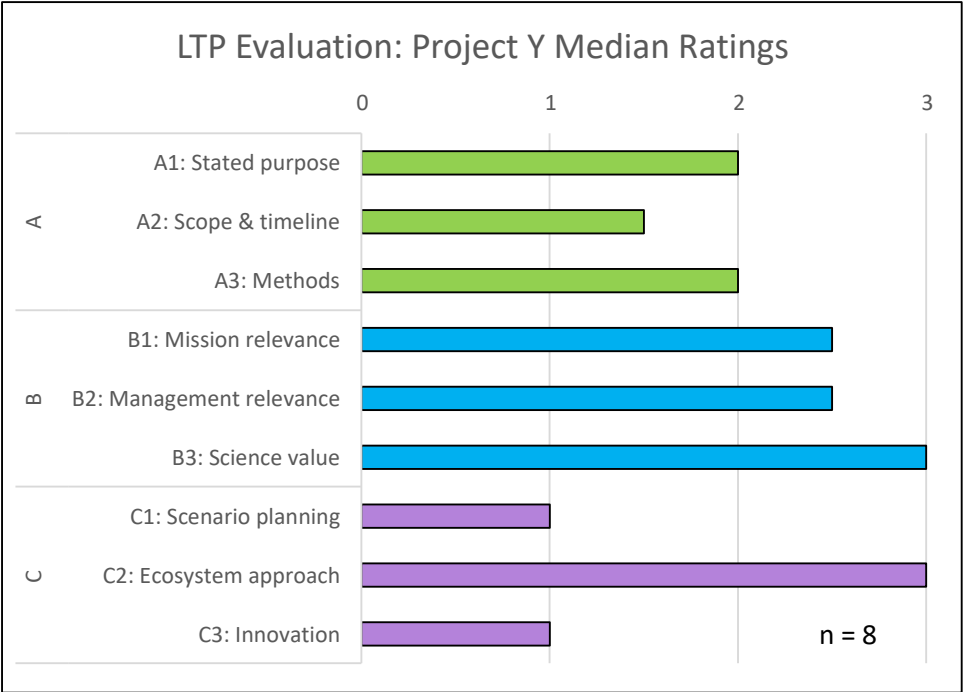
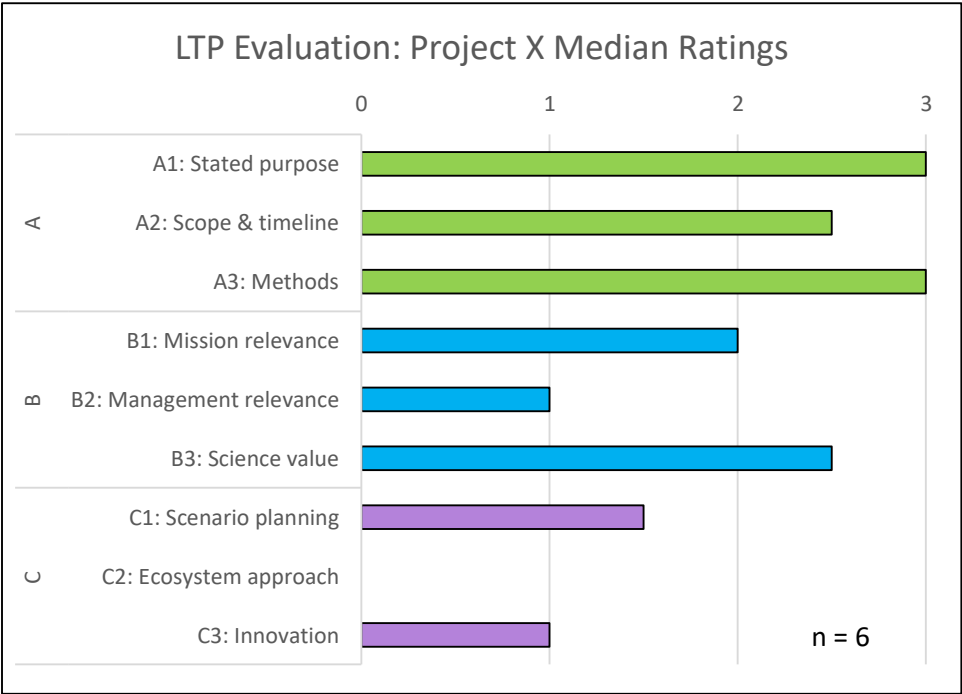
| ID | Criterion | DESIGN ¹ | DETAIL ¹ | Suggested Improvements | Questions to Guide the Assessment of Each Criterion |
|---|---------------------------------|---------------------|---------------------|------------------------|--|
| Clarity and Completeness (REQUIRED) | | | | | |
| A1 | Statement of purpose | Select a rating | Select a rating | | How clear are the project objectives? If this is a scientific study, is the research question clearly articulated? |
| A2 | Scope and timeline | Select a rating | Select a rating | | Does the scope describe a single, well-defined project or should it be split into several different projects? Is the timeline reasonable for the scope? |
| A3 | Aptness of methods | Select a rating | Select a rating | | Are the methods well-suited to the project objectives or research question? Are important elements missing? |
| Relevance and Value to Collaborative Program (REQUIRED) | | | | | |
| B1 | Relevance to mission | Select a rating | Select a rating | | How well does the project align with the Collaborative Program’s mission? Could anything be added to the description to increase relevance? |
| B2 | Relevance to management | Select a rating | Select a rating | | How well does the project address the Collaborative Program’s management priorities and recommendations? Use the linkages to strategies and ISP recommendations to inform your answer. |
| B3 | Value to advancement of science | Select a rating | Select a rating | | Will the project produce data or findings that will 1) inform other projects and/or 2) reduce a scientific uncertainty identified in the conceptual ecological models (CEMs)? Use the linkages to projects and uncertainties to inform your answer. |
| Vision and Utility for Adaptive Management (ENCOURAGED) | | | | | |
| C1 | Value to scenario planning | Select a rating | Select a rating | | How valuable is the project for planning for future climate scenarios and/or increasing resilience under changing conditions? |
| C2 | Relevance to ecosystem approach | Select a rating | Select a rating | | Will the project inform an integrated approach for management of systems supporting land, water, and living resources? Does the project contribute towards the amelioration of threats, offsetting the impact of threats, and/or promote conservation and sustainable use? |
| C3 | Proactivity and innovation | Select a rating | Select a rating | | How forward thinking is the work described? Will the project result in a new technology, methodology, or model that improves the way we study the species or system or plan for the future? |

¹See instructions below for rating scale.

Rating Scale for Evaluation Criteria

| Value | Rating | How well does the project address this criterion? |
|-------|---------------------|---|
| 3 | Exceptional | Project exceeds my expectation under this criterion. |
| 2 | Sufficient | Project meets my expectation under this criterion. |
| 1 | Insufficient | Project falls short of my expectation under this criterion. |
| 0 | Unable to Determine | Project does not contain enough information to rate this criterion. |

Examples of Assessment Results – Median Ratings for Project X and Project Y



Example Interpretation:

Project X is well-scoped, fits within the mission of the Collaborative Program and will add scientific value. Direct relevance to management is not clear and may require additional explanation. The Project X will inform scenario planning but Project Y is more well-suited to the Collaborative Program, having greater relevance and scientific value. Project Y also better informs the ecosystem approach and may be useful towards improving ecosystem resiliency (note that criteria C1-3 are encouraged but optional). However, the description for Project Y would benefit from greater detail.

SAMIS Data Viewer report type – Long-Term Plan project summaries for SAMC evaluation

Project ID

- ✓ Project Bank ID#, Project Name, Project Status

Project Description fields

- ✓ MRGESCP Category, Focus, Species, Reach
- ✓ Anticipated Benefit
- ✓ Project Description, Study Considerations (if applicable)
- ✓ Planning or Regulatory document linkage(s) (e.g., Biological Opinions, Genetics Management Plan, NM State Wildlife Action Plan, etc.)

SAMIS Linkages (lookup lists can be found in the S&AM Plan appendices)

- ✓ Related Projects (#parent, #child, project names)
- ✓ MRGESCP Science or Management Strategies (#strategies; use numeric label to indicate goal, objective, strategy)
- ✓ ISP Recs (#recs; include panel name and rec number)

[Link to full Meeting Materials List](#)

Science and Adaptive Management Committee Meeting May 30, 2023

See the following meeting material on the page below:

Results of SAMC Pilot Run of Long-Term Plan Project Evaluation Criteria [read-ahead]

| Evaluator | Project ID | A1: Statement of purpose | A2: Scope and timeline | A3: Aptness of methods | B1: Relevance to mission | B2: Relevance to management | B3: Value to advancement of science | C1: Value to scenario planning | C2: Relevance to ecosystem approach | C3: Proactivity and innovation |
|-----------|--|--------------------------|------------------------|------------------------|--------------------------|-----------------------------|-------------------------------------|--------------------------------|-------------------------------------|--------------------------------|
| A | Paired Spawning and Communal Spawning | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | 3 |
| B | Paired Spawning and Communal Spawning | 2 | 1 | 1 | 2 | 3 | 3 | 1 | 1 | 3 |
| A | Soil Moisture Holding Capacity | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| B | Soil Moisture Holding Capacity | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 1 |
| A | Temperature Degree Days and Photoperiod | 2 | 1 | 1 | 3 | 3 | 1 | 3 | 0 | 0 |
| B | Temperature Degree Days and Photoperiod | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 2 |
| A | YBCU Prey Base and Associate Host Plants | 2 | 3 | 1 | 3 | 3 | 0 | 0 | 0 | 1 |
| B | YBCU Prey Base and Associate Host Plants | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 |

[Link to full Meeting Materials List](#)

Science and Adaptive Management Committee Meeting
May 30, 2023

See the following meeting material on the page below:

List of Program Portal Data Sets [read-ahead]

| Name | Update Frequency | Layer on Interactive Map? | Source | Notes |
|---|------------------|---------------------------|----------|---|
| RGSM Population Monitoring | Annual | Yes | ASIR | Data also available at: https://reyes.gsanalysis.com/ |
| RGSM Rescue | Annual | Currently: No, future? | USFWS | |
| RiverEyes | Annual | Yes (two layers) | USBR | |
| Habitat Restoration Map (RioRestore) | Annual? | Yes | NMISC | |
| Hink and Ohmart Vegetation Map | N/A | Yes | USBR | |
| River Miles | Every 10 years | Yes | USBR | |
| Augmentation | N/A | Currently: No, future? | USBR | |
| BioPark Egg Collection | N/A | N/A | BioParks | |
| ABCWUA Egg Collection | N/A | N/A | ABCWUA | |
| Fish Use/Floodplain habitat | N/A | N/A | NMISC | |
| FLO geo | N/A | N/A | USBR | |
| LiDAR imagery | N/A | N/A | USBR | |
| Bird Data/Avian Community Monitoring (SWFL/YBCU surveys and monitoring) | N/A | N/A | USACE | |
| Groundwater Monitoring | N/A | N/A | USACE | |
| Climate Change Data | N/A | N/A | USACE | |

[Link to full Meeting Materials List](#)

Science and Adaptive Management Committee Meeting
May 30, 2023

See the following meeting material on the page below:

Revised SER Recovery Wheel Ad Hoc Charge [read-ahead, draft]

Middle Rio Grande Endangered Species Collaborative Program (MRGESCP)
Science & Technical (S&T) Ad Hoc Group Charge
Middle Rio Grande Ecosystem Recovery Assessment Tool Ad Hoc

Revised for Science and Adaptive Management Committee (SAMC) review on May 23, 2023.

Parent Committee

Science and Adaptive Management Committee

Ad Hoc Group Charge

Develop an ecosystem-level restoration assessment tool based on the Society for Ecological Restoration's (SER) Ecological Recovery Wheel, which visually represents recovery of a target ecosystem compared to a selected reference ecosystem using a 5-star rating scale across a set of attributes. The Recovery Wheel should be customized to the Middle Rio Grande (MRG) river-floodplain ecosystem. The process used to develop this tool should be fully documented to facilitate use and future updates to the wheel.

Membership

A. Criteria for membership

- Knowledge of the structure, function, and spatio-temporal dynamics of the Middle Rio Grande river-floodplain ecosystem;
- Understanding of habitat restoration, monitoring, and maintenance practices in the MRG.

B. Members (Nominees)

_____(Lead),
_____(Member),
_____(Member),
_____(Member),
_____(Member),
...

Iterative Task Development

Background

In February 2023 the SAMC identified the Society for Ecological Restoration's (SER) Ecological Recovery Wheel (Figure 1) as an appropriate and useful tool to assess the success of restoration efforts at the *ecosystem level* in the MRG. The development of this tool, combined with additional restoration monitoring resources and ecosystem-level driving questions, will support an end goal of developing standardized monitoring guidance for the MRG (Figure 2). The Recovery Wheel is part of a set of ecological restoration standards launched in 2016 by SER (McDonald et al. 2016). These standards have been vetted by the international restoration community and applied to a wide variety of restoration work since their inception. While restoration efforts in the MRG are often implemented at the species-specific habitat level, use of the Recovery Wheel tool can place habitat-level projects within the context of ecosystem-scale recovery. This context will help to identify additional benefits that potentially result from restoration projects. The Recovery Wheel is a customizable tool, in which sub-attributes can be modified to suit the MRG ecosystem, and ratings (1-5 stars) represent a scale of progress towards full recovery for each sub-attribute. Over the life of a project, the Recovery Wheel serves as a valuable

visual aid for demonstrating progress toward the restoration goals (along individual sub-attributes), as well as helping practitioners determine whether (and when) intervention/maintenance is warranted.

The primary objective of this ad hoc group is to customize the SER Recovery Wheel tool to the MRG ecosystem by: 1) selecting an appropriate reference ecosystem; 2) identifying desired sub-attributes for the MRG; and 3) assigning appropriate levels (see Table 2) to each sub-attribute. Sub-attributes within each attribute should reflect aspects of the MRG ecosystem that are relevant to management of listed species and associated ecological structure and function. Selection of metrics should take into account not only the responsiveness of the variable to both management actions and climate change, but also the cost, effort, and feasibility of collecting the data.

The final deliverable (i.e., customized wheel) of this ad hoc group can be subsequently modified through adaptive management and informed by climate futures planning.

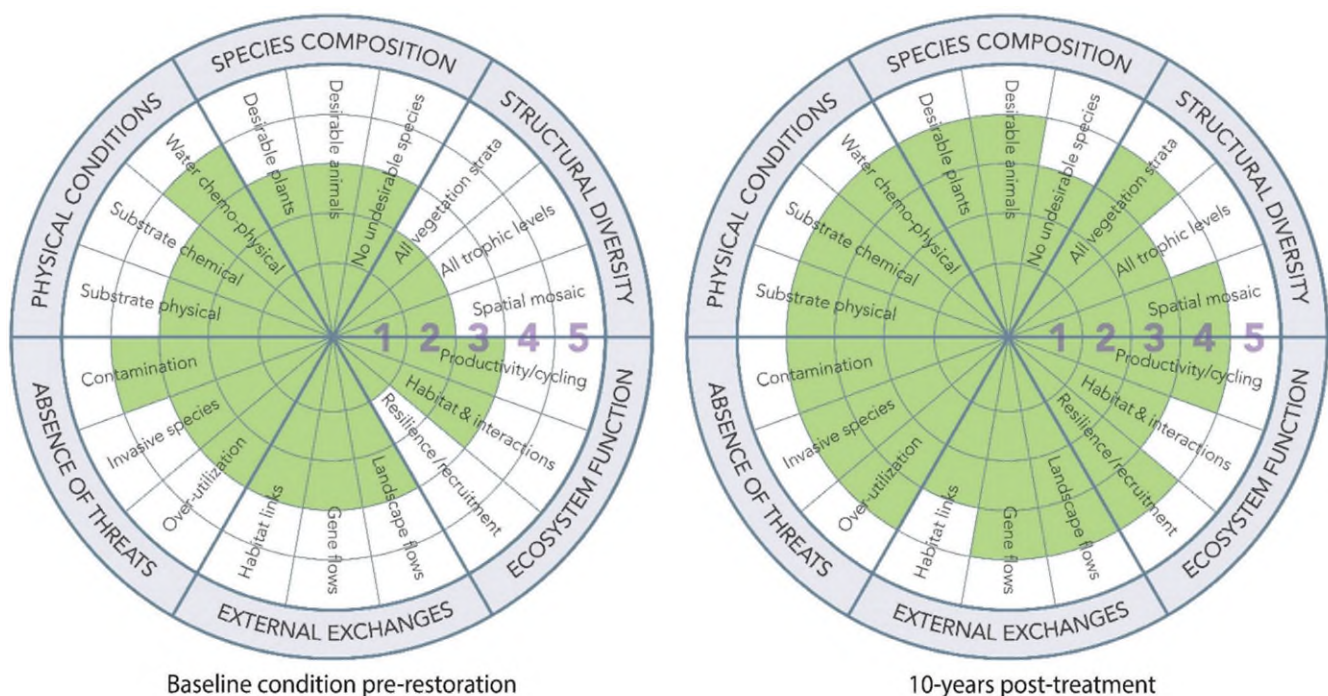


Figure 1. “The ecological recovery wheel is a tool for conveying progress of recovery of ecosystem attributes compared to those of a reference model. In this example, the first wheel represents the condition of each attribute assessed during the baseline inventory stage of the project. The second wheel depicts a 10-year-old restoration project, where over half its attributes have attained a four-star condition. Practitioners familiar with the project goals, objectives, site-specific indicators, and recovery levels achieved to date can shade the segments for each sub-attribute after formal or informal evaluation. Sub-attribute labels can be added or modified to best represent a particular project. For symmetry of design, three sub-attributes are used in this example, but there may be more, or fewer, needed depending on the project.” (Gann et al. 2019)

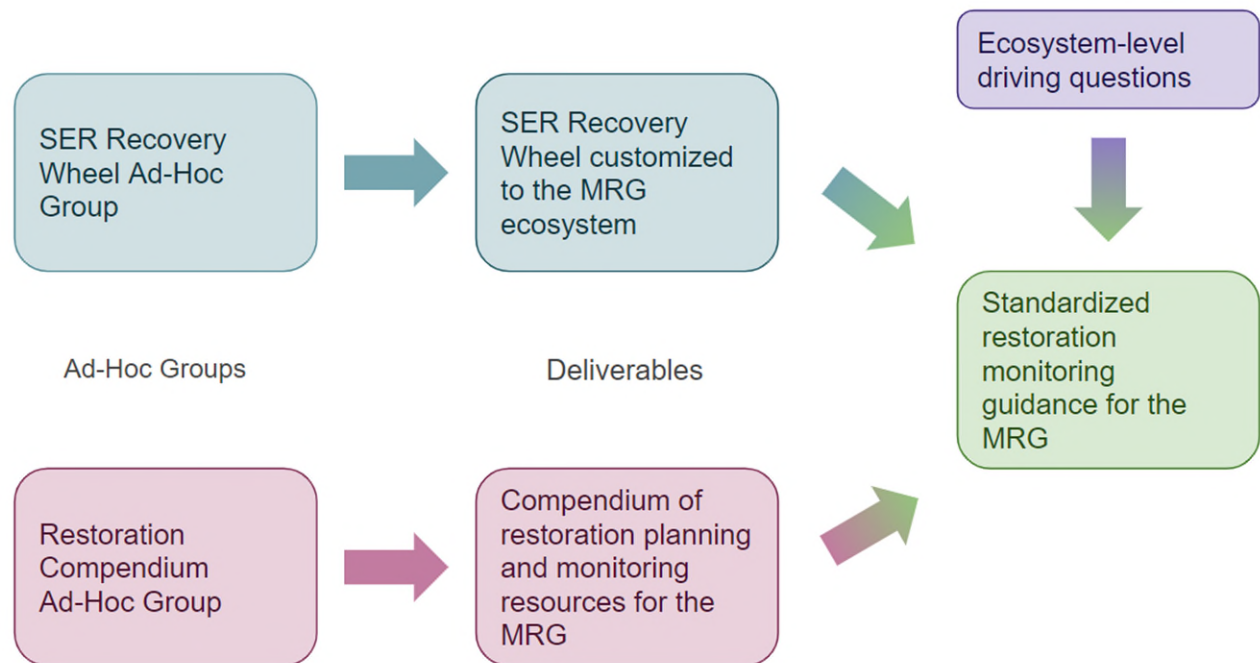


Figure 2. Outcomes of this ad-hoc group will be combined with restoration monitoring resources and ecosystem-level driving questions to inform the creation of standardized restoration monitoring guidance for the MRG.

Table 1. “Description of the key ecosystem attributes used to characterize the reference ecosystem, as well as to evaluate baseline condition, set project goals, and monitor degree of recovery at a restoration site.” (Gann et al. 2019)

| Attribute | Description |
|----------------------|--|
| Absence of threats | Direct threats to the ecosystem such as overutilization, contamination, or invasive species are absent |
| Physical conditions | Environmental conditions (including the physical and chemical conditions of soil and water, and topography) required to sustain the target ecosystem are present |
| Species composition | Native species characteristic of the appropriate reference ecosystem are present, whereas undesirable species are absent |
| Structural diversity | Appropriate diversity of key structural components, including demographic stages, trophic levels, vegetation strata and spatial habitat diversity are present |
| Ecosystem function | Appropriate levels of growth and productivity, nutrient cycling, decomposition, species interactions, and rates of disturbance |
| External exchanges | The ecosystem is appropriately integrated into its larger landscape or aquatic context through abiotic and biotic flows and exchanges |

Table 2. “Sample one- to five-star recovery scale interpreted in the context of the six key ecosystem attributes used to measure progress along a trajectory of recovery. This five-star scale represents a gradient from very low to very high similarity to the reference model. As a generic framework, users must develop indicators and monitoring metrics specific to the ecosystem and sub-attributes they identify.” (Gann et al. 2019)

| Attribute | ★ | ★★ | ★★★ | ★★★★ | ★★★★★ |
|----------------------|---|--|--|--|--|
| Absence of threats | Further deterioration discontinued, and site has tenure and management secured | Threats from adjacent areas beginning to be managed or mitigated | All adjacent threats managed or mitigated to a low extent | All adjacent threats managed or mitigated to an intermediate extent | All threats managed or mitigated to high extent |
| Physical conditions | Gross physical and chemical problems remediated (e.g. excess nitrogen, altered pH, high salinity, contamination or other damage to soil or water) | Substrate chemical and physical properties on track to stabilize within range of reference ecosystem | Substrate stabilized within range of reference ecosystem and supporting growth of characteristic native biota | Substrate securely maintaining conditions suitable for ongoing growth and recruitment of characteristic native biota | Substrate exhibiting physical and chemical characteristics highly similar to that of the reference ecosystem with evidence they can indefinitely sustain species and processes |
| Species composition | Some colonizing native species present (e.g. ~2% of species in the reference ecosystem). Moderate onsite threat from nonnative invasive or undesirable species. Regeneration niches available | A small subset of characteristic native species establishing (e.g. ~10% of reference). Low to moderate onsite threat from nonnative invasive or undesirable species | A subset of key native species (e.g. ~25% of reference) establishing over substantial proportions of the site. Very low onsite threat from nonnative invasive or undesirable species | Substantial diversity of characteristic native biota (e.g. ~60% of reference) present across the site and representing a wide diversity of species groups. Very low onsite threat from nonnative invasive or undesirable species | High diversity of characteristic native species present (e.g. >80% of reference), with high similarity to the reference ecosystem; improved potential for colonization of more native species over time. No known onsite threat from undesirable species |
| Structural diversity | One or fewer biological strata present and no spatial patterning or community trophic complexity relative to reference ecosystem | More strata present but low spatial patterning and trophic complexity, relative to reference ecosystem | Most strata present and some spatial patterning and trophic complexity relative to reference site | All strata present. Spatial patterning evident and substantial trophic complexity developing relative to the reference ecosystem | All strata present and spatial patterning and trophic complexity high. Further complexity and spatial patterning able to self-organize to highly resemble reference ecosystem |
| Ecosystem function | Substrates and hydrology are at a foundational stage only, capable of future development of functions similar to the reference | Substrates and hydrology show increased potential for a wider range of functions including nutrient cycling, and provision of habitats and resources for other species | Evidence of functions commencing (e.g. nutrient cycling, water filtration, and provision of habitat and resources for a range of species) | Substantial evidence of key functions and processes commencing including reproduction, dispersal, and recruitment of native species | Considerable evidence of functions and processes on a secure trajectory toward that of the reference and evidence of ecosystem resilience, tested by reinstatement of appropriate disturbance regimes |
| External exchanges | Potential for exchanges (e.g. of species, genes, water, fire) with surrounding landscape or aquatic environment identified | Connectivity for enhanced positive (and minimized negative) exchanges arranged through cooperation with stakeholders. Linkages being reinstated | Positive exchanges between site and external environment becoming evident (e.g. more species, gene flows, etc.) | High level of positive exchanges with other native ecosystems established; control of undesirable species and disturbances | Evidence that external exchanges are highly similar to reference, and long-term integrated management arrangements with broader landscape in place and operative |

The SAMC requests that you review the draft tasks, deliverables and schedule below and provide feedback and questions to begin the iterative process of task development. Tasks and Deliverables

| Step | Objective | Task | Deliverable |
|---|--|--|--|
| 1. | Become familiar with SER 5-Star Recovery Wheel tool | Review literature on SER Recovery Wheel (Figure 1) <ul style="list-style-type: none"> • Primary Attributes • Sub-attributes • 5-star Recovery Levels • Customization process | N/A |
| 2. | Designate a reference ecosystem | Determine an appropriate reference state for comparison based on desired restoration goals for the MRG. | A description of the designated reference ecosystem with a justification of choices based either on scientific literature or expert opinion when appropriate. Please cite sources. |
| 3. | Customize sub-attributes for the MRG | Define relevant sub-attributes for the MRG ecosystem. See Table 1 and Figure 3 for descriptions and examples. | A recovery wheel customized to the structure and function of the MRG ecosystem. Please cite sources, where appropriate, and provide rationale. |
| Interim Peer Review 1: attributes and sub-attributes | | | |
| 4. | Customize the sub-attribute recovery levels for the MRG | Using the customized wheel from Task 3, determine the appropriate recovery levels for each sub-attribute. Consider the question of when/if to maintain or intervene at a restoration site. See Table 2 for an example of how to define levels. | A recovery wheel for the MRG, including sub-attribute levels that inform decisions about site condition and maintenance/ intervention. Please cite sources, where appropriate, and provide rationale. |
| Interim Peer Review 2: levels and thresholds | | | |
| Check-in with SAMC – Summarize progress, issues and findings | | | |
| 5. | Recommend next steps | Using the lessons learned from Steps 2-4, provide recommendations regarding application of the Recovery Wheel to different habitat types within the MRG ecosystem. | An outline documenting the process used to develop a Recovery Wheel customized to the MRG and identifying any lessons learned during the task with recommendations for application and improvement of this tool. |

Timeline and Reporting Scheduling

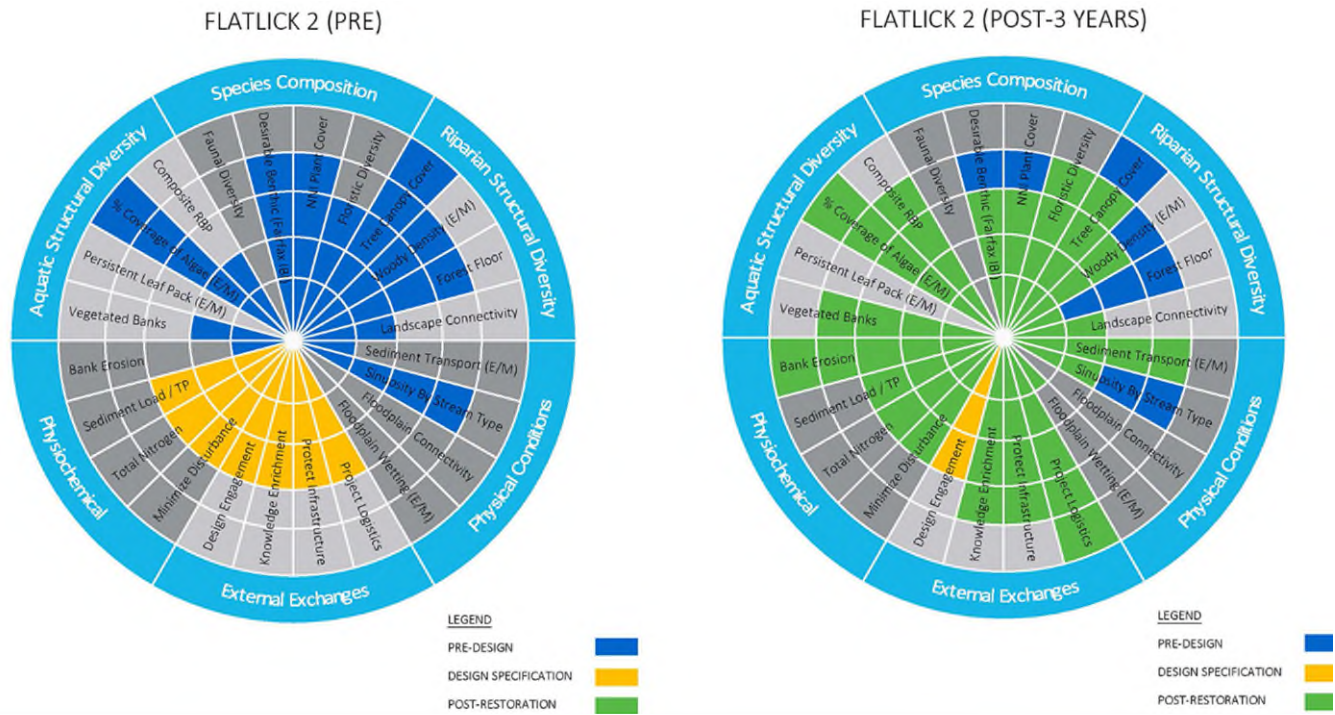
| Task | Subtask | Deliverable | To Be Completed By |
|--------|---|--|--|
| Step 1 | Familiarize with tool | N/A | TBD |
| Step 2 | Design reference ecosystem | A summary of the reference ecosystem constructed with a justification of choices based either on scientific literature or expert opinion when appropriate. Please cite sources. | Time to complete: ~2 weeks |
| Step 3 | Select sub-attributes; Peer Review 1 | A recovery wheel customized to the structure and function of the MRG. Please cite sources, where appropriate, and provide rationale. | Time to complete: ~4 weeks (additional 2 weeks for Peer Review) |
| Step 4 | Define sub-attribute recovery levels; Peer Review 2; Check-in with SAMC | A recovery wheel for the MRG, including sub-attribute levels that inform decisions about site condition and maintenance/intervention. Please cite sources, where appropriate, and provide rationale. | Time to complete: ~4 weeks (additional 2 weeks for Peer Review) |
| Step 5 | Recommendations and lessons learned; Presentation to SAMC | An outline documenting the process used to develop a Recovery Wheel customized to the MRG and identifying any lessons learned during the task with recommendations for application and improvement of this tool. | Time to complete: ~2 weeks |
| | | Collaborative Program seminar | TBD |

Footnotes

1. *"While every restoration practitioner strives to place his/her site on a secure trajectory to full ecosystem recovery relative to an appropriate reference system, full recovery can often be slow or unrealistic in the short-term. In these cases, and for all restoration projects, practitioners are encouraged to aim and monitor for continuous improvement toward ecosystem recovery... The 5-Star Recovery System tool utilizes a 5-star scale that represents a cumulative gradient from very low to very high similarity to a reference ecosystem. A restoration site can be assigned to one of the five recovery levels (1 to 5 stars) in an overall assessment; or, different ecosystem attributes can be individually assigned recovery levels based on available monitoring data, which provides a more detailed overview of recovery progress, and accounts for the fact that different attributes may have varying rates of recovery. The Recovery Wheel (Figure 1) provides a visual way in which to communicate ecological recovery progress using the 5-star system, and can be shaded in as various sub-attributes of the site achieve greater recovery over time."* (<https://www.ser.org/page/SERNews3113>)
2. The SER Recovery Wheel was modified and applied to Flatlick Stream (Department of Public Works and Environmental Services, Fairfax County, Virginia), where they created pre-restoration and post-restoration Recovery Wheels for a stream ecosystem (Figure 3). The attributes, sub-attributes, and

levels may be applicable to some MRG ecosystems. More information can be found at the following links:

https://d18lev1ok5leia.cloudfront.net/chesapeakebay/documents/fairfax_county_restoration_recovery_wheel.pdf



<https://www.fairfaxcounty.gov/publicworks/stormwater/plans-projects/fairfax-recovery-wheel>

Figure 2. “Recovery Wheels for the Flatlick II stream restoration, with both a pre-restoration condition and the condition as assessed 3-years post restoration.” <https://www.fairfaxcounty.gov/publicworks/stormwater/plans-projects/fairfax-recovery-wheel>

References

"Fairfax Recovery Wheel." Fairfax County, <https://www.fairfaxcounty.gov/publicworks/stormwater/plans-projects/fairfax-recovery-wheel>. Accessed 14 March 2023.

Gann, G.D., T. McDonald, B. Walder, J. Aronson, C.R. Nelson, J. Jonson, J.G. Hallett, C. Eisenberg, M.R. Guariguata, J. Liu, F. Hua, C. Echeverría, E. Gonzales, N. Shaw, K. Decler and K.W. Dixon. 2019. International principles and standards for the practice of ecological restoration. Second edition. Restoration Ecology, 27: S1-S46. <https://doi.org/10.1111/rec.13035>

McDonald, T., G.D. Gann, J. Jonson, and K.W. Dixon. 2016. International standards for the practice of ecological restoration – including principles and key concepts. First Edition. Society for Ecological Restoration, Washington, D.C.

McDonald, T., J. Jonson and K.W. Dixon. 2016. National standards for the practice of ecological restoration in Australia. Restoration Ecology, 24: S4-S32. <https://doi.org/10.1111/rec.12359>

[Link to full Meeting Materials List](#)

Science and Adaptive Management Committee Meeting
May 30, 2023

See the following meeting material on the page below:

Draft Restoration Compendium Ad Hoc Charge [read-ahead, draft]

Middle Rio Grande Endangered Species Collaborative Program (MRGESCP)
Science & Technical (S&T) Ad Hoc Group Charge
Restoration Resources Compendium Ad Hoc

Revised for Science and Adaptive Management Committee (SAMC) review on May 23, 2023.

Parent Committee

Science and Adaptive Management Committee

Ad Hoc Group Charge

Create a compendium of habitat/ecosystem restoration projects and resources within the Middle Rio Grande (MRG) Basin. The compendium should include project metadata, as well as monitoring plans, adaptive management plans, and reports associated with each project, when available. In addition, the compendium should also contain a list of resources that can inform restoration planning, adaptive management, and monitoring in the MRG.

Membership

A. *Criteria for membership*

- Experience with habitat restoration and management practices in the MRG.
- Knowledge about habitat restoration goals, monitoring protocols and metrics, and maintenance and adaptive management needs in the MRG.

B. *Members (Nominees)*

_____(Lead),
_____(Member),
_____(Member),
_____(Member),
_____(Member),
...

Iterative Task Development

Background

In February 2023, the SAMC requested a compilation of information about restoration efforts in the MRG to help inform future and ongoing restoration projects within the basin. The purpose of this “compendium” is to provide restoration practitioners with a reliable set of resources to aid in the design and monitoring of restoration projects in the MRG, as well as details about current and past MRG restoration projects. This compendium, combined with 1) the development of a tool to track restoration success at the ecosystem level, and 2) the clarification of ecosystem-level driving questions, will guide the formation of a standardized monitoring approach for the MRG (Figure 1).

The Program Support Team (PST) began drafting the compendium in March 2023, and included current and past restoration projects in the MRG, as well as a list of resources relevant to restoration planning and monitoring in the MRG. Using the list of projects, the PST identified common restoration goals (i.e., habitat restoration, fire fuel reduction, management of hydrology/geomorphology) and restoration targets (e.g., listed species, native

and non-native vegetation) for the MRG. Restoration targets were cross-referenced with projects and resources so that restoration practitioners can easily locate guidance and resources that relate to their desired target.

The primary objectives of this ad hoc group are to refine and further develop the draft compendium and to ensure that it is useful and relevant for restoration practitioners in the MRG. The final deliverable, the revised compendium, will support restoration throughout the MRG, and will also be used to inform the creation of standardized monitoring guidance for the MRG.

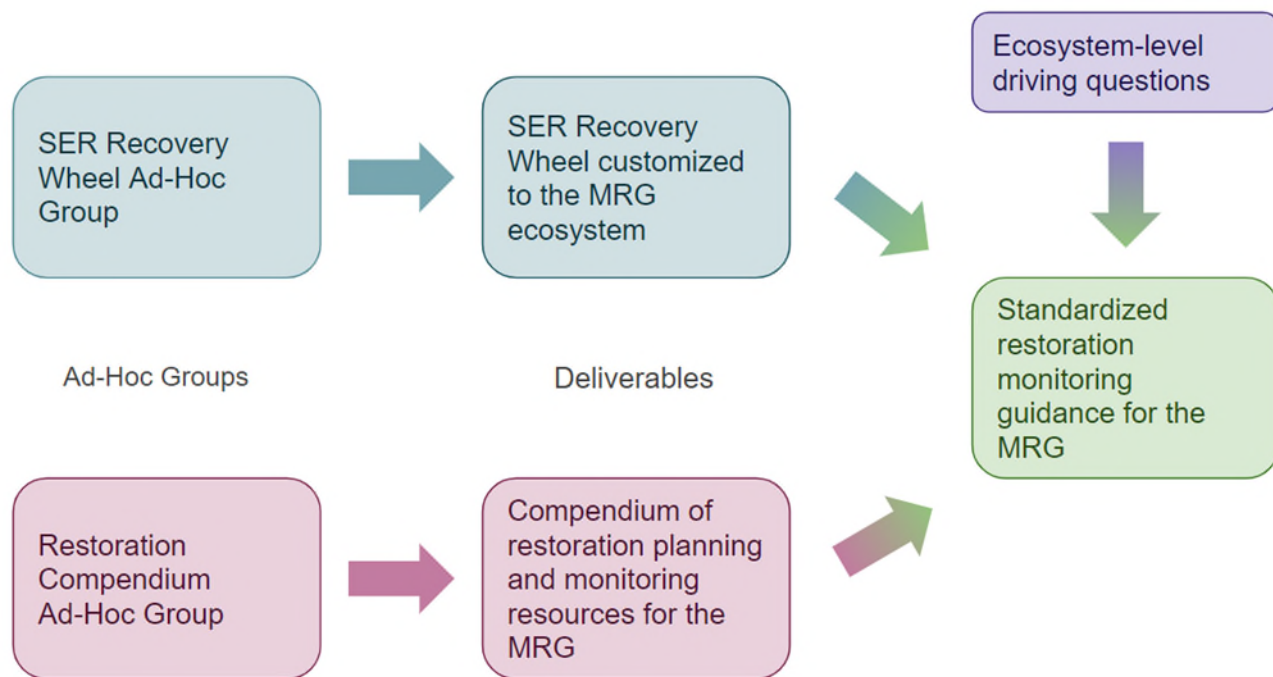


Figure 1. Outcomes of this ad-hoc group will be combined with a Recovery Wheel customized to the MRG and ecosystem-level driving questions to inform the creation of standardized restoration monitoring guidance for the MRG.

The SAMC requests that you review the draft tasks, deliverables and schedule below and provide feedback and questions to begin the iterative process of task development.

Tasks and Deliverables

| Step | Objective | Task | Deliverable |
|--|--|---|--|
| PST presentation to ad-hoc group – Overview of draft compendium | | | |
| 1. | Become familiar with the draft compendium, the process documentation, and the decision tree | Review the draft compendium created by the PST, as well as the documentation about its development. Review the associated decision tree and determine if the structure of the compendium is appropriate for use by restoration practitioners. | Provide suggestions for improving the structure of the compendium, if needed. |
| 2. | Edit project list | Edit the list of past and current restoration projects in the MRG. Add additional projects, any follow-up monitoring or reports, and identify the goals and targets for each project. | A revised list of completed and active restoration projects in the MRG. |
| 3. | Review list of goals and targets | Review the list of restoration goals and targets identified from the project list. Refine as needed. | A revised list of goals and targets for restoration practices in the MRG. |
| 4. | Edit resources list | Using the list of targets from Step 3, identify additional resources for restoration planning and monitoring and relate to one or more restoration targets within the MRG. | A revised list of restoration resources customized to the MRG. |
| Check-in with SAMC – Summarize progress, issues and findings | | | |
| 5. | Recommend next steps | Using the lessons learned from Steps 2-4, provide recommendations for using the compendium to inform the creation of standardized monitoring guidance for the MRG. | A brief outline containing lessons learned and any recommendations for future use of the compendium. |

Timeline and Reporting Scheduling

| Task | Subtask | Deliverable | To Be Completed By |
|--------|---|---|---|
| Step 1 | Review compendium | Suggestions for improving the structure of the compendium, if necessary. | Time to complete: 1 meeting + 1 week |
| Step 2 | Complete project list | A complete list of completed and active restoration projects in the MRG. | Time to complete: ~4 weeks |
| Step 3 | Review list of goals and targets | A complete list of goals and targets for common restoration practices in the MRG. | Time to complete: 1 meeting + 1 week |
| Step 4 | Complete resource list | A list of restoration resources customized to the MRG. | Time to complete: ~4 weeks |
| Step 5 | Recommendations and lessons learned; presentation to SAMC | An outline documenting the process used to complete the compendium, lessons learned, and any recommendations for future groups. | Time to complete: ~2 weeks |
| | | Collaborative Program seminar | TBD |