

Development of a Graded Approach to Project-level Quality Documentation for Habitat Restoration Projects

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Agenda

- Background
- Overview of the Graded Approach
- GLNPO's Informal Graded Approach
- GLNPO's Formal Graded Approach
- Application of the Graded Approach to Habitat Restoration Projects
- Next Steps

Background

- National standards for environmental data collection require QA planning and documentation (e.g., ANSI/ASQ E4-2004)
- EPA has adopted these standards for projects with environmental data collection activities
 - Quality Assurance Project Plan = QAPP

Background

- EPA accepts and encourages the use of the

GRADED APPROACH

What is EPA's Graded Approach?

The **graded approach** provides the level of detail needed to document quality practices for the proposed work.

Uses common sense to recognize that not all decisions require environmental data of the same quality

History of Quality with EPA

Time Frame	Event
1980	Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans
1983	UPDATED Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans
1989	EPA Pocket Guide for “Preparing Perfect Project Plans”
2000	<ul style="list-style-type: none">• EPA issued Quality Policies (CIO 2105.0 [formerly EPA Order 5360.1 A2] and CIO 2105-P-01-0 [formerly EPA Manual 5360 A1])• EPA Graded Approach Workgroup originated at the 19th Annual EPA QA Conference
2001	<ul style="list-style-type: none">• EPA issued requirements for quality documentation (EPA QA/R-2 for quality management plans and EPA QA/R-5 for quality assurance project plans)• EPA Graded Approach Workgroup hosted a session at the 20th Annual EPA QA Conference



EPA's Graded Approach

- Ensures the rigor of requested quality is commensurate with the:
 - importance of work,
 - availability of resources,
 - unique needs of the participating organizations, and
 - consequences of potential decision errors.

EPA's Graded Approach

- The Graded Approach depends on the:
 - Type of work –
 - the simpler the project, the less detail needed to adequately document the quality practices for the project
 - Intended use of the results –
 - dictates the extensiveness of the QA/QC documentation needed to substantiate the work performed
- The Graded Approach reflects the importance of the work, not just its complexity or dollar value.

Example of the Graded Approach

Project Description	Example 1	Example 2
Title	Habitat Restoration of the Ashtabula River Area of Concern	Western Detroit River <i>Phragmites</i> Control
Intended Use of Data	To remove the Ashtabula River from the list of Areas of Concern	To eradicate <i>Phragmites</i> from the Western Detroit River
Funding Allocation	\$3.0 million	\$189,000
Number of Participating Organizations	7: EPA, one state agency, 5 subgrantees	2: EPA, grantee
Sampling and Lab Analysis	Samples will be analyzed to assess direct human health concerns	Observational measurements will be collected
Duration	Project planned for 5+ years	Project will be completed in 1-2 years

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Should these projects require the same level of effort in planning to achieve high quality results?
NO

Benefits of the Graded Approach

The Graded Approach is intended to assist in:

1. Understanding the level of rigor required for projects
2. Reducing the time/effort required to develop, review, and approve quality documentation (QD)
3. Streamlining the QD review and approval process

Challenges of the Graded Approach

- National standards encourage the adoption of a Graded Approach
 - No national guidelines currently available for implementing a graded approach
- Guidelines or system may be specific to the organization; dependent upon:
 - Funding agency's purpose (e.g., regulatory, enforcement, monitoring)
 - Ability to implement (how advanced is the QA Program)
 - Resources available to support development and implementation
 - Project types may be vastly different

GLNPO's Informal Graded Approach

USEPA Great Lakes National Program Office (GLNPO) has used an **informal method** to implementing the Graded Approach

GLNPO's Informal Graded Approach

- Build in standard processes for specific data:
 - Geolocational
 - Existing
- Work with grantees with multiple projects and establish “standards” to be used across those projects (example: The Nature Conservancy)
- GLNPO currently accepts alternative quality documentation based on other requirements:
 - surveys and OMB's Information Collection Request
 - human subjects

GLNPO's Informal Graded Approach

- GLNPO uses a tiered system for reviewing QD:
 - **Level A** – Review the quality components to ensure the minimums are included (e.g., project organization, sampling design and methods, assessments, reporting, data review)
 - **Level B** – Provide technical feedback and review the quality components to ensure the minimums are included
 - **Level C** – Provide technical feedback and review the quality components to ensure all EPA requirements are fulfilled

GLNPO's Informal Graded Approach: Example

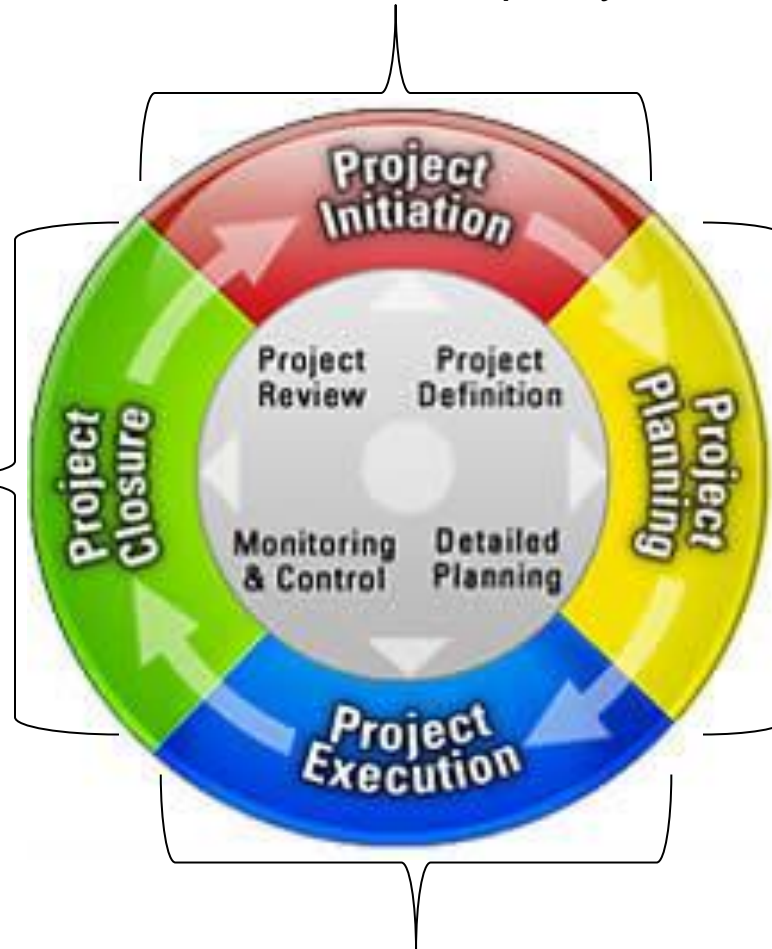
- **Title:** NE MI – Lake Huron Watershed Community Collaboration
- **Purpose:** To promote collaboration between people, organizations, communities, and agencies within the watershed
- **Activities:** Outreach, use of existing data
- **EPA's focus:**
 - Data meets geolocational standards
 - Data is logically-defensible, transparent, reproducible

GLNPO's Formal Graded Approach

USEPA GLNPO is working to use a more **formal method** to implementing the Graded Approach for habitat and invasive species

GLNPO's Formal Graded Approach

Determine the level of quality needed



- Use templates that provide guidance of the level of quality
- Review the quality plans using specific checklists

Conduct grant close-out reporting and assessment

Conduct assessment to verify level of quality is acceptable

<http://www.method123.com/project-lifecycle.php>

GLNPO's Formal Graded Approach

- **Phase 1:** Draft study plan for implementing a graded approach and test; review results
- **Phase 2:** Re-evaluate plan and focus on Graded Approach for habitat restoration projects
- **Phase 3:** Consider plan for other project types

Phase 1: Draft Implementation Plan and Test

Defining Criteria and Categories (e.g., tiers, levels)

Creating a QD review Checklist for Each Category

Implementing a Pilot

Analyzing the Results of the Pilot

Refining the Graded Approach Implementation Plan (i.e., criteria, categories, checklists) [Phase 2]

Defining Categories

- 3-tiered system; categories included:
 - 1 – Rigorous
 - 2 – Routine
 - 3 – Simplified

Defining Criteria

- Primary Criteria
 - Intended Use of Data
 - Scope/Impact
 - Complexity of Sampling and Lab Analysis
- Secondary Criteria
 - Organizational Complexity
 - Duration

Defining Criteria and Categories

Criteria	1-Rigorous	2-Routine	3-Simplified
Intended Use of Data	Results require the most detailed and rigorous QA/QC for legal and scientific defensibility	Results could be combined with those from other projects of similar scope to provide necessary information for decisions	Results are used to evaluate and select options for interim decisions, feasibility studies, preliminary assessments, proof of concepts, screening, routine restoration activities, etc.
Scope/Impact	Project with significant national interest	Project with significant regional interest	Local and sub-regional interest
Complexity of Sampling and Lab Analysis	Samples collected and analyzed with respect to direct human health concerns ²	Samples from multiple matrix types ¹ collected for laboratory analysis	A few samples from one matrix type ¹ or no samples are collected for laboratory analysis

Establishing a Category

1. Begin with Category 1 criteria. If one or more of these criteria apply, then treat the project as a Category 1 project.
2. If none of the Category 1 criteria apply, then move to Category 2. If one or more of these criteria apply, then treat the project as a Category 2 project.
3. If none of the Category 1 or 2 criteria applies, then treat the project as a Category 3 project.

Note: (1) Final category selected is the most restrictive for any criterion (not an average of the criteria).

Example: Establishing a Category

Project	Intended Use of the Data	Scope/Impact	Complexity of Sampling and Lab Analysis	Overall Category
Restoring the Coastal Wetlands of Sehring	2 – Routine	3 – Simplified	3 – Simplified	2 – Routine

Establishing Guidelines on Level of Rigor

Category Type (C1=Rigorous, C2=Routine, C3=Simplified)	C1	C2	C3
B1. Sampling Process Design (Experimental Design)			
Types and number of samples required	X	X	
Sampling network design & rationale for design	X	X	X
Sampling locations & frequency of sampling	X	X	
Sample matrices	X	X	
Classification of each measurement parameter as either critical or needed for information only	X		
Validation study information, for non-standard situations	X		
B2. Sampling Method Requirements			
Identifies sample collection procedures & methods	X	X	X
Lists equipment needs	X	X	
Identifies support facilities	X	X	
B3. Sample Handling & Custody Requirements			
Notes sample handling requirements	X	X	
Notes chain-of-custody procedures, if required	X		

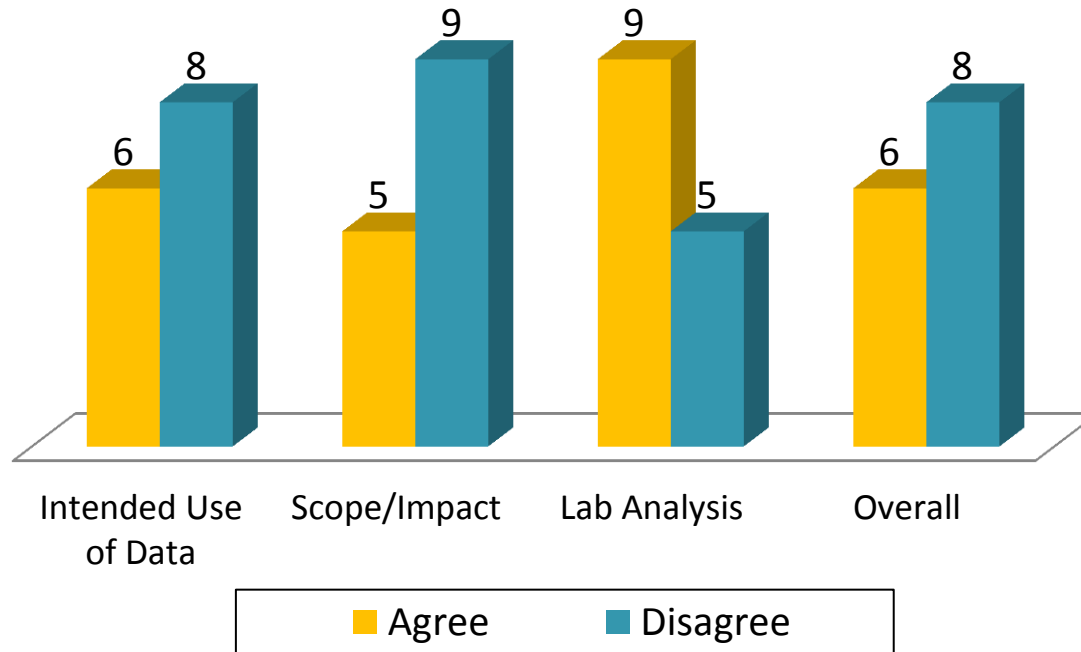
Implementing a Pilot Study

- Purpose: To assess independent reviewers' agreement on categorical assignment of QAPPs using the graded approach
- Reviewers completed a template rating:
 - Each criterion
 - Overall project

Title of the QAPP	Criteria: "Intended Use of Data" category assignment 1-Rigorous, 2-Routine, 3-Simplified	Criteria: "Scope/Impact" category assignment 1-Rigorous, 2-Routine, 3-Simplified	Criteria: "Complexity of Sampling and Lab Analysis" category assignment 1-Rigorous, 2-Routine, 3-Simplified	Overall QAPP category assignment 1-Rigorous, 2-Routine, 3-Simplified	Reviewer confidence on the Overall QAPP category assignment 1 – very confident, 2 – mostly confident, 3 – somewhat confident, 4 – not too confident, 5 – just guessing	Questions/clarifications needed in the Graded Approach implementation document to provide more assistance	Is the level of quality required within the QD review checklist appropriate for the specific category?
Restoring the Coastal Wetlands of Sehring	2 - Routine	3 - Simplified	3 - Simplified	2 - Routine	3 – somewhat confident	Project relies on existing data and was unsure how that impacted the project	Yes
Beach View Sanitary Remediation of the Happy River	3 - Simplified	3 - Simplified	3 - Simplified	3 - Simplified	5 – just guessing	Project impacts human health but is not highly	Yes, but there aren't significant enough
Happy River	1 - Rigorous	2 - Routine	1 - Rigorous	1 - Rigorous	1 – very confident	Table 1 uses some subjectivity	

Results of the Pilot Study

Category Assignment Among Reviewers



- 14 projects assessed
- Most agreed upon criteria: Lab Analysis
- Less than 50% agreement

Phase 2: Graded Approach for Habitat Restoration Projects

- Focus on a 2-tiered system: Simple and Complex
- Provide clearer definitions of criteria (e.g., a more quantitative approach to defining each criteria by category)
- Use QD tools developed specifically to address the nuances of habitat restoration/inv. spp. control projects

Phase 2: Anticipated Benefits

- Reduced QA planning effort required for routine restoration projects
- Use of specific planning and reviewing tools for two category types
- Streamlined QD review and approval process

Phase 3: Graded Approach for Other Project or Sub-Project Types

- Consider developing categories for specific project types:
 - Direct measurement
 - Existing (secondary) data
 - Modeling
- Grantees could consider using internal approaches for these project types

Next Steps

- Move into Phase 2 and focus on habitat restoration and invasive species projects
- Implement plan by having 1) grantees use QD templates and 2) EPA use QD review checklists (by fall 2013)
- Survey participants to assess if level of effort was reduced (*continuous improvement!*)

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Thank You!



Please send all comments and questions to:

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