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Metadata Creation for the Maryland Geological Survey's Collection of Aerial Photographs, Part 1 (2011-2012)

by

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TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

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ABSTRACT

The Maryland Geological Survey (MGS or "the Survey") shares the concerns of other agencies and organizations engaged in geological research – that geoscience collections and data are valuable in their own right, beyond the lifetime of the projects during which they are collected or acquired, and that special efforts are required to preserve them and ensure their accessibility.

In this, its fourth year as a recipient of a National Geological and Geophysical Data Preservation Program (NGGDPP) grant, MGS created metadata for three components of its collection of aerial photographs and associated index maps: (1) aerial photographs from the two earliest "eras" in its holdings, 1936-1938 and 1951-1953, (2) the second and final subset of enlarged (2' x 2') aerial photos flown in the 1950s and 1960s over the State's barrier islands, and (3) the entire collection of index maps. The Survey supplied the metadata to the U.S. Geological Survey's (USGS) *ScienceBase Catalog*, adding a total of approximately 7,600 new records.

Aerial photographs depict land use and land cover at particular points in time. A time-series of such photographs can reveal detectable, measurable changes in those patterns. Such photography is irreplaceable – once the flight date has passed, ground conditions on that date cannot be replicated or reconstructed. The Survey's collection of aerial photographs will only grow in usefulness, as land use continues to change, and as a broad range of researchers and managers attempts to reconstruct past usage from these snapshots in time.

Aside from the inherent value of aerial photography, MGS selected the collection for documentation because: (a) it is one of the Survey's most frequently used collections, (b) it is a permanent holding for which metadata are incomplete, (c) documenting the collection is the first of several steps that will eventually lead to the photos being scanned, uploaded to the Internet, and permanently preserved, (d) members of the Survey's Data Preservation Advisory Panel unanimously recommended that this collection be the next one documented, (e) the project supports a statewide effort to create an electronic archive of historical aerial photographs, and (f) the existence of complete metadata may strengthen future proposals requesting funding for digitizing the photographs.

In the course of creating metadata for the collection, MGS found that (a) again, each collection is unique and poses its own set of issues to be resolved, in this case, how to group the collection components, (b) collaboration with other agencies, while fruitful, particularly in terms of avoiding duplication of effort, places additional demands on the cooperators, and (c) anticipating the end of the metadata-creation phase of data preservation, the Survey must begin directing its attention to collection accessibility.

MGS has now completed a collections inventory and created metadata for about one-third of its collections – the initial steps in building what it hopes will become a first-rate

repository that effectively serves the larger geoscience community in Maryland and beyond.

INTRODUCTION

The Maryland Geological Survey (MGS) houses a large collection of historical aerial photographs of the State, most of which were donated by the Maryland State Highway Administration or its predecessors. To date, the Survey has identified four components, or sub-collections, of its entire aerial photograph collection:

1. The first component, and the bulk of the collection, consists of approximately 20,000 unrectified, black-and-white, aerial photos flown during six time periods or "eras" (1936-1938, 1951-1953, 1957-1958, 1963-1964, 1970-1972, and 1979-1980).
2. The second component, considered a "special collection," consists of approximately 500 unrectified, black-and-white, 2'x2' photographic enlargements, flown over one or both of the State's two Atlantic coast barrier islands, Fenwick and Assateague Islands, during 13 different time periods between 1952 and 1964.
3. The third component, a recently discovered special collection, consists of approximately 200 unrectified, black-and-white, 19"x19" photographic enlargements, flown over the Laurel/Rockville area of Montgomery County, Maryland, annually or biannually between 1966 and 1974. (Aside from this mention, this component is not further discussed or described in this report.)
4. The fourth component of the collection consists of approximately 400, 22"x34" photo-mosaic index maps depicting flight lines and frame numbers for both the aerial photos flown for a particular county or section of a county, as well as the 2'x2' photographic enlargements for the barrier islands.

As part of this year's NGGDPP grant, MGS proposed to create NGGDPP-compliant metadata for a subset of the first component of the collection - an estimated 7,200 photos, about one-third of the Survey's collection of 9"x 9" aerial photographs, flown during the two earliest eras, 1936-1938 and 1951-1953. In addition to the proposed work, the Survey also supplied metadata to the *ScienceBase Catalog* for approximately 400 previously undocumented barrier island photographic enlargements and the entire air photo index map collection. In developing and submitting metadata for these three collection components, the Survey treated them as three separate collections: *Historical (1936-1980) Aerial Photographs of Maryland*; *Historical (1952-1964) Aerial Photographs of Fenwick and Assateague Islands, Maryland*; and *Maryland Air Photo Index Maps* (Table 1). Finally, through a cooperative agreement with the Johns Hopkins University (JHU), MGS made arrangements to have all of the barrier island enlargements and associated index maps scanned. JHU then posted those digital images to its *JScholarship* website.

Table 1: Components of the Aerial Photograph Collection for which MGS created metadata (2011-2012)		
Collection category	**Collection ID***	**Collection name**
Photographs: Aerial Photographs (9”x9”)	MGS-28 P1603	*Historical (1936-1980) Aerial Photographs of Maryland*
Photographs: Aerial Photographs (2’x2’)	MGS-34 P1691	*Historical (1952-1964) Aerial Photographs of Fenwick and Assateague Islands, Maryland*
Photographs: Air Photo Index Maps	MGS-35	*Maryland Air Photo Index Maps*

* MGS-## = Internal MGS Collection ID
P#### = Original National Digital Catalog Collection ID for Maryland (State ID = 435934)

Aerial photographs depict land use and land cover at particular points in time. A time-series of such photographs can reveal detectable, measurable changes in those patterns. Such a collection is irreplaceable – once the flight date has passed, ground conditions on that date cannot be replicated or reconstructed.

The potential usefulness of historic aerial photos is difficult to predict, in part because of their appeal to a broad audience. However, two examples of their past usage are illustrative. One of Maryland’s most prominent physical features is the Chesapeake Bay, the largest estuary in the country. The declining health of the bay over the past several decades has been a cause of concern and intensive study among a myriad of federal, state, and local government agencies. One indicator of bay health is the acreage of the bay floor covered by sea grasses, which act as a nursery for a number of aquatic species and buffer the shore from wave-generated erosion. To develop a baseline against which to measure more recent distributions of such grasses, the Maryland Department of Natural Resources used the 1951-1953 aerial photos to delineate their historical distribution.

The second example has to do with the repatriation and eventual reburial of Piscataway Indian remains held by the Maryland Historical Trust. In seeking a solution to the problem, an archeologist assigned to the case consulted the MGS aerial photo collection and was able to identify the pits – circular areas of disturbed soil - from which the remains had been extracted during the original archeological dig in the 1930s.

The air photo collection will only grow in usefulness, as land use continues to change, and as researchers and managers attempt to reconstruct past usage from these snapshots in time.

Besides the intrinsic value of the collection, a number of other considerations led MGS to select it for documentation. First, with the exception of certain online collections, it is one of the Survey’s most frequently used collections. The MGS library, home to the collection, is open to the public during normal business hours. Many of the library’s patrons – several hundred annually – request access to the aerial photos.

Second, the collection is in need of rescue. Because of their age and popularity, the photographs are at risk of further damage due to excessive handling. Compounding that problem are the poor conditions under which the photos are stored. Temperature and relative humidity in the library fluctuate widely with the seasons. Some of the photographs have become moldy or mildewed. Ultimately, MGS intends to scan the photographs, post the digital images to the Internet, and remove the photos themselves from active circulation to the Maryland State Archives, an environment more conducive to their long-term preservation. Documenting and scanning the items in the collection are the first steps leading to their ultimate preservation.

Third, at its annual meeting in September 2010, the Survey's Data Preservation Advisory Panel discussed the collections remaining to be documented in light of the upcoming NGGDPP request for proposals. The consensus of the Panel was that, of the MGS collections as yet undocumented, the aerial photographs were undoubtedly the collection of greatest interest to the broadest range of users and that making such a collection available to an audience that includes non-geologists might encourage greater support of data preservation efforts at the Survey. One of the Panel members, the director of the Delaware Geological Survey, attested to the widespread use of that state's web-accessible aerial photos by "not only…the geologic community, but land use people in state, county, local government, agriculture, emergency management agencies, coastal program staff, real estate industry, engineering and geological consultants, individual home owners, schools, etc."

Fourth, the project supports a wider state effort to create an electronic archive of historical aerial photographs. Over the past several years, a number of Maryland state agencies have periodically discussed inventorying, scanning, and preserving historical aerial photography held by state and local governments. Partly in response to discussions at the September 2010 meeting of the Survey's Data Preservation Advisory Panel, a co-chair of the State Government Caucus of the Maryland State Geographic Information Committee (MSGIC) issued an invitation to MSGIC members and other interested parties to attend a meeting of the revived Historic Aerial Images and Maps Committee. The purpose of the meeting was to discuss (a) the activities that must be undertaken to make aerial photos digitally accessible and (b) coordinating those activities to avoid duplication of effort. There was considerable interest in making such an online resource available to the public. Since then, the Committee has launched a web-based survey instrument to collect information about aerial imagery held by government agencies and private companies throughout the State. In creating NGGDPP metadata for its collection, MGS will contribute to this statewide effort.

Finally, documenting the collection will ensure that a finding aid for the aerial photos exists, enabling MGS to make a stronger case in the future for funding completion of the scanning phase.

In summary, then, by creating metadata for its historical aerial photo collection, MGS is satisfying criteria outlined in its own *Long-range Data Preservation Plan* (Hennessee, 2009), advancing the permanent preservation of a valuable collection, honoring the

considered opinions of an advisory panel that fosters data preservation at the Survey, contributing to statewide efforts to create an online resource available to a broad user community, and better positioning itself to take advantage of other grant opportunities.

The organization of this year's report follows a precedent begun last year: each collection is discussed in a stand-alone section - an appendix at the end of the report - following a standardized template. Grouping all of the information about a particular collection in one place provides an easy-to-access summary of progress to date and facilitates addressing needs and next steps. In effect, the collection appendices become supplements to the Survey's *Long-Range Data Preservation Plan*. Also, once again, this report serves double duty: to report MGS's progress with respect to the 2011 NGGDPP grant and to document the Survey's other, non-grant-related data preservation activities over the same time period. Having a single, dual-purpose "annual report" facilitates communicating results to other stakeholders, particularly the Survey's staff and the members of the Data Preservation Advisory Panel.

BACKGROUND

Geographically, Maryland is a relatively small state, with a land area of 9,844 square miles and a water area of 623 square miles. But, with a population of nearly 5.8 million people, it is the fifth most densely-populated state in the U.S. (595 people per square mile) (MGS, 2007; U.S. Census Bureau, 2010). The state straddles six geologically diverse physiographic provinces, from the Appalachian Plateau to the Atlantic Continental Shelf, and contains an extensive network of tidal streams and bays, most notably northern Chesapeake Bay. The Atlantic Ocean forms its eastern border.

The state geological survey has been in existence since 1896. The types of geoscience collections held by MGS reflect its mission, as it has changed over the past 116 years. Current research is focused on the geological underpinnings and groundwater resources of the State. However, MGS has retained several collections from the past, when the interests of its staff and the needs of Maryland's citizenry were different than they are today. For instance, although the Survey is no longer actively engaged in paleontological research, MGS has a macrofossil collection that numbers in the hundreds of specimens. As a consequence of its longevity and the diversity of its activities, MGS possesses a wide array of holdings in a variety of formats.

Four years ago, in response to financial incentives offered by the NGGDPP, MGS began to address the long-term preservation of its data and collections in a formalized, systematic way. In 2008, NGGDPP awarded MGS a one-year grant to (1) identify and broadly described the geoscience collections and data currently in its possession and (2) enter information about the nature, size, condition, and accessibility of those collections and data deemed "permanent" into the Collections Inventory of the National Digital Catalog (Hennessee and Shelton, 2009). Since then, MGS has identified 33 permanent collections: 9 physical collections and 24 derived or indirect data collections. A detailed

list of those collections, as well as their status in terms of data preservation, can be found in Appendix 1.

In 2009, NGGDPP awarded MGS a second grant, which enabled the Survey to master metadata creation through the documentation of three of its sediment core collections. Also in 2009, MGS developed a long-range data preservation plan for its non-digital holdings (Hennessee, 2009) and appointed a curator from among its scientific staff. Inspired by the Data Preservation Workshop at Indiana University, MGS established a Data Preservation Advisory Panel composed of outside geologists, archivists, librarians, and archeologists. From its inception, the Advisory Panel has fostered data preservation at MGS, helping to resolve thorny questions, endorsing proposals, and forming partnerships in applying for preservation-related grants.

The third year grant allowed MGS to continue metadata creation for several more of its collections and, as noted in the Introduction, led to a revision in the way that the Survey reports its results. As part of its third-year effort, MGS documented about 20% of the Fenwick and Assateague Island photographs, a pilot project of sorts for this fourth year effort.

OBJECTIVES

Designed to further MGS's progress in metadata creation and submittal to the *ScienceBase Catalog*, the objectives of the 2011 NGGDPP project, as outlined in the proposal, were as follows:

1. For a subset of one component of the collection - 9"x 9" aerial photographs flown in the 1930s and 1950s - assemble the information needed to develop item-by-item metadata, consistent with the NGGDPP metadata template. Populate an internal Microsoft Access database, AirPhotoIndex.mdb, with metadata describing the items that comprise the photographs, in a format consistent with version 1.0 of the *Metadata Profile for the National Digital Catalog*:
2. Through digital transfer, provide metadata to the *ScienceBase Catalog* for the items that comprise the proposed collection.
3. Develop collection-specific strategies for the preservation of the aerial photographs, particularly in light of the statewide effort to scan, preserve, and make such photos accessible via the Internet. Address the issue of improving storage conditions for the existing items in the collection.
4. Submit a final report to the NGGDPP, describing the results, findings, and lessons learned from this year's project.

METADATA CREATION, CONVERSION, AND TRANSFER

POPULATING AN INTERNAL AIR PHOTO INDEX DATABASE

Several years ago, MGS developed and began populating a Microsoft Access database, AirPhotoIndex.mdb, with information about the aerial photos and index maps in its collection. The database, stored on the MGS network (Common on 'Mgsdc':/ AirPhotoIndex), contains two primary tables, tblAirPhoto and tblIndexMap, with information about air photos and index maps, respectively. At the onset of this project, the "titles" of all photos depicted on the Survey's air photo index maps had been entered into the database, regardless of whether MGS actually held the photos in its collection. Thus, the first phase of this project entailed entering information about the actual photos that comprise the MGS collection.

In many ways, the information stored in the Air Photo Index database differs in content or format from the fields that comprise NGGDPP-compliant metadata. The internal database includes information pertaining to photo condition, the physical and cultural features depicted on the photo, the ID of the associated air photo index map, the location of the photo (i.e., room, file cabinet, cabinet drawer), etc. – fields not necessarily of interest to *ScienceBase Catalog* users. On the other hand, NGGDPP metadata require that dates be reported in YYYYMMDD format, instead of the MM/DD/YYYY format employed in the Access database. And, the NGGDPP *abstract* field must be constructed, largely by concatenating fields in the internal Access database.

From its very first foray into metadata creation, the Survey adopted an idea similar to one suggested in the NGGDPP instructions, *Preparing Metadata for the National Digital Catalog* (05/15/2009), which provides a worksheet for mapping existing digital data into the metadata fields. For each collection, MGS completes an *NGGDPP Metadata Form* describing the information to be supplied as metadata, including explanations and examples for each metadata field and a list of information sources, as appropriate. The completed forms for the three sub-collections that the Survey documented this year are included as part of the individual collection reports (Appendices 2-4). The remainder of this section discusses some of the more important metadata decisions that the Survey made in the course of documenting this year's collections.

Title

For all aerial photographs, MGS used the photo identifier embedded in the upper right corner of the photo itself as the item title. For air photo index maps, the title includes the area and year of coverage, as well as the sheet number.

Geographic Coordinates

Initially, MGS intended to determine the geographic coordinates of the NE corner of each aerial photo by first scanning and georeferencing the associated index map and then positioning a cursor over the NE corner of the photo in the mosaic to reveal its coordinates. Instead, for the 9"x 9" photos and the index maps themselves, the Survey reported the geographic coordinates of the centroid of the county over which a photograph was flown or for which an index map was created. For the barrier island

photos, geographic coordinates represent the Ocean City Inlet, an approximate centroid in the Maryland section of Fenwick Island, or an approximate centroid in the Maryland section of Assateague Island, depending on the area depicted in the photograph (see a fuller explanation in Results and Lessons Learned section below).

Alternate Geometry

MGS commonly uses the *alternateGeometry* field to document the contents of the *coordinate* field, even though the *alternateGeometry* field is intended for reporting (x, y) coordinates based on other coordinate systems. An example of the MGS version of an *alternateGeometry* field entry might be, "Geographic coordinates (NAD83) represent centroid of Talbot Co., MD, from the U.S.Geological Survey's Geographic Names Information System (GNIS)."

CONVERTING METADATA TABLES AND SUBMITTING FILES TO THE *SCIENCEBASE CATALOG*

For this year's documented collections, MGS used the same process it has used in the past to convert Access metadata tables to .csv-formatted files and upload those files to the *ScienceBase Catalog*. Once again, the clear instructions in *Preparing Metadata for the National Digital Catalog* (05/15/2009), coupled with MGS-specific instructions and admonitions for metadata upload, included as an appendix in a previous report (Hennessee and Shelton, 2010), made file submission fairly straightforward. MGS particularly appreciated being able to interact directly with NGGDPP personnel, especially Richard Brown, to learn about the latest changes in submitting data to the *ScienceBase Catalog* and to resolve occasional minor glitches in the process.

VERIFYING THE ACCURACY AND COMPLETENESS OF THE UPLOADED METADATA

MGS verified the completeness and accuracy of the metadata upload. In terms of completeness, MGS checked that the total number of records in each collection, determined from the appropriate internal database table, matched the number uploaded to the *ScienceBase Catalog*. Then, for a subset of records in each collection, MGS verified the accuracy of the uploaded information, that is, MGS verified that the information in the *ScienceBase Catalog* matched the information in the internal database tables.

After verifying the accuracy and completeness of the metadata upload, MGS reviewed and, as needed, revised the associated information contained in the original Collections Inventory. This step is necessary because the exact number of items uploaded may differ from the estimated number reported in the initial description of a collection. Or, metadata are completed for additional items in a collection. Or, as a collection is itemized and documented, the contents of the collection is broadened to include more kinds of items, or narrowed to include fewer, necessitating a change in the collection description.

DIGITAL INFRASTRUCTURE

Although MGS received no direct funding from NGGDPP to convert its aerial photography from paper to digital imagery, the generosity of the Johns Hopkins University Eisenhower Library (JHU) enabled MGS to scan all of the Fenwick and Assateague Islands photographs and index maps. A few years ago, MGS, JHU, and the Maryland State Archives (MSA) signed an informal agreement to collaborate in the scanning of all of MGS's publications, primarily reports and maps. JHU extended the agreement to include the "Ocean City" photography; it funded and arranged for the scanning of the 500+ photos and index maps by an outside vendor (400 dpi; .tif/.jpg/.jp2 formats).

ACCESSIBILITY

Currently, MGS holds all of the photos and index maps that comprise its collection of aerial photography. Library patrons are welcome to access the collection in-house during normal business hours. Once the collection components have been digitized and made available online, MGS plans to transfer the collection in its entirety to MSA for permanent preservation. Meanwhile, JHU has posted all of the digital barrier island imagery to its free, publicly accessible *JScholarship* website (*Aerial Photography – Ocean City (1952-1964)*, https://jscholarship.library.jhu.edu/handle/1774.2/35704 [8/3/2012]). Files in .jpg or .jp2 format are available for immediate download from that site. MGS has copied the same scanned images to its internal Digital Library and transferred the files to MSA and to the offices of the Assateague Island National Seashore.

RESULTS AND LESSONS LEARNED

MGS broadly met this year's grant objectives by documenting the proposed sub-collection of early 9"x 9" aerial photographs. In addition, the Survey provided complete metadata for two other air photo sub-collections, the barrier island photographs and the air photo index maps. In all, 7,578 new, as opposed to replacement, records, were uploaded to the *ScienceBase Catalog*. Finally, in a related, but unfunded, effort, MGS collaborated with JHU to digitize all of the barrier island photos and associated index maps and make them web-accessible.

As part of the grant, MGS planned to assign photo-specific geographic coordinates to each metadata record. A problem arose, however, temporarily thwarting this approach. MGS had hoped that the Historic Aerial Images and Maps Committee would come to an agreement about how the many sets of historical aerial photos held by various agencies and companies in Maryland would be digitized and made accessible via the Internet. Once the committee developed a set of specifications, MGS planned to follow them, modifying the approach proposed to the NGGDPP, if necessary. In effect, the Survey hoped to avoid having to redo the work of assigning coordinates according to committee

specifications, after having completed the work of creating NGGDPP coordinates. The committee, however, did not made as much progress in creating specifications as the Survey had anticipated. Consequently, MGS decided to postpone determining photo-specific coordinates until the committee makes such a decision. Instead, the Survey reported the geographic coordinates of county or island centroids, depending on the sub-collection.

The most important lessons learned in the course of the project are as follows:

- This year confirmed, once again, that each collection is unique and poses its own set of issues to be resolved. The main question with regard to the collection of aerial photographs was how to handle the collection components. Should all of the items – "regular" air photos, photo enlargements, and index maps – be grouped into a single collection? Or, should the regular and enlarged air photos be considered two separate collections, with associated index maps included with the air photos themselves? Or, should the regular and enlarged air photos be considered a single collection, and the index maps a separate collection? Or, should all three components be considered separate collections? In the end, MGS chose the last option. Until that framework was established, it was difficult to begin compiling metadata in a meaningful way.
- In its data preservation efforts, MGS has been trying to form cooperative relationships with other agencies interested in its collections, in large part to avoid costly duplication of effort. Several of those efforts have succeeded, in particular, MGS's collaboration with JHU and MSA to scan Survey publications, described below. Successful as they may be, though, such efforts usually entail new staff obligations and an additional outlay of time (e.g., in tracking the release and return of physical items being scanned by another agency; in ensuring that all collaborators have received copies of digital images; in supplying collaborators with item metadata). Often, a project timeline, affected by other duties and constraints on collaborators, ends up being extended. So, even though the final product may be less costly in terms of actual dollars spent, it may take longer to achieve the desired results.
- Within a few years, MGS will have completed the metadata creation phase of data preservation for all of its collections. In keeping with its long-range data preservation plan, MGS will then turn to making those collections more easily accessible, preferably online. Although MGS has a long-standing web presence, the Survey's website is in need of revamping; staff are currently engaged in the redesign process. However, MGS is hampered by inadequate funds to acquire hardware capable of serving digital versions of its paper-based collections, particularly large aerial photograph and map files. For the moment, JHU's *JScholarship* website and MSA's online *Guide to Public Records* are meeting that need. Although such access may satisfy online users, it has the effect of dissociating Survey products from the Survey itself.

NON-GRANT-RELATED PRESERVATION ACTIVITIES

Although the activities described in this section of the report were not directly funded by the NGGDPP, MGS has decided to include this section for two reasons: (1) undertaking the activities was inspired by the Survey's involvement with the NGGDPP and (2) compiling all of the Survey's data preservation activities in one place allows the report to serve double duty as a final report to the NGGDPP, as well as an annual report to MGS's data preservation stakeholders (e.g., MGS staff, members of the MGS Data Preservation Advisory Panel).

The most important non-grant-related activities that MGS undertook this year included:

- Continuing compilation of a still-incomplete digital finding aid for its many publications, both reports and maps

  Last year, MGS began developing a finding aid, essentially metadata, for its reports and maps. The number of reports listed in the database now stands at 450; the number of maps and oversized illustrations, at over 1,500.

- Continuing collaboration with the Johns Hopkins University (JHU) Eisenhower Library and the Maryland State Archives (MSA), to scan MGS publications and air photos and make them available online

  As part of the MGS-JHU-MSA collaboration, JHU has scanned and supplied digital images of ~700 maps and ~500 aerial photographs to both MGS and MSA. This year, MSA scanned the ~200 oversized figures/plates/illustrations in the Survey's Reports of Investigations series of publications and all of the maps (~130) comprising the 26 Quadrangle Atlases series, supplying digital images of those maps to MGS and JHU. JHU is making the digital images available online via its *JScholarship* website, and, similarly, MSA is making the images available through its online *Guide to Public Records*. Once the MGS website redesign is complete, the Survey will post all or some of the same images online. All three collaborators are authorized to distribute scanned images to other interested parties, as they see fit. So, MGS made digital copies of the Fenwick and Assateague Island air photos available to the offices of the Assateague Island National Seashore, a research partner on a number of coastal projects.

- Collaborating with the Geography Department at the University of Alabama to exchange digital images of MGS maps and oversized publication figures, etc.

  In an effort to minimize the amount of scanning required to digitize the Survey's remaining maps, MGS contacted the University of Alabama, which maintains an online Historical Map Archive [http://alabamamaps.ua.edu/historicalmaps/us_states/maryland/index2.htm]. Although the Archive features maps of Alabama, it also contains maps of other states in the U.S., including Maryland. The Cartography Lab at Alabama has scanned about 150 maps and oversized figures produced by MGS, with a concentration on the Survey's

earliest, and most fragile, publications. The lab director readily agreed to an exchange – the pre-1960 MGS maps that the Survey and its collaborators have scanned, in exchange for the MGS maps that the lab has scanned.

- Collaborating with website design team at MGS.

  The MGS curator is working closely with the website design team to ensure Data Preservation database and website compatibility, to facilitate the delivery of the Survey's digital publications and information about other MGS collections.

- Meeting with the MGS Data Preservation Advisory Panel.

  At its annual meeting in Fall 2011, the Survey's Data Preservation Advisory Panel encouraged MGS to apply for NGGDPP funding to continue developing metadata for its remaining (post-1955) aerial photos and to begin scanning the pre-1955 air photos. With a letter of endorsement from the Advisory Panel, MGS successfully did so.

- Continuing participation on the Maryland State Geographic Information Committee's (MSGIC's) Historical Aerial Images Committee

  MGS remained an active participant on MSGIC's Historical Aerial Images Committee (HAIC). The goals of the HAIC are to locate, digitize, and preserve older aerial photographs and related imagery flown for the State. This year, HAIC created a SurveyMonkey inventory form for use by individual agencies, private companies, etc., in describing their collections. MGS added its air photo collection to the catalog.

- Developing accession policies and forms for accepting donations to existing MGS collections

  The Survey acquired the Richard Lucas Collection, a small, private collection, primarily of Maryland fossils, and, in the process, recognized the need for a plan that facilitates decisions having to do with accepting or declining donations and for forms that acknowledge both the gift and the terms of accession.

CONCLUSIONS

During the past year, MGS has initiated and/or successfully completed a number of activities in building what it hopes will become a first-rate repository that effectively serves the larger geoscience community in Maryland and beyond. Having created and uploaded metadata for a total of 10 of its 33 permanent collections to the *ScienceBase Catalog*, MGS now fully understands the process and has developed procedures and collection-level reporting requirements for documenting the outcome. MGS has embarked on several independent initiatives to digitize and preserve its reports, maps, and

aerial photographs, ensuring continued accessibility to their digital counterparts. In its data preservation efforts, the Survey's next steps are to continue documenting its remaining collections, to seek funding for and prepare all of the collections for long-term preservation, and to continue addressing mechanisms for public access to the collections.

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APPENDIX 1
MGS's Permanent Collections and Their Preservation Status
September 2012

Table A1-1: Status of the permanent collections held by MGS, by NGGDPP collection category, as of September 2012 (shaded cells indicate that the activity is complete)

Collection category	Permanent collections (N)	Items in collection* (N)	Collection inventory	Metadata creation	Collection organization & storage	Internet accessibility	Education/ outreach
PHYSICAL COLLECTIONS							
1. Auger samples							
2. Fluid samples							
3. Geochemical samples							
4. Hand samples	2						
Maryland Rocks and Minerals (P1510)		99 (203)	NGGDPP 2008	NGGDPP 2010			
Exhibition Flasks: Mineral Commodities of Maryland (P1692)		38	NGGDPP 2010	NGGDPP 2010			
5. Ice cores							
6. Paleontological samples	1						
Maryland Macrofossils (P1518)		156 (200) species; 1500 specimens	NGGDPP 2008	NGGDPP 2010			
7. Rock cores	1						
Rock Cores (P1531)		200	NGGDPP 2008	*(NGGDPP 2010)*			
8. Rock cuttings	1						

Table A1-1: Status of the permanent collections held by MGS, by NGGDPP collection category, as of September 2012 (shaded cells indicate that the activity is complete)							
Collection category	**Permanent collections (N)**	**Items in collec-tion* (N)**	**Collection inventory**	**Metadata creation**	**Collection organization & storage**	**Internet accessibility**	**Education/ outreach**
Rock Cuttings (P1532)		200,000	NGGDPP 2008				
9. Sediment cores	4						
Coastal Plain Cores (P1507)		125	NGGDPP 2008	NGGDPP 2009			
Atlantic Continental Shelf Cores (P993)		282	NGGDPP 2008	NGGDPP 2009			
Chesapeake Bay Cores (P1648)		4,255	NGGDPP 2009	NGGDPP 2009			
Heavy Minerals, Atlantic Coastal Shelf (P1519)		250					
10. Sidewall cores							
11. Thin sections and polished sections							
12. Type stratigraphic sections							
Subtotal	**9**						
DERIVED/INDIRECT DATA							
13. Drilling/completion reports	1						
Well Permits and Well Completion Reports, Maryland (P1526)		500,000	NGGDPP 2008				
14. Drill stem and other tests	1						
Aquifer (Pump) Tests, Maryland Coastal Plain (P1521)		262	NGGDPP 2008				
15. Field notes	1						
Geology Field Notebooks, Maryland (P1522)		70	NGGDPP 2008				
16. Geochemical data	1						

Table A1-1: Status of the permanent collections held by MGS, by NGGDPP collection category, as of September 2012 (shaded cells indicate that the activity is complete)							
Collection category	**Permanent collections (N)**	**Items in collec-tion* (N)**	**Collection inventory**	**Metadata creation**	**Collection organization & storage**	**Internet accessibility**	**Education/ outreach**
Maryland Groundwater Quality Data (P1530)		?	NGGDPP 2008				
17. Geophysical data							
18. Lithology logs	1						
Geological (Lithological) Descriptions of Coastal Plain Cores and Well Cuttings, MD and VA (P1527)		52	NGGDPP 2008				
19. Maps	1						
MGS Maps, including Oversized Inserts in MGS Publications (no USGS ID)		1500	In progress (9/2012)	In progress (9/2012)			
20. Paleomagnetic resistivity							
21. Paper reports	3						
Published MGS Reports		~500	In progress (9/2012)	In progress (9/2012)			
Unpublished MGS Reports (P1553)		300	NGGDPP 2008	In progress (9/2012)			
Doctoral Dissertations on Maryland Geology (P1523)		28	NGGDPP 2008				
22. Petrophysical data							
23. Photographs	6						
Photographs, Chesapeake Bay Shoreline, Maryland (P1565)		20,000	NGGDPP 2008				
X-rays & Xeroradiographs of Marine & Estuarine Sediment Cores, MD (P1589)		300	NGGDPP 2008				
Maryland Air Photo Index Maps		395	NGGDPP 2011	NGGDPP 2011			
Historical (1936-1980) Aerial		6,772	NGGDPP	NGGDPP			

Table A1-1: Status of the permanent collections held by MGS, by NGGDPP collection category, as of September 2012 (shaded cells indicate that the activity is complete)							
Collection category	**Permanent collections (N)**	**Items in collec-tion* (N)**	**Collection inventory**	**Metadata creation**	**Collection organization & storage**	**Internet accessibility**	**Education/ outreach**
Photographs, MD (P1603)		(~25,000)	2008	2011 (6,772) 2012 (in progress)			
Historical (1952-1964) Aerial Photographs, Fenwick & Assateague Is., MD (P1691)		505	NGGDPP 2010	NGGDPP 2010 (92), 2011 (413)			
Historical (1966-1974) Aerial Photographs, Montgomery Co., MD		~200					
24. Potential fields							
25. Production history							
26. Routine analysis data	2						
Marine & Estuarine Beach & Bottom Sediment Data (P1612)		~50 studies	NGGDPP 2008	*(NGGDPP 2010)*			
Paleontological and Palynological Data Derived from MD Water Wells (P1524)		?	NGGDPP 2008				
27. Scout tickets							
28. Seismic data	1						
Marine and Estuarine Seismic Profile Prints (P1554)		240	NGGDPP 2008				
29. Source rock maturity analysis							
30. Special analysis data							
31. Stratigraphic horizons							
32. Surface and airborne data	3						
Bathymetric Surveys, MD Water Bodies (P1547)		8	NGGDPP 2008	NGGDPP 2010			

Table A1-1: Status of the permanent collections held by MGS, by NGGDPP collection category, as of September 2012 (shaded cells indicate that the activity is complete)							
Collection category	**Permanent collections (N)**	**Items in collec-tion* (N)**	**Collection inventory**	**Metadata creation**	**Collection organization & storage**	**Internet accessibility**	**Education/ outreach**
Elevation Surveys of Arnold, Broad Creek, and Crofton Meadows Well Fields, Anne Arundel Co., MD (P1529)		15	NGGDPP 2008				
Beach Profiles, Coastal Maryland (P1613)		?	NGGDPP 2008				
33. 2-D and 3-D seismic reflection	1						
2-D Seismic Reflection Profiles, Maryland Coastal Plain (P1520)		2	NGGDPP 2008				
34. Vertical seismic profiles							
35. Well logs	2						
Geophysical Logs, Western Maryland Deep Wells (P1528)		337	NGGDPP 2008	NGGDPP 2010			
Well Logs, Maryland and Neighboring States (P1525)		2,000	NGGDPP 2008				
Subtotal	**24**						
Total	**33**						

* Number in parentheses = total number of items held by MGS, vs. number of items for which metadata was reported to the *ScienceBase Catalog*

APPENDIX 2

Historical (1936-1980) Aerial Photographs of Maryland

MGS Collection ID: 28
Original NGGDPP ID: P1603
ScienceBase ID: 4f4e4a94e4b07f02db658dba

September 2012

COLLECTION DESCRIPTION

The largest component of the Survey's collection of aerial photography, this sub-collection consists of approximately 20,000 unrectified, black-and-white aerial photographs flown throughout Maryland, most by the U.S. Department of Agriculture, during one of six time periods or "eras" (1936-1938, 1951-1953, 1957-1958, 1963-1964, 1970-1972, and 1979-1980). Each of the photos in the collection is about 9"x9" in size, most with an approximate scale of 1:20,000. The photographs cover all of the counties in the State, though not always completely. In addition to the photos, several hundred index maps are included in the related sub-collection, *Maryland Air Photo Index Maps*.

Tables A2-1 and A2-2 below list the aerial photos, by county, flown during the two earliest eras represented in the collection, 1936-1938 and 1951-1953, respectively.

COLLECTION LOCATION AND STORAGE CONDITIONS

The physical collection of 9"x9" aerial photographs is stored vertically in several file cabinets in the MGS map library (Room 315). Ambient temperature in this windowed, north-facing room at the top of the building fluctuates widely; the space becomes quite warm in summer, despite air-conditioning. Humidity, though not monitored, probably varies, as well.

The collection is accessible to library visitors, who are often left unsupervised to study photos retrieved by an MGS staff member. Visitors are at liberty to photocopy photos of interest, using a photocopier located in the library. MGS asks that they not refile the photos they consult.

Although the photos are fairly well organized and maintained, there is sometimes a delay in refiling photos that have been retrieved for library patrons. Also, MGS employees feel free to borrow photos as the need arises. There is no system in place for checking out and returning borrowed photos.

COLLECTION DOCUMENTATION

The Survey's Data Preservation Database

Several years ago, MGS developed and began populating a Microsoft Access database, AirPhotoIndex.mdb, with information about all of the aerial photos and index maps in its

collection. The database, stored on the MGS network (Common on 'Mgsdc':/ AirPhotoIndex), contains two primary tables, tblAirPhoto and tblIndexMap, with information about air photos and index maps, respectively.

Once all of the information for photos flown during the two earliest eras was entered into the Air Photo Index database, MGS copied those entries to a table in the Data Preservation Database, tblAerialPhotos_MD1930s_1950s, and appended the NGGDPP metadata fields to the table. Two additional iterations of the table, tblMetadata_P1603_APMD_1936-1953 and, finally, tblUploadMetadata_ P1603_APMD_1936-1953 resulted in metadata in NGGDPP-compliant format.

ScienceBase Catalog

For aerial photos, the *title* field in aerial photo metadata is a unique identifier consisting of the project area-film negative roll-frame number, which is embedded in the top right corner of each photograph. For the *geographic coordinates* field, MGS assigned the coordinates of the centroid of the Maryland county over which the photography was flown, as reported in GNIS. For additional information about the Survey's handling of collection-specific metadata, see the associated *NGGDPP Metadata Form* below

NGGDPP-compliant metadata for photos flown during the two earliest eras only were submitted to the *ScienceBase Catalog* this year. Metadata for photos flown during the remaining four eras are scheduled for completion by December 2013.

PAPER-TO-DIGITAL CONVERSION

Several years ago, the Johns Hopkins University Eisenhower Library (JHU), a repository of Baltimore City and Baltimore County maps and aerial photography, approached MGS about scanning the Survey's 1937-1938 and 1952-1953 photos for those areas. Students, hired by the library, digitized the images at MGS, following standard specifications (1200 dpi, .tif and .jpg formats). JHU subsequently provided a copy of the .tif images to MGS.

Earlier this year, MGS purchased a Plustek OpticPro A320 flatbed scanner to continue the digitizing begun by JHU, following the same specifications that JHU established for the Baltimore City and County air photos. NGGDPP recently notified the Survey that its proposal to digitize a minimum of 1,500 photographs from the two earliest eras had been fully funded as part of a year-long grant beginning September 2012.

ACCESSIBILITY

The 9"x9" aerial photographs held by MGS are available to visitors during normal business hours.

Digital images of Baltimore County and Baltimore City air photos (1936-1938 and 1951-1953), previously scanned by Johns Hopkins University (JHU), are stored at the Survey. MGS maintains a copy of the .jpg version of the photography in the Digital Library, primarily for the benefit of MGS staff. Versions of the photography in both .tif and .jpg

formats are stored on two portable hard drives, one kept on MGS premises and the other at the curator's home. Although MGS currently lacks the ability to support digital download of the imagery through its own website, prospective customers may request digital copies of the photographs through the MGS Publications Office.

JHU has posted the early (1937-1938 and 1952-1953) Baltimore City and Baltimore County digital aerial photos to its free, publicly accessible *JScholarship* website (*Aerial Photography – Baltimore (1927, 1937, 1948, 1952, 1964, 1972)*, https://jscholarship.library.jhu.edu/handle/1774.2/32749 [9/17/2012]). Files in .tif and .jpg formats are available for immediate download from that site.

SUMMARY OF ACTIONS

Date	Action
?	JHU scanned 1936-1938 and 1951-1953 air photos for Baltimore City and Baltimore County and posted digital images to *JScholarship* website
2008	MGS created the Microsoft Access database AirPhotoIndex.mdb and began populating it with records (air photos), based on their appearance on an index map, whether or not MGS possessed the photos
8/30/2012	Metadata (v. 1) for air photos flown during the earliest two eras, 1936-1938 and 1951-1953, submitted to NGGDPP for inclusion in the *ScienceBase Catalog*

NEXT STEPS

- As part of the 2012-2013 NGGDPP grant, MGS has already begun scanning the 1936-1938 and 1951-1952 aerial photos and intends to have completed digitizing at least 1,500 of them within a year.
- Once scanning is complete, photos will be transferred to archival boxes and removed to the Survey's Archives Room, where temperature and humidity fluctuate within a narrower range.
- Once the digital imagery is accessible and easily searchable/downloadable, MGS intends to donate the original photographs and associated index maps to the Maryland State Archives (MSA) for permanent preservation. Visitors to the MGS website will be able to link to the available digital images, perhaps through MSA's *Guide to Public Records* website.

MGS's Collection of Historical Aerial Photographs of Maryland, 1936-1938

Table A2-1: Aerial photographs held by MGS, flown during the period 1936-1938, by county						
Flight date(s)	**Project ID**	**Flight line**	**Frames**		**Index map ID**	**Archive box ID**
			N	**Frame nos.**		
Allegany County						
4/11/1938 - 5/2/1938	AMN	3	2	83, 86		MGS-AP-
		4	2	48, 49		
		8	2	60,168		
		Subtotal	6			
Anne Arundel County						
4/12/1938 - 5/1/1938	AHR	2	3	5, 59, 61	1	MGS-AP-
		4	102	15-26, 28, 34-48, 60-63, 68-75, 78-85, 87-98, 103-131, 138-150	1, 3	
		5	56	1, 3-14, 16, 24-27, 31-39, 41-55, 59-72	1-3	
		6	89	1-18, 26-37, 40, 43-60, 62-73, 75-80, 82-103	2, 3	
		8	8	41-48	2	
		Subtotal	258			
Baltimore County						
11/24/1937 - 5/2/1938	AJO	1	28	35-52, 54, 56, odd nos. from 123-131, even nos. from 136-140	5	MGS-AP-
		2	10	even nos. from 32-40; even nos. from 46-54	4	
		3	18	odd nos. from 27-39, even nos. from 42-48, 52, 54, odd nos. from 109-117	2, 4	

Table A2-1: Aerial photographs held by MGS, flown during the period 1936-1938, by county						
			Frames			
		8	25	odd nos. from 27-37, 38-40, odd nos. from 49-57; even nos. from 110-120; even nos. from 138-146	4, 5	
		9	5	odd nos. from 33-41	5	
		15	1	17	5	
		66	15	25-34, 47-51	1, 2	
		70	1	26	2	
		Subtotal	103			
Calvert County						
4/12/1938 - 4/24/1938	AHS	4	6	132-137	-	MGS-AP-
		7	98	6-21, 26-46, 75-82, 84-94, 98-117, 151-172	1, 2, 4	
		10	41	1-11, 45-50, 52-65, 97-106	2	
		Subtotal	145			
Carroll County						
9/24/1937 – 3/22/1938	AGZ	19	7	even nos. from 30-38, 87, 94	1	MGS-AP-
		20	3	66, 68, 69	1	
		49	8	70, 72-75, 77, 89, 91	1, 2	
		53	13	even nos. from 24-32, 40-47	1, 2	
		66	20	52-56, 59-66, 68-74	3	
		71	23	1-8, 19-27, odd nos. from 29-33, 37, 42, 46	1-3	
		78	17	1-9, 11-17, 27	1, 3	
		79	3	even nos. from 74-78	4	
		81	35	2, even nos. from 14-20, 21-29, 34-35, 37-41, odd nos. from 43-49, 50, 56,	1, 2, 4	

Table A2-1: Aerial photographs held by MGS, flown during the period 1936-1938, by county						
			Frames			
				even nos. from 60-64, 74, 76, odd nos. from 85-89		
		83	7	even nos. from 10-22	4	
		Subtotal	136			
Cecil County						
4/15/1938 – 4/25/1938	ANI	12	3	161-163	3	MGS-AP-
		Subtotal	3			
Charles County						
4/22/1937 – 9/8/1937	AHU	1	37	1-17, 33-36, 52-58, 61, 76-79, 94-97	1, 3	MGS-AP-
		2	4	119-122	1, 3	
		4	6	odd nos. from 5-13, 28	2, 4	
		21	5	58, 59, 61, 87, 89	3	
		30	1	12	2	
		32	3	3, 5, 7	2	
		Subtotal	56			
Dorchester County						
5/1/1938 – 5/7/1938	ANJ	13	1	47	1	MGS-AP-
		19	5	18-22	5	
		Subtotal	6			
Frederick County						
9/24/1937 – 4/12/1938	AHA	19	14	40, 45-57	2, 4	MGS-AP-
		20	12	78-89	4	
		49	9	78-95, 87	2, 4	
		53	6	34-39	2, 4	

Table A2-1: Aerial photographs held by MGS, flown during the period 1936-1938, by county						
			Frames			
		70	3	1, 3, 5	3	
		86	15	73, 79-92	2, 4	
		Subtotal	59			
Garrett County						
5/2/1938 – 10/25/1938	AMO	8	8	even nos. from 170-184	2	MGS-AP-
		9	18	even nos. from 86-98, odd nos. from 121-129, 156, 160, odd nos. from 167-173	2	
		10	23	5, 10, odd nos. from 29-33, odd nos. from 69-73, odd nos. from 107-131, 138, 140	1-4	
		11	13	24, 26, 30, 32, odd nos. from 39-45, 46, 48, even nos. from 58-62	1, 3	
		12	64	odd nos. from 1-25, 26, odd nos. from 27-31, 37, odd nos. from 41-61, even nos. from 64-76, odd nos. from 83-91, even nos. from 96-104, odd nos. from 111-145	1-4	
		15	13	odd nos. from 97-121	1, 3	
		16	12	even nos. from 2-16, even nos. from 20-26	1, 2, 4	
		18	16	odd nos. from 113-119, even nos. from 128-150	1, 3	
		Subtotal	167			
Harford County						
4/5/1938-	ANK	1	7	22, 67, 114-117, 144	1, 3	MGS-AP-

Table A2-1: Aerial photographs held by MGS, flown during the period 1936-1938, by county						
			Frames			
4/23/1938		9	2	17, 47	1	
		Subtotal	9			
Howard County						
12/3/1937	NP	72	5	18-22	1	MGS-AP-
		Subtotal	5			
Montgomery County						
12/11/1937-4/11/1938	NV	1	42	1-8, 11-16, 19-24, 27-32, 35-40, 44-49, 51-54	3	MGS-AP-
		74	4	49-52	4	
		79	6	32-35, 68, 69	4	
		Subtotal	52			
Prince George's County						
6/23/1937-5/1/1938	AHV	1	32	57-59, 63-90, 92	3, 4	
		2	31	odd nos. from 7-33, even nos. from 34-52, 53, even nos. from 54-58, odd nos. from 67-71	3, 4	
		3	32	odd nos. from 1-21, 73, 74, 82-86, 90-94, 98, 100, even nos. from 106-118	2-4	
		4	17	odd nos. from 1-13, 37, 39, even nos. from 50-58, 59, 76, 77	3, 4	
		30	2	14, 16	4	
		32	3	9, 11, 13	4	
4/19/1937-5/31/1938	FG	113	26	46-71	-	
		118	116	14-23, 26, 28-30, 32, 37-40, 42-44, 49-58, 76-78, 80-97, 102, 103, 106-	-	

Table A2-1: Aerial photographs held by MGS, flown during the period 1936-1938, by county						
			Frames			
				147, 149, 150, 156-164, 168-171, 173-176		
		119	23	1-22, 79	2	
		132	44	even nos. from 68-72, 150-190	1	
		133	13	even nos. from 150-156, even nos. from 162-166, odd nos. from 179-183, 286, 188, 189	-	
		135	22	1-22	3, 4	
		Subtotal	361			
Queen Anne's County						
6/24/1937-9/10/1937	AHW	5	1	17	4	
		6	3	90-92	4	
		7	1	37	4	
		28	1	43	4	
		37	1	14	2	
		Subtotal	7			
Somerset County						
5/3/1938-5/7/1938	ANL	16	1	118	3	
		18	1	190	3	
		20	1	131	-	
		Subtotal	3			
St. Mary's County						
4/20/1938-4/24/1938	AHX	7	2	46, 118	-	
		10	5	122-126	4	
		Subtotal	7			

Table A2-1: Aerial photographs held by MGS, flown during the period 1936-1938, by county						
			Frames			
Talbot County						
8/20/1936-11/14/1937	AHY	5	9	29-37	1	
		6	7	30, 31, 40-44	1, 3	
		27	8	87-94	3	
		28	11	20-29, 84	3	
		36	5	46-50	3	
		63	2	58, 59	3	
		Subtotal	42			
Wicomico County						
5/3/1938-6/7/1938	ANM	16	5	129-133	1	
		18	4	80, 87, 89, 188	1	
		19	8	128-131, 165-168	2	
		20	11	42-45, 132-138	2	
		26	2	170, 171	2	
		Subtotal	30			
		TOTAL	1,455			

Table A2-2: Aerial photographs held by MGS, flown during the period 1951-1953, by county						
Flight date(s)	**Project ID**	**Flight line**	**Frames**		**Index map ID**	**Archive box ID**
			N	**Frame nos.**		
Allegany County						
		Subtotal	0			
Anne Arundel County						
6/20/1952 - 10/17/1952	AHR	1K	136	2, 4-38, 44, odd nos. from 45-49, 50, 52-66, 68-75, 79, 82, 83, 85-105, 107, 108, 110, 111, 113-118, 122, 123, 125-127, 131, 133-138, 140-142, 144-155, 190-192, 204-210, 212	1-3	MGS-AP-
		2K	8	odd nos. from 5-15, 16, 17	1	
		4K	44	2-16, 145-157, 167-179, 191-193	3	
		6K	17	6-9, 19-31	2	
		7K	54	even nos. from 86-90, even nos. from 96-100, 101, 102, 104, 144-156, 158, 160-165, 171-187, 189-191, 198-202	1-3	
		Subtotal	259			
Baltimore County						
7/12/1952-2/14/1953	AJO	3K	6	192-197	4	MGS-AP-
		4K	51	2, 3, 5-13, 59-64, 66-76, 98-120	2, 4	
		5K	101	40-45, 47-61, 70-74, 76-80, 83-88, 90, 91, 119-122, 128, 129, 133-143, 149-159, 162-164, 176-183, 187-193, 199, 201, 203, 204, 206, 210-220	2-4	

Table A2-2: Aerial photographs held by MGS, flown during the period 1951-1953, by county						
			Frames			
		6K	153	6-15, 17-23, 25-38, 42-53, 55-63, 80-117, 133-180, 205-219	1, 3	
		7K	62	13-28, 52-74, 87, 90-103, 131-138	1, 3	
		8K	61	70, 71, 73-78, 81, 86-95, 97, 99, even nos. from 102-106, 107-111, 113-117, 121-129, 131-135, 137, 138, 143-153	3, 4	
4/24/1953-5/10/1953	431	2	10	even nos. from 618-622, 623-629	-	
		3	16	600-615	-	
		4	22	630-635, 637-652	-	
		5	23	576-598	-	
		6	21	552-572	-	
		7	24	300-310, 312, 314, 315-325	-	
		8N	10	526-535	-	
		8S	9	543-551	-	
		9	20	253-267, 274-276, 278, 279	-	
		10	14	500-504, 513, 516-523	-	
		11	16	207-215, 217-220, 227-229	-	
		12	13	464-476	-	
		13	8	183-190	-	
		14	8	452-459	-	
		15	16	151-165, 167	-	
		16	19	130-148	-	
		17	20	109-128	-	
		18	21	86-106	-	
		19	21	61, 63-70, 431-442	-	
		20	13	47-55, 57-60	-	
		21	10	22, 23, 25-29, 31-33	-	
		22	6	11, 13-16, 21	-	

Table A2-2: Aerial photographs held by MGS, flown during the period 1951-1953, by county						
			Frames			
		Subtotal	774			
Calvert County						
6/26/1952 - 10/22/1952	AHS	3K	35	146-159, 161-181	1	MGS-AP-
		4K	69	25-32, 34-48, 50-69, 71, 72, 122-145	1	
		5K	45	47-53, 94-96, 98-100, 105-114, 156-177	1	
		6K	5	127, 129, 130-132	1	
		Subtotal	154			
Caroline County						
6/6/1952 – 10/4/1952	AHT	1K	10	24-29, 176-179	2	MGS-AP-
		2K	85	1-25, 62-84, 86-94, 100-127	1, 2	
		3K	41	50-79, 84-94	1, 2	
		4K	18	1-10, 199-206	1, 2	
		7K	67	6-14, 18-20, 54-62, 66-78, 80-86, 92-95, 133-135, 137-155	1, 2	
		Subtotal	221			
Carroll County						
10/24/1951 – 9/14/1952	AGZ	1K	21	1-11, 13-22	-	MGS-AP-
		5K	64	64-66, 113-138, 179-213	-	
		6K	87	36-55, 115-168, 209-221	-	
		7K	74	2-18, 31-59, 100-127	-	
		9K	19	1-19	-	
		Subtotal	265			
Cecil County						

Table A2-2: Aerial photographs held by MGS, flown during the period 1951-1953, by county						
			Frames			
7/2/1952 – 7/12/1952	ANI	1K	39	3, 5-12, 14-27, 31-46	1	MGS-AP-
		2K	156	5-16, 20-36, 38-41, 49, 53-67, 69-71, 78, 79, 83-104, 110-131, 135, 138, 139, 143-163, 169-182, 187, 188, 190-193, 206-219	1	
		3K	25	16-25, 30-37, 80-84, 90, 91	1	
		Subtotal	220			
Charles County						
6/19/1952 – 10/22/1952	AHU	1K	180	4-26, 31-46, 49-55, 57-60, 64-78, 83-95, 102, 103, 107-118, 120-146, 148-160, 162-184, 190-202, 205-216	1, 3	MGS-AP-
		2K	126	1-29, 36-67, 69-93, 116-140, 148-150, 152, 153, 159-168	1-4	
		3K	26	5-10, 12-16, 67-76, 141-145	2	
		6K	75	3-24, 26-52, 59-75, 89-97	2, 4	
		Subtotal	407			
Dorchester County						
6/6/1952 – 10/4/1952	ANJ or AHT (NJ)*	1K	116	2-7, 9-23, 35-66, 70-77, 79-86, 88-95, 106-138, 170-175	1-4	MGS-AP-
		2K	19	38-42, 48-61	2	
		3K	31	18-43, 45-49	2, 4	
		4K	41	34-38, 40-43, 45-60, 143-158	2, 4	
		5K	158	1-12, 14-35, 42-46, 48-65, 68, 80-83, 100-108, 110-115, 117-129, 131-152, 154, 155, 157, 162-189, 198-208, 210-213	1-4	

Table A2-2: Aerial photographs held by MGS, flown during the period 1951-1953, by county						
			Frames			
		6K	7	16-22	1, 3	
		7K*	75	1, 3-5, 6*, 20*, 21-35, 37-53, 96-132	2, 4	
		Subtotal	447			
Frederick County						
9/11/1952 – 10/24/1952	AHA or AHB (HA)*	3K	23	132-142, 146-157	3	MGS-AP-
		4K*	159	3-30, 31*,85-149, 151-161, 164-177, 179-218	1-4	
		5K	93	1-3, 5-13, 15, 16, 18, 21-34, 36, 38, 39-54, 56-59, 61-63, 67-89, 106-112, 139-144, 176-178	2, 4	
		8K	67	73-79, 106-130, 134-168	1, 3	
		Subtotal	342			
Garrett County						
		Subtotal	0			
Harford County						
7/2/1952- 10/22/1952	ANK	2K	3	199, 201, 202	1	MGS-AP-
		3K	141	4-15, 38-53, 59-79, 92-116, 120-151, 156-172, 174-185, 198-203	1	
		4K	44	14-36, 52-58, 121-130, 133-136	1	
		5K	56	2, 3, 5-20, 25-39, 92-104, 109-118	1	
		7K	11	116-118, 120-127	1	
		Subtotal	255			
Howard County						
10/24/1951-	NP	6K	18	169-177, 200-208	-	MGS-AP-

Table A2-2: Aerial photographs held by MGS, flown during the period 1951-1953, by county						
			Frames			
9/14/1952		7K	17	60-67, 91-99	-	
		9K	2	79, 80	-	
		Subtotal	37			
Kent County						
6/3/1952-6/6/1952	FB	1K	19	3-21	1	MGS-AP-
		2K	81	3-45, 117-136, 139-156	1	
		3K	56	33-39, 41-45, 48-59, 154-174, 203-213	1	
		4K	19	11-29	1	
		5K	30	25-33, 138-158	1	
		Subtotal	205			
Montgomery County						
9/20/1951-9/28/1951	NV	1G	31	11-28, 30-42	-	MGS-AP-
		2G	26	51-62, 67-80		
		Subtotal	57			
Prince George's County						
6/20/1952-10/17/1952	AHV	1K	29	172-190, 194-203	1, 2, 4	
		2K	1	19	1	
		3K	20	1-20	2, 4	
		5K	4	4, 6, 8, 9	1	
		7K	4	84, 85, 105, 106	1	
		Subtotal	58			
Queen Anne's County						
6/3/1952-	AHW	1K	20	22-34, 62, 63, 66-70	2	

Table A2-2: Aerial photographs held by MGS, flown during the period 1951-1953, by county						
			Frames			
6/6/1952		2K	44	1, 2, 46-58, 60, 61, 102, 103, 105-116, 157-169	1-3	
		3K	88	14-32, 60-77, 79, 80, 133-153, 175-202	1, 3	
		4K	32	1-11, 30-50	1, 3	
		5K	72	15-24, 35-46, 76-95, 97, 119-137, 159-168	1-3	
		Subtotal	256			
Somerset County						
6/1952-10/4/1952	ANL	3K	82	46-55, 100-104, 116-139, 172-175, 177-194, 197-217	1	
		4K	89	2, 3, 46, 48-90, 128-130, 132-150, 154-174	1	
		4L	2	47, 131		
		5K	91	2-16, 22-37, 43-61, 64-82, 99-120	1	
		6K	8	85, 86, 88-93	1	
		Subtotal	272			
St. Mary's County						
6/19/1952-10/22/1952	AHX	2K	7	145-147, 155-158	1	
		3K	92	17-34, 45-66, 98, 99, 101-109, 120-140, 182-201	1	
		4K	39	8, 9, 11-24, 73-75, 88, 103-121	1	
		5K	73	17-30, 54-71, 75-81, 115-131, 138-144, 197-204, 206, 207	1	
		6K	48	76-88, 101-126, 133-141	1	
		8K	1	100		

Table A2-2: Aerial photographs held by MGS, flown during the period 1951-1953, by county						
			Frames			
		Subtotal	260			
Talbot County						
6/3/1952-6/6/1952	AHY	1K	27	35-61	1	
		2K	79	62-74, 76-78, 81-101, 170-194, 197-213	1	
		3K	57	5-13, 81-105, 109-131	1	
		4K	11	51-61	1	
		5K	47	1-14, 48-59, 63-73, 100-109	1	
		Subtotal	221			
Washington County						
9/11/1952-10/24/1952	AHB	2K	85	100-113, 130-143, 146-167, 169-181, 185-190, 204-219	2-4	
		3K	91	1-8, 18-50, 52-69, 83-92, 110-131	3, 4	
		4K	8	32-39	3	
		8K	76	24-37, 39-72, 80-85, 87-105, 169-171	2, 3	
		Subtotal	260			
Wicomico County						
6/8/1952-10/4/1952	ANM	2K	10	23-26, 32, 33, 81, 82, 152, 179	1	
		3K	5	15, 60, 140, 170, 171	1	
		4K	11	4, 5, 44, 45, 91-93, 127, 175-177	1	
		5K	1	98	1	
		6K	1	94	1	
		Subtotal	28			
Worcester County						

Table A2-2: Aerial photographs held by MGS, flown during the period 1951-1953, by county						
			Frames			
6/8/1952-10/22/1952	ANN	1K	113	3, 10, 15-17, 19-27, 32-50, 56-70, 100-103, 105-114, 120-137, 172-186, 195-199, 201-213	1, 3	
		2K	110	5-17, 34-54, 61, 64-80, 109-119, 121-126, 128, 132-151, 180-199	1-4	
		3K	37	16-35, 40-45, 56-59, 105-111	2, 4	
		6K	59	3-14, 35-67, 124-137	1	
		Subtotal	319			
TOTAL (All counties)			5,317			

NGGDPP METADATA FORM

Historical (1936-1980) Aerial Photographs of Maryland

MGS Collection ID: 28
Original NGGDPP ID: P1603
ScienceBase ID: 4f4e4a94e4b07f02db658dba

Sources of Information:

- Information embedded, stamped and/or handwritten on the aerial photographs or associated index maps and stored in the internal MGS Microsoft Access databases AirPhotoIndex.mdb and DataPreservation.mdb
- USGS *ScienceBase Catalog* (collection ID)
- 2006 *Implementation Plan for the National Geological and Geophysical Data Preservation Program*, Appendix 2 (data type) [http://datapreservation.usgs.gov/docs/2006DataPreservation.pdf]
- USGS Geographic Names Information System (GNIS) website [http://geonames.usgs.gov/domestic/] (geographic coordinates)
- The Johns Hopkins University *JScholarship* website *Aerial Photography - Baltimore (1927, 1937, 1948, 1952, 1964, 1972)* [https://jscholarship.library.jhu.edu/handle/1774.2/32749]

CollectionID

Definition: NGGDPP collection identification number
Value: "4f4e4a94e4b07f02db658dba"
(*ScienceBase Catalog* ID for the collection *Historical (1936-1980) Aerial Photographs of Maryland*)
Source: Generated by the *ScienceBase Catalog* upon submittal of a collection inventory for *Historical (1936-1980) Aerial Photographs of Maryland*; stored internally in DataPreservation.mdb – tblCollection – field "ScienceBaseID"

Title

Definition: Official, human-readable title for individual record, used in listings & search results (short, distinctive) – mandatory
Value: A concatenation of three standard elements representing the flight/project area and film used in the production of the photo, separated by dashes (i.e., flight/project area – film negative roll – frame number)
Source: Embedded in upper right corner of aerial photograph; elements comprising the title are stored as two separate fields in the Air Photo Index database – tblAirPhoto and tblAirPhoto2 – fields "Flight Line" and "Frame" (in the database, the field "Flight Line" includes both the flight/project and the film negative roll, separated by a dash)
Examples:

- AMN-1-1 (Flight Line = AMN-1; Frame = 1)
- ANK (JO)-5DD-212 (Flight Line = ANK (JO)-5DD; Frame = 212)

- AHU-2-176 (Flight Line = AHU-2; Frame = 176)
- 24003-179-101 (Flight Line = 24003-179; Frame = 101)

Alternate Title

Definition: Additional title identifiers for individual record (e.g., for further identification by other Web service interfaces); textual titles or specific sample IDs used by collection – optional

Value: None at present, although it could include the database key field *AirPhotoID*, with an appropriate reference to the associated AirPhoto table

Abstract

Definition: Human-readable description of individual record, used to help determine nature of underlying physical data resource; contains much information about data resource – mandatory

Value: "unrectified, black-and-white aerial photograph, 9 in. x 9 in. in size, flown over [county name] County, Maryland, on [date of flight]; photo associated with Index Map [#] see (*alternateTitle* field in MGS collection *Maryland Air Photo Index Maps*)"

Source: A concatenation of information stored in the Air Photo Index database, linked by text (i.e., tblAirPhoto and tblAirPhoto2 – fields *County Name*, *Date*, and *Index Map ID*)

Data Type

Definition: A controlled vocabulary of one or more data types - mandatory

Value: "Photograph"

Source: Determined by MGS, based on the list of data types provided in Appendix 2 of the 2006 NGGDPP *Implementation Plan*

SupplementalInformation

Definition: Information on how to access physical data represented by metadata record (e.g., general for entire collection, such as URL, or specific reference to online resource, like ordering system with specific ID) - mandatory

Value: "Contact the MGS curator at (410) 554-5500 for additional information."

Source: n/a

Coordinates

Definition: Geographic coordinates (longitude, latitude), in decimal degrees – mandatory

Value: (-)decimal longitude, decimal latitude

This field presently contains the centroid of the county over which the photography was flown (Table A2-3).

Source: Geographic Names Information System (GNIS)

Table A2-3: Geographic coordinates (NAD83) of county centroids, from the Geographic Names Information System (GNIS), January 2011 (Feature class = Civil)				
County	**Latitude (DMS)**	**Longitude (DMS)**	**Latitude (dec. deg.)**	**Longitude (dec. deg.)**
Allegany	394000N	0783959W	39.666667	-78.666389
Anne Arundel	390000N	0763659W	39.	-76.616389
Baltimore	392800N	0763859W	39.466667	-76.649722
Baltimore City	391725N	0763644W	39.290278	-76.612222
Calvert	383300N	0763459W	38.55	-76.583056
Caroline	385200N	0754959W	38.866667	-75.833056
Carroll	393300N	0770059W	39.55	-77.016389
Cecil	393400N	0755659W	39.566667	-75.949722
Charles	382900N	0765859W	38.483333	-76.983056
Dorchester	382800N	0755959W	38.466667	-75.999722
Frederick	392800N	0772359W	39.466667	-77.399722
Garrett	393300N	0791459W	39.55	-79.249722
Harford	393300N	0761759W	39.55	-76.299722
Howard	391501N	0765559W	39.250278	-76.933056
Kent	391800N	0760159W	39.3	-76.033056
Montgomery	390900N	0771159W	39.15	-77.199722
Prince Georges	385000N	0765059W	38.833333	-76.849722
Queen Anne's	390400N	0755859W	39.066667	-75.983056
Somerset	380800N	0754359W	38.133333	-75.733056
St. Mary's	381800N	0763659W	38.3	-76.616389
Talbot	384600N	0760459W	38.766667	-76.083056
Washington	393700N	0774559W	39.616667	-77.766389
Wicomico	382200N	0753559W	38.366667	-75.599722
Worcester	381200N	0752259W	38.2	-75.383056

AlternateGeometry

Definition: Alternate method of storing geospatial footprint; description of authoritative source of geographic location & how simple coordinates derived – optional

Value: "Geographic coordinates (NAD83) represent centroid of [county name] Co., MD, from the U.S. Geological Survey's Geographic Names Information System (GNIS)"

Source: n/a

OnlineResource

Definition: URL pointer(s) to textual information about specific record - optional

Value: none supplied

Source: n/a

BrowseGraphic

Definition: URL pointer(s) to images representing specific record - optional
Value:
For Baltimore City and Baltimore County aerial photos flown in 1937-1938 [https://jscholarship.library.jhu.edu/handle/1774.2/32802]

For Baltimore City and Baltimore County aerial photos flown in 1952-1953 [https://jscholarship.library.jhu.edu/handle/1774.2/32827]

Source: The Johns Hopkins University *JScholarship* website

Date

Definition: Meaningful date (e.g., collection date) attached to record; may be to any degree of precision or left blank (e.g., 20010101, 1939-1945, -20030331, 2000) - optional
Value: Date on which the aerial photo was flown, in YYYYMMDD format
Source: Embedded in upper left corner of aerial photograph
Examples: Dates as they occur on the photos, "APR -5 1938" or "AUG 23 1952," for example, are reformatted, respectively, as follows: "19380405" or "19520823"

DatasetReferenceDate

Definition: Reference date indicating currency of underlying data record (e.g., date metadata record added to National Catalog); format=YYYYMMDD - mandatory
Value: Date record provided to NGGDPP for uploading to the *ScienceBase Catalog*, in YYYYMMDD format, namely "20120830"
Source: Provided by curator

VerticalExtent

Definition: Vertical extent (e.g., vertical depth information for rock core samples); contains 2-3 elements: unit of measure, max value, min value (e.g., m, 35.4, 0 => rock core measured at 35.4 total meters)
Value: n/a
Source: n/a

Additional Information about the Sources, Photos, Etc.

MGS intends to digitize a minimum of 1,500 of the documented photos as part of the 2012-2013 NGGDPP grant. Once the photos are scanned and uploaded to the Internet, MGS will transfer the original photos and a copy of the digital images to the Maryland State Archives for permanent preservation.

APPENDIX 3

Historical (1952-1964) Aerial Photographs of Fenwick and Assateague Islands, Maryland

MGS Collection ID: 34
Original NGGDPP ID: P1691
ScienceBase ID: 4f4e4aafe4b07f02db66cf18
(formerly 1866612)

September 2012

COLLECTION DESCRIPTION

This collection consists of 13 sets of enlarged, unrectified, black-and-white aerial photographs flown along Fenwick and/or Assateague Islands, Maryland, between October 1952 and July 1964 (Table A3-1). Each of the 505 photos in the collection is about 2'x2' in size, most with an approximate scale of 1 inch = 200 feet. The photographs cover the Maryland section of two narrow barrier islands that lie along the State's Atlantic coast, separated by the Ocean City Inlet: Fenwick Island to the north and Assateague Island to the south. The general area of coverage (though not for every set) extends from the Maryland-Delaware state line in the north, about 10 miles north of the Ocean City Inlet, to the Maryland-Virginia state line in the south, about 23 miles south of the inlet. For several sets, handwritten markings on the front of the photographs indicate miles north or south of the Ocean City Inlet (Mile 0), as well as some street numbers or names and the general area now occupied by Assateague State Park. In addition to the 505 photos, 19 index maps are included in a companion collection – *Maryland Air Photo Index Maps* – covering all but 20 of the photos, flown in October 1952 or December 1957.

Based on information found on the back of many photographs, the sets were originally acquired by the Maryland State Roads Commission (now, the Maryland State Highway Administration) and later transferred to MGS. Serendipitously, they flank the date of the Ash Wednesday Storm (March 1962), arguably "the most intense nor'easter of the 20th century" (Watson, 2007).

Table A3-1: 1952-1964 aerial photographs of Fenwick and/or Assateague Islands, Maryland

Date(s)	Project ID	Flight line	Frames		Index map
			N	Frame nos.	
10/30/1952	402	3	3	39, 42, 43	None
		Subtotal	3		
11/28/1952	411	1	10	2-9, 11, 13	Index Map ID = 392
		2	12	15-24, 26, 28	
		3	13	31-43	
		Subtotal	35		

Table A3-1: 1952-1964 aerial photographs of Fenwick and/or Assateague Islands, Maryland					
			Frames		
2/1/1954	462	1	7	even nos. from 100-112	Index Map ID = 393
		2	5	odd nos. from 81-89	
		3	4	odd nos. from 69-75	
		Subtotal	16		
12/8/1954	538	1	3	odd nos. from 41-45	Index Map ID = 396
		2	8	odd nos. from 15-29	
		3	3	odd nos. from 3-7	
		Subtotal	14		
1/26/1956 1/28/1956	672	1	10	odd nos. from 223-237, 238, 240	Index Map ID = 394
		2	14	even nos. from 250-276	Index Map ID = 394
		3	14	odd nos. from 289-311, 312, 314	Index Map ID = 394 for 289-303 Index Map ID = 395 for 305-314
		4	13	odd nos. from 153-157, 327-345	Index Map ID = 395
		5	15	odd nos. from 207-215, 377-395	Index Map ID = 397
		6	6	odd nos. from 175-185	Index Map ID = 397
		Subtotal	72		
3/5/1957	806	1	13	even nos. from 6-30	Index Map ID = 398
		2	15	even nos. from 38-66	Index Map ID = 398 for 38-52 Index Map ID = 399 for 54-66
		3	8	odd nos. from 87-101	Index Map ID = 399
		4	10	odd nos. from	Index Map ID = 399

Table A3-1: 1952-1964 aerial photographs of Fenwick and/or Assateague Islands, Maryland					
			Frames		
				111-129	
		Subtotal	46		
12/21/1957	866	1	13	odd nos. from 5-29	None
		2	3	odd nos. from 33-37	None
		3	1	107	None
		Subtotal	17		
1/12/1960	997	1	14	even nos. from 142-168	Index Map ID = 359
		2	17	odd nos. from 101-133	Index Map ID = 360 for 101-117 Index Map ID = 359 for 119-133
		3	9	even nos. from 64-80	Index Map ID = 360
		4	10	even nos. from 8-26	Index Map ID = 360
		Subtotal	50		
1/17/1962	605	1	8	3-10	Index Map ID = 402
		2	8	1-8	Index Map ID = 403
		Subtotal	16		
1/17/1962	606	1	34	odd nos. from 3-69	Index Map ID = 363 for 3-5 Index Map ID = 364 for 7-27 Index Map ID = 365 for 29-69
		4	13	even nos. from 4-28	Index Map ID = 363 for 4-8 Index Map ID = 364 for 10-28
		5	2	odd nos. from 11-13	Index Map ID = 364 for 11-13
		7	15	odd nos. from 1-29	Index Map ID = 364 for 1-13 Index Map ID = 365 for 15-29

Table A3-1: 1952-1964 aerial photographs of Fenwick and/or Assateague Islands, Maryland					
			Frames		
		Subtotal	64		
5/6/1962	635	1	32	odd nos. from 1-63	Index Map ID = 366 for 1-29 Index Map ID = 367 for 31-63
		2	25	odd nos. from 1-47, 48	Index Map ID = 366 for 1-33 Index Map ID = 367 for 35-48
		4	16	odd nos. from 1-31	Index Map ID = 368 for 1-31
		5	6	1, odd nos. from 7-15	Index Map ID = 368 for 7-15
		Subtotal	79		
3/24/1963	1285	1	12	odd nos. from 133-143, 147-157	Index Map ID = 390
		2	18	even nos. from 98-132	Index Map ID = 390 for 128-132 Index Map ID = 391 for 98-124
		3	8	even nos. from 64-78	Index Map ID = 391
		4	8	odd nos. from 3-17	Index Map ID = 391
		Subtotal	46		
7/7/1964	1446	1	10	even nos. from 4-18, 22-24	Index Map ID = 404
		2	17	even nos. from 38-70	
		3	10	even nos. from 88-106	
		4	10	odd nos. from 121-139	
		Subtotal	47		
		TOTAL	505		

COLLECTION LOCATION AND STORAGE CONDITIONS

The curator discovered the photos, quite by accident, in two different locations in the main MGS building: (1) in an office (Room 214) vacated hurriedly by its former occupant, who, due to the nation's economic downturn and the ensuing budgetary constraints at the state level, was forced into retirement, and, sometime later, (2) in the Survey library (Room 315). All of the photos had been stored, some stacked upside down, in map cabinet drawers, forgotten and unused for at least 30 years. Photographs stored in the Survey library had been subjected to temperature extremes – hot in summer and cold in winter – for much of that time.

For the most part, the photos are in very good shape, except for slight curling of the edges, minor to moderate bending and/or tears along the edges of a few of the more heavily utilized/handled photos, and occasional cracking of the photo surface. Some tears have been mended with transparent tape. At some time in the past, a few of the photos were apparently mounted for display; they have staples at their corners, or holes left following the removal of staples. Much of the damage from handling or displaying the photos occurs along the east or west edges (tears) or corners (bending, stapling) but, because of the north-south orientation of the islands, the damage seldom impinges on the land masses depicted in the photos.

The photos, awaiting transfer to the Maryland State Archives, are presently being stored in specially-made archival boxes, labeled and stacked on map cabinets in the Survey's Archives Room (Room 114). The room is dedicated to the storage of archival reports and publications. Windows and window blinds are kept closed. Although the room is subject to variable temperature and humidity, the extremes are considerably less than those found in the Survey library.

COLLECTION DOCUMENTATION

Because items in the collection were discovered at two different points in time, metadata were created during two separate NGGDPP grant cycles. Metadata for the March 1963 and July 1964 aerial photographs and associated index maps were submitted to the *ScienceBase Catalog* as part of the 2010-2011 NGGDPP grant (Hennessee and Shelton, 2011). Metadata for the remaining ~400 photographs and associated index maps were submitted to the Catalog as part of this year's (2011-2012) grant. In keeping with its decision to group all air photo index maps as a separate sub-collection, the Survey included the barrier island index maps with index maps associated with the 9"x 9" air photos.

The Survey's Internal Data Preservation Database

Several years ago, MGS developed and began populating a Microsoft Access database, AirPhotoIndex.mdb, with information about its collection of 9"x 9" aerial photographs and associated index maps. The database, stored on the MGS network (Common on 'Mgsdc':/AirPhotoIndex), contains two primary tables, tblAirPhoto and tblIndexMap, with information about air photos and index maps, respectively. As part of the 2010-2011 NGGDPP grant, MGS copied tblAirPhoto, structure only, to the Data Preservation

Database and populated it with information about 2 of the 13 sets of barrier island aerial photographs and associated index maps. This year, MGS added information about the remaining 11 sets of barrier island aerial photographs to the Data Preservation database table, tblAerialPhotos_OC_1964_v2, and removed information about the associated index maps. A modification of that table, tlbUploadMetadata_P1691_AP_ OC_v2_201208, containing NGGDPP-compliant metadata, was submitted to the USGS for incorporation into the *ScienceBase Catalog.*

In describing photo condition, one of the internal database fields, MGS discovered that damage to the photos is best assessed by looking at the back of the photo, as well as the front. Usually, tape used to repair tears was applied to the back, though not always. Likewise, small tears and holes left from the removal of staples are generally easier to detect from the back of the photo. MGS also checked for bending, especially of the corners; general wear or fraying of the edges; and chips, scratches, or cracks on the photo surface.

The USGS *ScienceBase Catalog*

For aerial photos, the *title* field in NGGDPP-compliant metadata is a unique identifier consisting of the project area-film negative roll-frame number, which is embedded in the top right corner of each photograph.

MGS assigned one of three pairs of *geographic coordinates* to each photo, depending on its location with respect to the Ocean City Inlet. For photos flown north of the inlet, MGS assigned the geographic coordinates for Fenwick Island, as they appear on the Ocean City quadrangle. This location is approximately mid-way between the inlet and the Maryland-Delaware line. For photos flown south of the inlet, MGS assigned the geographic coordinates for Assateague Island, as they appear on the Tingles Island quadrangle. This location is approximately mid-way between the inlet and the Maryland-Virginia line. For photos of the Ocean City Inlet, MGS assigned the geographic coordinates of the inlet itself. MGS acquired the three coordinate pairs from the GNIS website.

In submitting 2011-2012 metadata to the *ScienceBase Catalog*, MGS requested an "erase and replace" substitution of the newer, complete version for the older, incomplete one, as opposed to appending new records to the original set.

PAPER-TO-DIGITAL CONVERSION

In accordance with an informal memorandum of understanding between MGS, the Maryland State Archives (MSA), and the Johns Hopkins University (JHU), JHU generously provided funding and made arrangements with a private vendor to scan all of the barrier islands photographs and index maps (400 dpi,. tif/.jpg/.jp2 formats). Originals were returned to MGS, along with a copy of the digital images. MSA also received a copy of the scans. Because of its close working relationship with Assateague Island National Seashore and the overlap between park boundaries and the area covered by the

aerial photography, MGS provided a copy of the scanned images to GIS staff at the park (see Summary of Actions, below, for details).

ACCESSIBILITY

Until their transfer to the Maryland State Archives, the physical photographs are accessible to the public at MGS, for in-house only, during normal business hours, through prior arrangements with the Survey's curator.

MGS maintains a digital copy of the .jpg version of the photography on its internal Digital Library, primarily for the benefit of MGS staff. Versions of the photography in all three formats (.tif, .jpg, and .jp2) are stored on two portable hard drives, one kept on the Survey's premises and the other at the curator's home. Although MGS currently lacks the ability to support digital download of the imagery through its own website, prospective customers may request digital copies of the photographs through the MGS Publications Office.

JHU has posted all of the digital imagery – both the aerial photographs and the associated index maps – to its free, publicly accessible *JScholarship* website (*Aerial Photography – Ocean City (1952-1964)*, https://jscholarship.library.jhu.edu/handle/1774.2/36062 [9/6/2012]). Files in .jpg or .jp2 format are available for immediate download from that site.

SUMMARY OF ACTIONS

Date	Action
2010-2011	Discovery of 92 aerial photographs and associated index maps; completion of initial NGGDPP collection inventory
4/28/2011	Collection inventory & partial NGGDPP metadata, for 92 of 505 aerial photographs, submitted to ScienceBase
9/2011	505 aerial photos (and associated index maps) scanned at 400 dpi (jp2, jpg, tif formats) by JHU, delivered to MGS, and later uploaded (by JHU) to *JScholarship* website
Fall 2011	Digital images of aerial photographs and associated index maps added to MGS Digital Library
Spring 2012	Physical aerial photographs relocated to 13 archival boxes in MGS archives
2/23/2012	Digital images of aerial photographs and associated index maps delivered to MD State Archives, along with "Table_34-1.doc" describing files
5/8/2012	Digital images of aerial photographs and associated index maps delivered to Assateague Island National Seashore (c/o Neil Winn, GIS Specialist, 7206 Nat'l Seashore La., Berlin, MD 21811; Phone – 410-629-6041; E-mail – Neil_Winn@nps.gov)
8/22/2012	Completed NGGDPP metadata for all 505 aerial photographs; submitted metadata to NGGDPP as .csv file to upload to *ScienceBase Catalog*,

	requesting that USGS replace subset of 92 records added previously (vs. appending new records only); amended collection description in *ScienceBase Catalog*

NEXT STEPS

- Owing largely to the data preservation efforts at MGS, a subcommittee of the Maryland State Geographic Information Committee (MSGIC) has recently been reconvened to preserve historical aerial photographs and make digital images of them available, possibly through the Maryland State Archives' (MSA's) *Guide to Public Records* website. Once the imagery is accessible and easily searchable/downloadable, MGS intends to donate the original photographs and index maps to MSA for permanent preservation. Visitors to the MGS website will be able to link to the digital images available through the MSA website.
- Incorporate the information pertaining to these aerial photographs, stored in the Data Preservation database, into the Air Photo Index database. Create a field in the Air Photo Index database that allows for easy identification of these air photos as a particular special collection.

REFERENCES

Hennessee, L., and Shelton, D., 2011, Metadata creation for several of the Maryland Geological Survey's geological and geophysical collections (2010-2011): Maryland Geological Survey, Baltimore, Md., 71 p.

Watson, B.M., 2007, Maryland winters: snow, wind, ice, and cold: National Weather Service, Weather Forecast Office Baltimore/Washington, http://www.erh.noaa.gov/lwx/Historic_Events/md-winter.html, [8/25/2011]

NGGDPP METADATA FORM

Historical (1952-1964) Aerial Photographs of Fenwick and Assateague Islands, Maryland

MGS Collection ID: 34
Original NGGDPP ID: P1691
ScienceBase ID: 4f4e4aafe4b07f02db66cf18
(formerly 1866612)

Sources of Information:

- Information embedded, stamped and/or handwritten on the aerial photographs or associated index maps and stored in the internal MGS Microsoft Access database DataPreservation.mdb
- USGS *ScienceBase Catalog* (collection ID)
- 2006 *Implementation Plan for the National Geological and Geophysical Data Preservation Program*, Appendix 2 (data type) [http://datapreservation.usgs.gov/docs/2006DataPreservation.pdf]
- USGS Geographic Names Information System (GNIS) website [http://geonames.usgs.gov/domestic/] (geographic coordinates for Fenwick and Assateague Islands and the Ocean City Inlet)
- The Johns Hopkins University *JScholarship* website, *Aerial Photography – Ocean City (1952-1964)* [https://jscholarship.library.jhu.edu/handle/1774.2/36062]

CollectionID

Definition: NGGDPP collection identification number
Value: "4f4e4aafe4b07f02db66cf18"
(ScienceBase ID for the collection *Historical* (*1952-1964) Aerial Photographs of Fenwick and Assateague Islands, Maryland*)
Source: DataPreservation.mdb – tblCollection – field *ScienceBaseID*

Title

Definition: Official, human-readable title for individual record, used in listings & search results (short, distinctive) – mandatory
Value: A concatenation of three standard elements representing the flight/project area and film used in the production of the photo, separated by dashes (i.e., flight/project area – film negative roll – frame number)
Source: Embedded in upper right corner of aerial photograph; elements comprising the title are stored as two separate fields in the Data Preservation database – tblAerialPhotos_OC_1964_v2 – fields *Flight Line* and *Frame* (in the database, the field *Flight Line* includes both the flight/project and the film negative roll, separated by a dash)
Examples:

- 1285-1-133 (*Flight Line* = 1285-1; *Frame* = 133)

- 1446-1-24 (*Flight Line* = 1446-1; *Frame* = 24)

Alternate Title

Definition: Additional title identifiers for individual record (e.g., for further identification by other Web service interfaces); textual titles or specific sample IDs used by collection – optional
Value: None at present, although it could include the database key field *AirPhotoID*

Abstract

Definition: Human-readable description of individual record, used to help determine nature of underlying physical data resource; contains much information about data resource – mandatory
Value: Embedded, stamped, and/or handwritten information found on the front and back of the photo:
"Black-and-white aerial photograph, 2 ft x 2 ft in size, flown along the Maryland Atlantic coast; scale ~1:2,400; paper and digital versions."
Source: the photo or index map itself

Data Type

Definition: A controlled vocabulary of one or more data types - mandatory
Value: "Photograph"
Source: Determined by MGS, based on the list of data types provided in Appendix 2 of the 2006 NGGDPP *Implementation Plan*

SupplementalInformation

Definition: Information on how to access physical data represented by metadata record (e.g., general for entire collection, such as URL, or specific reference to online resource, like ordering system with specific ID) - mandatory
Value: "Contact the MGS curator at (410) 554-5500 for additional information."
Source: n/a

Coordinates

Definition: Geographic coordinates (longitude, latitude), in decimal degrees – mandatory
Value: (-)decimal longitude, decimal latitude
Source:
The aerial photographs cover the Maryland section of two narrow barrier islands that lie along the State's Atlantic coast, separated by the Ocean City Inlet: Fenwick Island to the north and Assateague Island to the south. The area extends from the Maryland-Delaware state line in the north, about 10 miles north of the Ocean City Inlet, to the Maryland-Virginia state line in the south, about 23 miles south of the inlet. Handwritten markings on the front of the photographs indicate miles north or south of the Ocean City Inlet (Mile 0).

After consulting the U.S. Geological Survey's Geographic Names Information System (GNIS) website, MGS assigned one of three pairs of geographic coordinates to each aerial photo, depending on its location with respect to the Ocean City Inlet. For photos flown north of the inlet, MGS assigned the geographic coordinates for Fenwick Island, as they appear on the Ocean City quadrangle. This location is approximately mid-way between the inlet and the Maryland-Delaware line. For photos flown south of the inlet, MGS assigned the geographic coordinates for Assateague Island, as they appear on the Tingles Island quadrangle. This location is approximately mid-way between the inlet and the Maryland-Virginia line. For photos of the Ocean City Inlet, MGS assigned the geographic coordinates of the inlet itself.

Also, for fewer than a dozen photos, the coordinates of which were uncertain, MGS assigned the geographic coordinates of the Ocean City Inlet and commented in the *alternateGeometry* field either "specific location uncertain" or "photo of Isle of Wight Bay."

The pairs of coordinates of the photographs and related index maps are reported in Table A3-2.

Table A3-2: Geographic coordinates (NAD83) of Fenwick and Assateague Islands, Maryland, from the Geographic Names Information System (GNIS), March 2011

County	Latitude (DMS)	Longitude (DMS)	Latitude (dec. deg.)	Longitude (dec. deg.)
Fenwick Island (Ocean City quad)	3821410N	0750424W	38.3615029	-75.0732384
Assateague Island (Tingles Island quad)	381000N	0750959W	38.1667846	-75.1662987
Ocean City Inlet	381928N	0750526W	38.3245590	-75.0904616

AlternateGeometry

Definition: Alternate method of storing geospatial footprint; description of authoritative source of geographic location & how simple coordinates derived – optional

Value:

"For photographs flown N of the Ocean City Inlet, geographic coordinates represent the coordinates of Fenwick Island, as they appear on the Ocean City quadrangle. For photographs flown S of the Ocean City Inlet, geographic coordinates represent the coordinates of Assateague Island, as they appear on the Tingles Island quadrangle (from the Geographic Names Information System, 3/28/2011). All coordinates are based on NAD83."

Source: n/a

OnlineResource

Definition: URL pointer(s) to textual information about specific record - optional
Value: https://jscholarship.library.jhu.edu/handle/1774.2/36062
Source: JHU *JScholarship* website

BrowseGraphic

Definition: URL pointer(s) to images representing specific record - optional
Value: https://jscholarship.library.jhu.edu/handle/1774.2/36062
Source: JHU *JScholarship* website

Date

Definition: Meaningful date (e.g., collection date) attached to record; may be to any degree of precision or left blank (e.g., 20010101, 1939-1945, -20030331, 2000) - optional
Value: date on which the aerial photo was flown
Source: Embedded in upper left corner of aerial photograph
Examples: dates as they occur on the photos, 3-24-63 or 7-7-64, for example, are reformatted, respectively, as follows: 19630324 or 19640707

DatasetReferenceDate

Definition: Reference date indicating currency of underlying data record (e.g., date metadata record added to National Catalog); format=YYYYMMDD - mandatory
Value: Date record provided to NGGDPP for uploading to the *ScienceBase Catalog*, namely 20120822
Source: Provided by curator

VerticalExtent

Definition: Vertical extent (e.g., vertical depth information for rock core samples); contains 2-3 elements: unit of measure, max value, min value (e.g., m, 35.4, 0 => rock core measured at 35.4 total meters)
Value: n/a
Source: n/a

Additional Information about the Sources, Samples, Etc.

This section includes detailed information about two of the sets of air photos: Set A - 45 photos flown on March 24, 1963, and Set B - 47 photos flown on July 7, 1964.

Set A: Photos flown on March 24, 1963
Ocean City Inlet, as well as the starting points (Mile 0) for mileage markers N and S of there, appears on Photo 1285-1-133

Going N from the inlet, photos are numbered, in order (minus the 1285- prefix): (1-135, 2-128), (1-137, 2-130), (1-139, 2-132), 1-141, 1-143, 1-147, 1-149, 1-151, 1-153, 1-155,

1-157. (There are no photos 1-145 and 2-126.) Photos 2-128, 2-130, and 2-132 cover about the same area as photos 1-135, 1-137, and 1-139, respectively.

Going S from the inlet, photos are numbered, in order: 2-124, 2-122, 2-120, 2-118, 2-116, 2-114, 2-112, 2-110, 2-108, 2-106, 2-104, 2-102, 2-100, (2-98, 3-78), 3-76, 3-74, 3-72, 3-70, 3-68, 3-66, 3-64, 4-17, 4-15, 4-13, 4-11, 4-09, 4-07, 4-05, 4-03. Photo 3-78 covers about the same area as photo 2-98.

Set B: Photos flown on July 7, 1964
Ocean City Inlet, as well as the starting points (Mile 0) for mileage markers N and S of there, appears on Photo 1446-2-44.

Going N from the inlet, photos are numbered, in order (minus the 1446- prefix): 2-42, 2-40, 2-38, 1-24, 1-22, 1-18, 1-16, 1-14, 1-12, 1-10, 1-08, 1-06, 1-04. (There is no photo 1-20.)

Going S from the inlet, photos are numbered, in order: 2-46, 2-48, 2-50, 2-52, 2-54, 2-56, 2-58, 2-60, 2-62, 2-64, 2-66, 2-68, 2-70, 3-88, 3-90, 3-92, 3-94, 3-96, 3-98, 3-100, 3-102, 3-104, 3-106,4-121, 4-123, 4-125, 4-127, 4-129, 4-131, 4-133, 4-135, 4-137, 4-139.
(From the Collection Table (tblCollection) in the internal data preservation database, DataPreservation.mdb)

The two sets of aerial photos, flown a little more than a year apart, were probably produced for a precursor of the State Highway Administration, based on a notation on the back of a few of the 1963 photos, “Return to Thompson – Room 500 – MD State Roads.” In both sets of photos, the general area now occupied by Assateague State Park is marked, as is the proposed approach to Sinepuxent Bridge (1963 photos only), linking Assateague Island to the mainland. The two index maps for the 1963 photos indicate that the project was intended for a “Beach Erosion Study.”

References

Questions to Resolve

APPENDIX 4

Maryland Air Photo Index Maps

MGS Collection ID: 35
Original NGGDPP ID: P-#### (none)
ScienceBase ID: 4f70c4dee4b08a0b754221e1

September 2012

COLLECTION DESCRIPTION

The collection *Maryland Air Photo Index Maps*, consists of 395, ~22"x34"photo-mosaic index maps depicting the flight lines and frame numbers of (1) the 9"x 9" aerial photos flown for a particular Maryland county or section of a county over one of six time periods (1936-1938, 1951-1953, 1957-1958, 1963-1964, 1970-1972, and 1979-1980) and (2) the 2' x 2' photographic enlargements flown over one or both of Maryland's barrier islands between 1952-1964. The collection is very nearly complete; for almost all of the aerial photographs in the MGS collection, there is a corresponding index map.

As is the case with the other two components of the aerial photography collection, the index maps were transferred, along with the photographs themselves, to MGS from the Maryland State Highway Administration or its predecessors.

Growth of this collection has always depended on outside donations. As a practical matter, no additions to the collection are anticipated. In fact, if a donation were offered to the Survey, MGS would in all likelihood direct the potential donor to the Maryland State Archives.

COLLECTION LOCATION AND STORAGE CONDITIONS

Physical Collection

The physical collection of air photo index maps is well organized and maintained. Index maps are stored in the MGS map library (Room 315) in a single vertical map cabinet labeled "Aerial Photo Indices" (red DNR inventory sticker 0060875). A pre-punched carrier strip attached to one of the shorter ends of each index map enables the map to hang vertically in the cabinet. The strip is labeled with the county name, the year of photography, and the sheet number (Sheet X of Y total sheets), as well as the Index Map identification number from the Air Photo Index database (see "Collection Documentation" below). Index maps are arranged in order, first, by county; within a given county, by year of photography; and, within a given year, by sheet number. Although an effort was made to assign consecutive Index Map ID numbers to the index maps, the maps are not filed in strict numeric order.

Because the index maps are stored in the same room as the collection of 9"x 9" aerial photographs, they are subject to the same unsatisfactory conditions described for the latter collection.

Digital Collection

Only a small subset of the index map collection has been digitized (scanned), namely the 19 index maps associated with the barrier island air photos. MGS made arrangements with the Johns Hopkins University (JHU) library to scan the entire collection of 2'x 2' barrier island air photos and associated index maps (400 dpi, .tif, .jpg, and .jp2 formats). At MGS, the digital images are stored in the Survey's Digital Library (Mgsdata2 on 'Mgsdata2' (S:)/Library/AirPhotos/WorcesterCo/MDBarrierIslands/YYYYMMDD. MGS file names follow the convention - APIndex_###_YYYYMM – where ### is the Index Map ID from the Air Photo Index database (tblIndexMap) and YYYYMM are the month (MM) and year (YYYY) of photography.

The same index maps are also available through the JHU *JScholarship* website, *Aerial Photography – Ocean City (1952-1964)*, [https://jscholarship.library.jhu.edu/handle/1774.2/35704]. The JHU index map file names, however, follow a different naming convention, related directly to the file names of the aerial photographs.

The same digital index map and aerial photo files have also been transferred to the Assateague Island National Seashore and, through an informal memorandum of understanding, the Maryland State Archives.

COLLECTION DOCUMENTATION

Internal MGS Database

The air photo index map collection has been well documented in the Microsoft Access database, AirPhotoIndex.mdb.

ScienceBase Catalog

Extracted primarily from the Air Photo Index database, NGGDPP-compliant metadata for the entire air photo index map collection have been submitted to the *ScienceBase Catalog*. A detailed description of the values entered into the various metadata fields, as well as the sources of those values, is included below (see "*NGGDPP Metadata Form – Maryland Air Photo Index Maps*")

NEXT STEPS

Virtually all of the "Next Steps" envisioned for the air photo index map collection are applicable to the other components of the air photo collection: In addition, MGS should consider the following:

- If available, obtain index maps scanned by JHU for Baltimore City and County; update the Air Photo Index database to include the file names and the Data Preservation database to include the URLs for the *browseGraphic*; resubmit the metadata to the *ScienceBase Catalog*
- Scan the remaining index maps

- Determine a procedure for georeferencing the index maps (and associated air photos) consistent with protocols under development by the MSGIC subcommittee
- Once all of the air photos and index maps have been scanned and made available online, box the index maps in archival containers and transfer them to the Maryland State Archives

NGGDPP METADATA FORM

Maryland Air Photo Index Maps

MGS Collection ID: 35
Original NGGDPP ID: P-#### (none)
ScienceBase ID: 4f70c4dee4b08a0b754221e1

September 2012

Sources of Information:

- Collar information printed on the index map or recorded on the pre-punched paper or mylar carrier strip attached to the index map, which allows the map to be hung in a vertical map storage cabinet
- Information stored in the internal MGS Microsoft Access databases AirPhotoIndex.mdb and DataPreservation.mdb
- U.S. Geological Survey's Geographic Names Information System (GNIS) website [http://geonames.usgs.gov/domestic/] – (geographic coordinates for county centroids)
- U.S. Geological Survey's *ScienceBase Catalog* (collection ID)

CollectionID

Definition: NGGDPP collection identification number
Value: 4f70c4dee4b08a0b754221e1 (*ScienceBase Catalog* ID for the collection *Maryland Air Photo Index Maps*)
Source: Originally generated by the *ScienceBase Catalog* upon submittal of a "collection inventory" for *Maryland Air Photo Index Maps*; stored internally in DataPreservation.mdb – tblCollection – field *ScienceBaseID*

Title

Definition: Official, human-readable title for individual record, used in listings & search results (short, distinctive) – mandatory
Value: The title includes the following information, in order, separated by spaces: (1) the name of the county over which the photography was flown, (2) the date (year or month and year) the photography was flown, (3) the sheet number (X of Y total sheets), and (4) the number of copies, if multiple copies are included in the collection, in parentheses. The form of the title differs somewhat, depending on whether the index map is associated with the aerial photography flown county-wide between 1936-1980 or with the special collection of photographic enlargements flown over Maryland's barrier islands between 1952-1964.
Source: AirPhotoIndex.mdb – tblIndexMap – field *IndexMapDescription*, in turn, based on information printed directly on the index map and/or on the carrier strip attached to the index map
Examples:

- "Allegany 1938 Sheet 1 of 4"
- "Prince George's 1970 Sheet 4 of 5"

- "Worcester Barrier Islands Nov 1952 Sheet 1 of 1"
- "Worcester Barrier Islands Jan 1960 Sheet 1 of 2 (2 copies)"

Alternate Title

Definition: Additional title identifiers for individual record (e.g., for further identification by other Web service interfaces); textual titles or specific sample IDs used by collection – optional
Value: The alternate title corresponds to the unique index map identification number, assigned automatically by Microsoft Access, in the internal Air Photo Index database
Source: AirPhotoIndex.mdb – tblIndexMap - IndexMapID
Example: "Index Map ID 357"

Abstract

Definition: Human-readable description of individual record, used to help determine nature of underlying physical data resource; contains much information about data resource – mandatory
Value: The abstract is, in part, a concatenation of several fields in the Air Photo Index database, linked with additional text. It includes the following information, in order: (1) year or month and year of photography, (2) general area covered by the index map, (3) form in which the index map exists (i.e., "paper only" or "paper and digital"), and (4) the file name of the digital image, in parentheses, if one exists.
Source: AirPhotoIndex.mdb – tblIndexMap – fields *Year*, *Area*, *Scanned?*, *FileName*
Examples:

- "1937 air photo index map for SE Montgomery Co.; paper only"
- "1952 air photo index map for Harford Co. (all); paper only"
- "Mar 1963 air photo index map for Worcester Co. barrier island(s) – S Assateague Island; paper and digital (APIndex_391_196203)"

Data Type

Definition: A controlled vocabulary of one or more data types - mandatory
Value: "Photograph"
Source: Determined by MGS, based on the list of data types provided in Appendix 2 of the 2006 NGGDPP *Implementation Plan*

SupplementalInformation

Definition: Information on how to access physical data represented by metadata record (e.g., general for entire collection, such as URL, or specific reference to online resource, like ordering system with specific ID) - mandatory
Value: "Contact the MGS curator at (410) 554-5500 for additional information."
Source: n/a

Coordinates

Definition: Geographic coordinates (longitude, latitude), in decimal degrees – mandatory

Value: (-)decimal longitude, decimal latitude

For index maps associated with the collection of 9"x 9" aerial photos:
This field presently contains the centroid of the county over which the photography was flown, determined from the Geographic Names Information System (GNIS) (Table A4-1).

For index maps associated with the special collection of 2' x 2' Maryland barrier island photographic enlargements:
This field presently contains the geographic coordinates of Ocean City Inlet, Worcester Co., MD, determined from GNIS: -75.0904616, 38.3245590

Source: Geographic Names Information System (GNIS)

Table A4-1: Geographic coordinates (NAD83) of county centroids, from the Geographic Names Information System (GNIS), January 2011 (Feature class = Civil)

County	Latitude (DMS)	Longitude (DMS)	Latitude (dec. deg.)	Longitude (dec. deg.)
Allegany	394000N	0783959W	39.666667	-78.666389
Anne Arundel	390000N	0763659W	39.	-76.616389
Baltimore	392800N	0763859W	39.466667	-76.649722
Baltimore City	391725N	0763644W	39.290278	-76.612222
Calvert	383300N	0763459W	38.55	-76.583056
Caroline	385200N	0754959W	38.866667	-75.833056
Carroll	393300N	0770059W	39.55	-77.016389
Cecil	393400N	0755659W	39.566667	-75.949722
Charles	382900N	0765859W	38.483333	-76.983056
Dorchester	382800N	0755959W	38.466667	-75.999722
Frederick	392800N	0772359W	39.466667	-77.399722
Garrett	393300N	0791459W	39.55	-79.249722
Harford	393300N	0761759W	39.55	-76.299722
Howard	391501N	0765559W	39.250278	-76.933056
Kent	391800N	0760159W	39.3	-76.033056
Montgomery	390900N	0771159W	39.15	-77.199722
Prince Georges	385000N	0765059W	38.833333	-76.849722
Queen Anne's	390400N	0755859W	39.066667	-75.983056
Somerset	380800N	0754359W	38.133333	-75.733056
St. Mary's	381800N	0763659W	38.3	-76.616389
Talbot	384600N	0760459W	38.766667	-76.083056
Washington	393700N	0774559W	39.616667	-77.766389
Wicomico	382200N	0753559W	38.366667	-75.599722

Table A4-1: Geographic coordinates (NAD83) of county centroids, from the Geographic Names Information System (GNIS), January 2011 (Feature class = Civil)				
County	**Latitude (DMS)**	**Longitude (DMS)**	**Latitude (dec. deg.)**	**Longitude (dec. deg.)**
Worcester	381200N	0752259W	38.2	-75.383056

AlternateGeometry

Definition: Alternate method of storing geospatial footprint; description of authoritative source of geographic location & how simple coordinates derived – optional

Value:

For index maps associated with the collection of 9"x 9" aerial photos:

"Geographic coordinates (NAD83) represent centroid of [CountyName] Co., MD, from the U.S.Geological Survey's Geographic Names Information System (GNIS)"

For index maps associated with the special collection of 2' x 2' Maryland barrier island photographic enlargements:

"Geographic coordinates (NAD83) of Ocean City Inlet, Worcester Co., MD, from the U.S.Geological Survey's Geographic Names Information System (GNIS)"

Source: n/a

OnlineResource

Definition: URL pointer(s) to textual information about specific record - optional

Value: none supplied

Source: n/a

BrowseGraphic

Definition: URL pointer(s) to images representing specific record - optional

Value: none supplied

Source: n/a

Date

Definition: Meaningful date (e.g., collection date) attached to record; may be to any degree of precision or left blank (e.g., 20010101, 1939-1945, -20030331, 2000-) - optional

Value: 4-digit year in which the photography depicted on the index map was flown

Source: AirPhotoIndex.mdb – tblIndexMap – field *Year*, in turn, based on information printed directly on the index map and/or on the carrier strip attached to the index map

DatasetReferenceDate

Definition: Reference date indicating currency of underlying data record (e.g., date metadata record added to National Catalog); format=YYYYMMDD - mandatory

Value: Date (YYYYMMDD) on which metadata record was submitted to NGGDPP for uploading to the *ScienceBase Catalog* (v.1 = "20120327")

Source: Provided by curator

VerticalExtent

Definition: Vertical extent (e.g., vertical depth information for rock core samples); contains 2-3 elements: unit of measure, max value, min value (e.g., m, 35.4, 0 => rock core measured at 35.4 total meters)

Value: none supplied

Source: n/a

Omissions from ScienceBase

The following information was added to the Air Photo Index database after the initial metadata was submitted to ScienceBase:

- JHU JScholarship *browseGraphic* URL for the barrier island index maps

References

APPENDIX 5
MGS Data Preservation Advisory Panel
2011-2012 Membership

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