Reclamation Manual

Policy

APPENDIX A

PHASES IN THE RECLAMATION DATA LIFECYCLE TO BE ADDRESSED IN A DATA ACQUISITION AND MANAGEMENT PLAN (DAMP)

Introduction

The data lifecycle is a series of phases through which data progress to inform the organization's decisions or provide information to the public (see Figure 1). Each phase of the lifecycle is related to, and driven by, the mission's information requirements and the decision needs that the data will support. In the *Define* phase these mission and decision requirements, along with data quality metrics and business processes, are developed.

The data lifecycle phases are applicable during the period of time for which data have value for their original business requirement. The useful life of the data, however, may extend beyond the original business requirement to serve subsequent requirements of the original decision-makers or new ones-- as well as stakeholders and/or the public. Information sharing across an organization creates a community of interest around these data which may extend their value beyond the original purpose. The determination of the useful life of any data, and the disposition of those data after the original business requirement has been served, are the joint responsibilities of the decision-maker, project lead, senior Reclamation management, partners, and the business data steward, based upon interaction with the community of interest.

Definitions for each Phase in the Data Lifecycle.

A. **Define:** The define phase provides characterization of data and information requirements based upon the business-driven user needs, including any scientific or technical questions that must be answered to support sound decision-making. It also establishes the relevant laws, policies, standards, and documentation requirements. The *Define* step is the planning step that drives all subsequent steps. This phase sets the requirements for data acquisition, access, and sharing.

B. **Acquire**: The acquire phase describes both the collection of data from existing sources and all new field or sensor data collection. The data acquisition plan translates the business/decision needs into variable definitions, sampling plans, collection methods, and recording techniques. It documents specifications, collection protocols, QA/QC procedures and other requirements for all collected or purchased data.

This step should include an inventory to identify both existing information assets and data gaps. For existing data sources, it should identify the metadata needed to document

the information obtained. This stage includes a review of relevant existing data standards, leading to adoption of existing standards or the potential development of new standards. This phase should identify any conversion or transformations of the data required for Reclamation use.

Often missing from this component is a statistical power analysis, which determines the required number of data points to be taken to achieve a desired level of statistical confidence. This analysis matches collection requirements with decision requirements.

C. **Evaluate:** The evaluate phase of the lifecycle ensures the data collected and processed meet the original requirements for objectivity, utility, and quality established in the Define and Acquire phases. This phase includes a periodic function to obtain feedback on data usage and analysis to determine their continued usefulness for the intended information and decision requirements.

D. **Maintain:** The maintain phase describes the ongoing processes, procedures, and systems for data storage, control, maintenance, security, and manipulation to ensure that the data can provide information to meet the business requirements. It includes procedures to maintain data integrity, appropriate updating, and documentation. Typically, this step involves creating a database system where the data and metadata are stored, and where basic data analysis and restructuring can be accomplished.

E. **Access:** The access phase develops procedures to ensure that the data acquired are known to and retrievable by the designated user community, using documentation and discovery best practices. Processes are established to identify who can create, modify, delete, discover, view, query, download, copy, update, and report data.

F. **Analyze:** The analysis phase describes the analytic methods and processes that will create information products to meet the business requirements and successfully address the needs of the decision-maker.

G. **Reporting:** In the reporting phase, the information products are agreed upon to meet the business and/or legal requirements. These products will be provided to decision-makers, managers, stakeholders, and the public.

H. **Archive:** The archival phase describes the data's retention and retirement into long-term storage within the agency. Archival refers to the disposition of data after the original business requirements have been met and the need for access will be infrequent. With archival continued discoverability and access will be maintained. Access and maintenance processes for long-term storage are also described in this phase.

Periodic Review of the DAMP

The data lifecycle phases described above are cyclical components. This necessitates the periodic review of the data within the context of each phase to determine if the processes outlined in the data acquisition and management plan remain valid. This review will ensure that the mission's informational requirements and decision needs continue to be met.

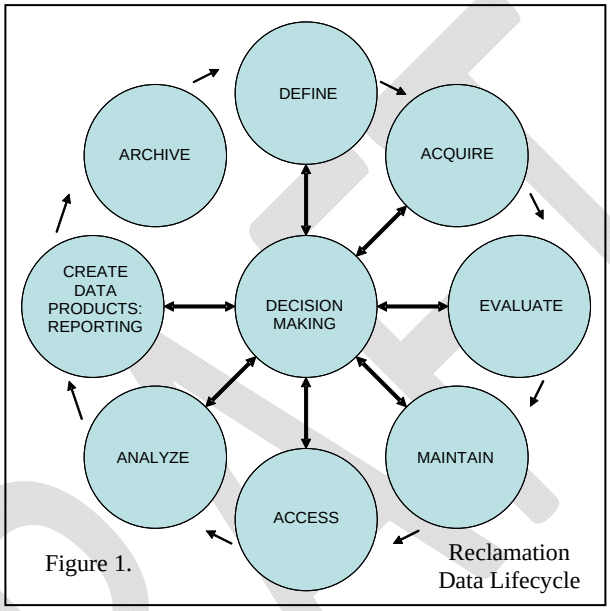

Figure 1. Reclamation Data Lifecycle