Levels of Digital Preservation

Element	Level One	Level Two	Level Three	Level Four
Storage and Geographic Location	- Two copies stored physically separate from each other - Transfer the digital content from temporary media into an established storage system - Managed storage system in place	- Three copies stored physically separate from each other - At least one copy in a different geographic location (off-site locations must follow NARA 1571 guidelines) - Document the storage system and storage media	- At least one copy in a geographic location with a different disaster threat (e.g. hurricane-prone area versus an earthquake-prone area) - Maintain an obsolescence monitoring process for the storage system and media	- At least three copies in geographic locations with different disaster threats - Implement a comprehensive plan that keeps files and metadata on currently accessible systems and media
Data Integrity	- Verify checksums on ingest, if provided - Create checksums if not provided - Virus check all content	- Verify checksums on all data ingest - Use read-only procedures when working with original media	- Verify checksums at fixed interval of 2 years - Maintain logs of checksums and supply audit information on demand - Maintain procedures to detect corrupt data	- Verify checksums of all content in response to specific events or activities - Maintain procedures to replace or repair corrupted data - Ensure no one person has write access to all copies - Create, store, and verify a second, different checksum for all content
Information Security	- Identify who has authorization to read, write, move, and delete individual files - Limit authorizations to individual files	Document access restrictions for content	Maintain logs of who performed what actions on files, including deletions and preservation actions	Perform audit of logs
Metadata	- Inventory of content and its storage location - Ensure backup and physical separation of inventory information - Adhere to current USGS metadata standards	- Store all relevant database management information - Store information describing changes to the structure or format of the data, including time of occurrence - Provide access to all forms of the metadata	Preserve standard *technical*, *descriptive*, and *preservation* metadata	Same as Level Three
File Formats	Encourage the use of a limited set of documented and open file formats, codecs, compression schemes,	Inventory the file formats in use	Monitor file format obsolescence issues	Perform format migrations

	and encapsulation schemes			
Physical Media	• Inventory all physical media utilized including hard disks.	• Develop a plan to utilize trade studies to evaluate medias suitable for USGS purposes. • Begin to transition away from all media utilized that are 10 years or more in age.	• All non-recommended media have been properly disposed of following transition activities.	• Base all media choices on trade studies • All information is migrated from an older media to a newer media every 3 to 5 years, including hard disks.

Derived from Library of Congress, National Digital Stewardship Alliance, NDSA Levels of Digital Preservation: Version 1, February 2013.