Guidance for the Application of Quality Assurance and Quality Control Principles to Ecological Restoration Project Monitoring

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Great Lakes Restoration Initiative

- Initiated in 2010
- 16 federal agencies
- $2.86 billion FY 2010-2018
- Five focus areas
  1. Toxic Substances and Areas of Concern
  2. Invasive Species
  3. Nonpoint Source Pollution Impacts on Nearshore Health
  4. Habitats and Species
  5. Foundations for Future Restoration Actions

Quality Management Requirements

- National standards for environmental data collection require quality assurance planning and documentation (e.g., ANSI/ASQ E4-2014)

- EPA adopted these standards for projects with environmental data collection activities that they undertake or fund

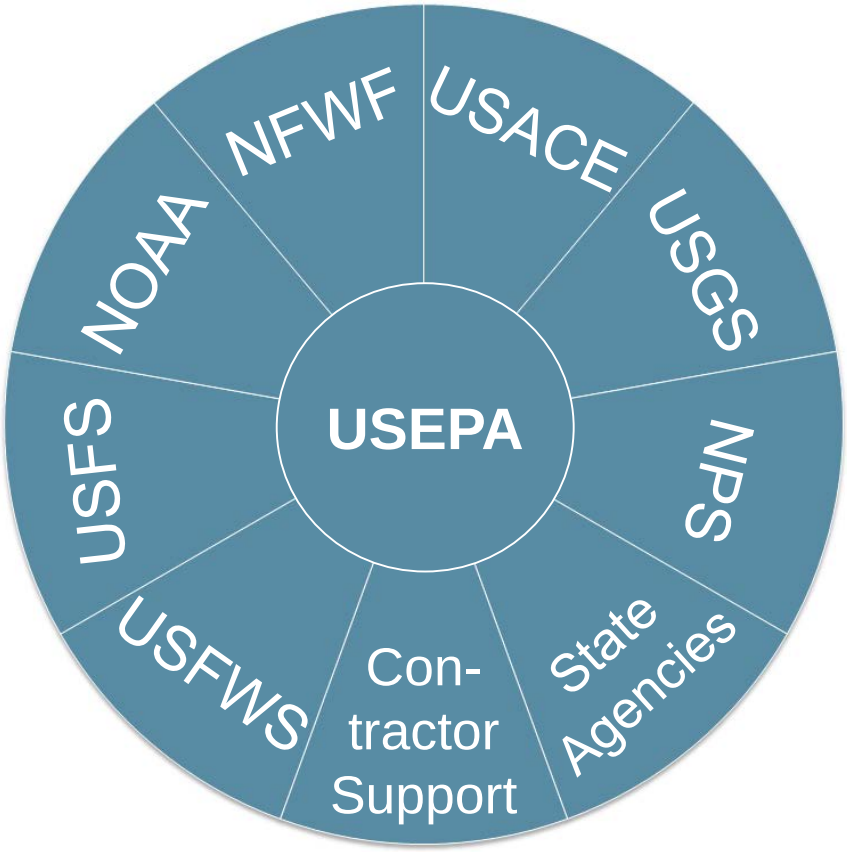
Quality of Ecological Data

- Inherently difficult to control
- Minimal guidance exists

Matt Cooper

Interagency Ecological Restoration Quality Committee (IERQC)

- Initiated: June 2012
- Purpose: Share quality concepts, practices, guidance, methods, and tools to improve projects funded by the GLRI



Committee Accomplishments

Guidance Document

Monthly Webinars

Journal Articles

SER Partnership

Trainings

Committee Guidance Document

"Application of Quality Assurance and Quality Control Principles to Ecological Restoration Projects"

Overall Goal

Improve data quality for ecological data collection efforts, especially **observer-determined data**

Chapters

1. Introduction
2. Fundamental Principles Concerning Quality Assurance/Quality Control
3. Planning for Data Collection
4. Preparing for Data Collection

Chapters (cont'd)

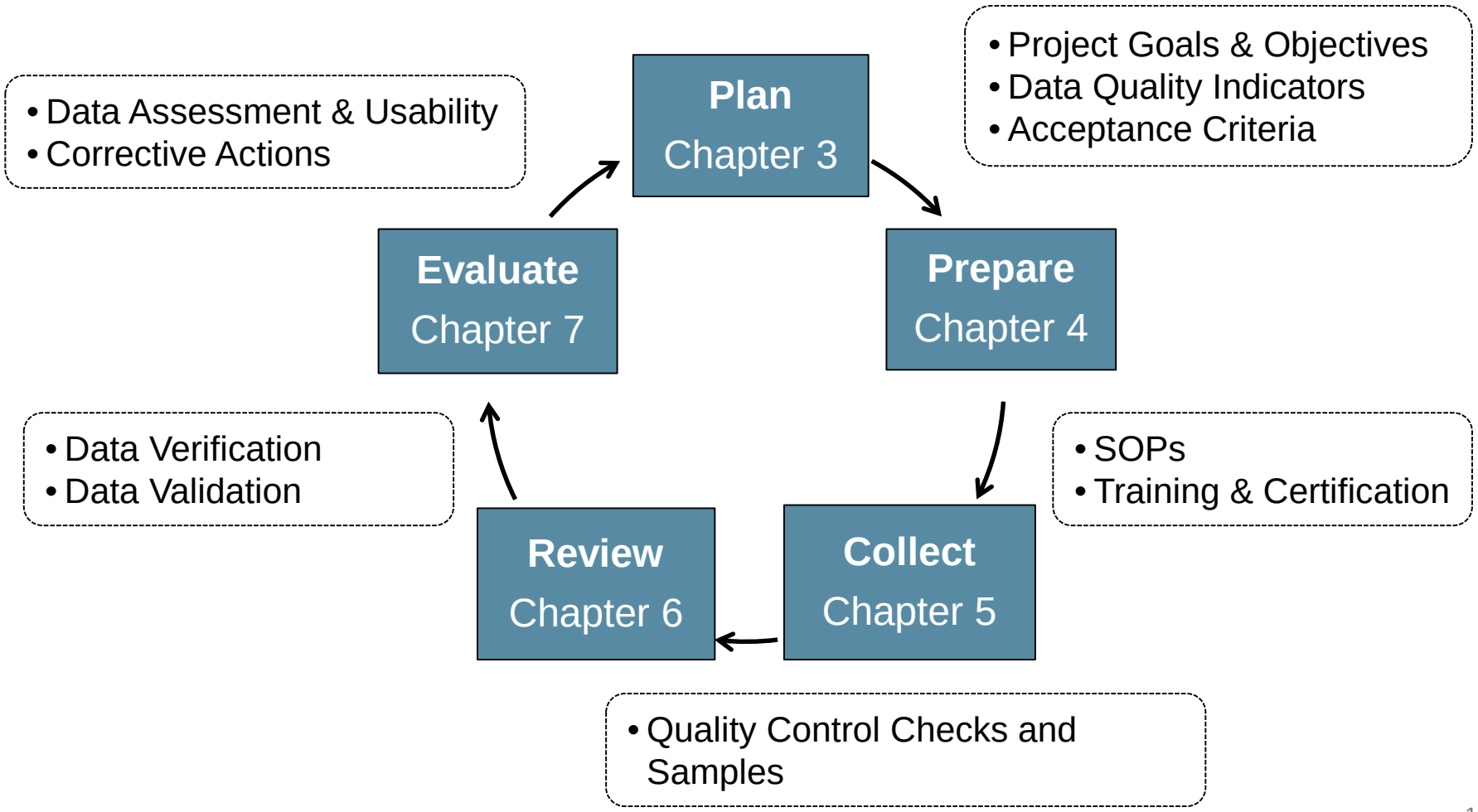
5 Quality Control During Field Activities

6 Data Review

7 Data Assessment, Analysis and Reporting

8 The Relationship between Quality Management and Adaptive Management Strategies

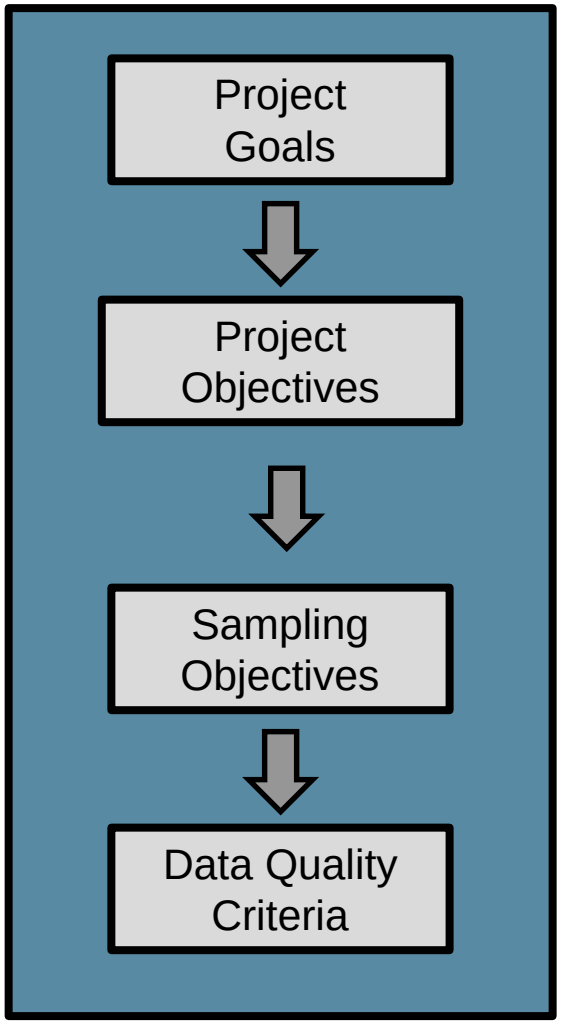
Project Lifecycle with Key QA Components



Planning for Data Collection

"We cannot overemphasize the importance of expressing each and every project goal with a succinct and carefully crafted statement."

Guidelines for Developing and Managing Ecological Restoration Projects by the Society for Ecological Restoration



Planning for Data Collection (con't)

- Recognize how data quality is evaluated
  - Data quality indicators
  - Acceptance criteria for precision, bias, and accuracy
    - Error tolerance with expected frequency or rate of compliance

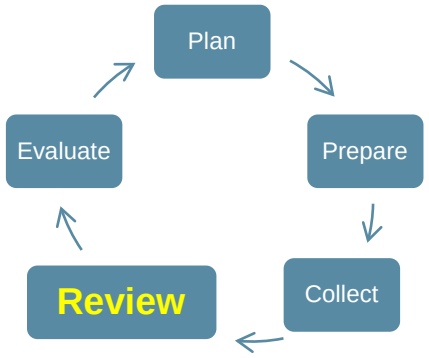
Preparing for Data Collection

- Standard operating procedures (SOPs)
- Classroom and field training
- Certification of crew members
- Field permits and other logistics

Quality Control During Field Activities

- Real-time assessments of:
  - Crew's ability to perform procedures and effectiveness of procedures
  - Data quality
- Assessments through:
  - Checks of data before leaving the field
  - QC field checks: hot, cold, blind, precision, calibration
  - Routine plots or reference plots/points

Data Review



- Data verification
- Data validation
- Data certification

Data Assessment, Analysis and Reporting

- Assess impacts of data quality on use of the data
- Analyze and interpret data
- Take corrective action to support
  - Continuous improvement
  - Decision making within an adaptive management

Appendices

- A: Data Management Best Practices
- B: Assessment of Data Quality Indicators
- C: Quality Assurance Project Plan Template for Ecological Restoration Projects
- D: Quality Assurance Project Plan Review Checklist for Ecological Restoration Projects

Technical Review

- Review took place in Fall 2017
  - 10 formal charge questions
  - 19 reviewers from federal/state agencies, consultants, and universities (US and Canada)
  - Over 300 comments provided
- Addressed comments in Winter 2018

Next Steps

- Conduct final EPA review
- Assign a document number
- Publish and distribute to the restoration community

Thank You!

Please send all comments and questions to:

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