*Please provide the following information, and submit to the NOAA DM Plan Repository.*

**Reference to Master DM Plan (if applicable)**

*As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.*

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

**1. General Description of Data to be Managed**

    **1.1. Name of the Data, data collection Project, or data-producing Program:**
    2021 Maine NAIP Digital Ortho Photo Imagery

    **1.2. Summary description of the data:**
    This data set contains imagery from the National Agriculture Imagery Program (NAIP). The NAIP program is administered by USDA FSA and has been established to support two main FSA strategic goals centered on agricultural production. These are, increase stewardship of America's natural resources while enhancing the environment, and to ensure commodities are procured and distributed effectively and efficiently to increase food security. The NAIP program supports these goals by acquiring and providing ortho imagery that has been collected during the agricultural growing season in the U.S. The NAIP ortho imagery is tailored to meet FSA requirements and is a fundamental tool used to support FSA farm and conservation programs. Ortho imagery provides an effective, intuitive means of communication about farm program administration between FSA and stakeholders. New technology and innovation is identified by fostering and maintaining a relationship with vendors and government partners, and by keeping pace with the broader geospatial community. As a result of these efforts the NAIP program provides three main products: DOQQ tiles, Compressed County Mosaics (CCM), and Seamline shape files. The Contract specifications for NAIP imagery have changed over time reflecting agency requirements and improving technologies. These changes include image resolution, horizontal accuracy, coverage area, and number of bands. In general, flying seasons are established by FSA and are targeted for peak crop growing conditions. The NAIP acquisition cycle is based on a minimum 3 year refresh of base ortho imagery. The tiling format of the NAIP imagery is based on a 3.75' x 3.75' quarter quadrangle with a 300 pixel buffer on all four sides. NAIP quarter quads are formatted to the UTM coordinate system using the North American Datum of 1983. NAIP imagery may contain as much as 10% cloud cover per tile.

    **1.3. Is this a one-time data collection, or an ongoing series of measurements?**
    One-time data collection

    **1.4. Actual or planned temporal coverage of the data:**
    2021-07-23 to 2021-10-07

**1.5. Actual or planned geographic coverage of the data:**
W: -71.299, E: -66.799, N: 47.589, S: 42.833

**1.6. Type(s) of data:**
*(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)*
Image (digital)

**1.7. Data collection method(s):**
*(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)*

**1.8. If data are from a NOAA Observing System of Record, indicate name of system:**

**1.8.1. If data are from another observing system, please specify:**

**2. Point of Contact for this Data Management Plan (author or maintainer)**

**2.1. Name:**
NOAA Office for Coastal Management (NOAA/OCM)

**2.2. Title:**
Metadata Contact

**2.3. Affiliation or facility:**
NOAA Office for Coastal Management (NOAA/OCM)

**2.4. E-mail address:**
coastal.info@noaa.gov

**2.5. Phone number:**
(843) 740-1202

**3. Responsible Party for Data Management**
*Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.*

**3.1. Name:**

**3.2. Title:**
Data Steward

**4. Resources**
*Programs must identify resources within their own budget for managing the data they produce.*

**4.1. Have resources for management of these data been identified?**


**4.2. Approximate percentage of the budget for these data devoted to data management ( specify percentage or "unknown"):**


## 5. Data Lineage and Quality

*NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.*

**5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible**

*(describe or provide URL of description):*

Process Steps:

- 2022-01-10 00:00:00 - DOQQ Production Process Description;        USDA FSA APFO NAIP Program 2021;                     The imagery was collected using the following digital sensors:        Vexcel Condor M4.1 (Serial Number 435S52516X011066),        Vexcel Condor M4.1 (Serial Number 435S72614X210073),        Cameras are calibrated radiometrically and geometrically        by the manufacturer.        Collection was performed using a combination of the  following twin-engine aircraft with turbines flying        at 17,000 ft above mean terrain.        Plane types:        C441 Cessna Conquest        Tail numbers:   N440EH,        N441MD,        With this flying height, there is a 30% sidelap, giving the collected data nominal ground sampling distance        of 15cm and rectified to 60cm.        Based-upon the CCD Array configuration present in  the Condor sensor, imagery for each flight        line is 48,460-pixels in width. Red, Green, Blue,        Near-Infrared and Panchromatic image bands were collected.        The Vexcel Condor has the following band specifications at 40% intensity:        Red 585-690,        Green 570-600,        Blue 425-530,        Near Infrared 700-830,        all values are in nanometers.                     Flight planning was performed in IGI Plan over a                 buffered boundary covering DOQQ extents provided by the USDA.        A 500m reduced resolution DEM file was used to determine                 ground heights. A targeted flight altitude of approximately                17,000 feet above ground level for native 15 cm image                acquisition with sidelap of 30% was used     for flight planning parameters. Multiple aircraft were utilized        for acquisition, the seamline                shapefile clarifies which aircraft were used for a given area.                                            All aircraft were equipped with Vexcel                        Condor systems where utilized for data                        capture. The Vexcel Condor sensor    has been calibrated by the manufacturer as well as validated                against a local calibration range.  The calibration includes                measuring the radiometric and geometric properties of the                camera.  This data is used in the Post Processing Software                to eliminate the radiometric and

geometric distortion.                 All aerial imagery was collected with associated GPS/IMU              data.  Condor collection requires high quality IMU data for                    processing and was critical for early access hosting of digital              data to the web for USDA interim access and review.

- 2022-01-10 00:00:00 - After early access web delivery was complete, all              imagery was triangulated using Vexcel Ultramap in which                        the airborne GPS data was constrained to expected limits.                 To validate the accuracy of the block adjustment derived from               GPS/IMU, sensor parameters and conjugate point measurements,               photo identifiable ground control points were field surveyed within           each State.  These points were surveyed using GPS techniques to              produce coordinates that are accurate to +/- 0.25 meters RMSE in XYZ.           The GPS surveying techniques utilized assured that the coordinates            are derived in the required project datum and relative to an approved          National Reference System. Once the block has proper statistics and fits the               control to specifications, the final bundle adjustment was               made.

The final adjustments assure a high quality relative adjustment and a high quality absolute adjustment limited to the                 airborne GPS data accuracy. This process assures the final               absolute accuracy of all geopositioned imagery.  Both                 signalized and photo identified ground control were used to               QC and control the IMU/GPS based aerial triangulation bundle               block solution.  Surdex Grouping Tool provides real-time updates          of the USDA APFO Image Metrics.  The image technician adjusts           image correction parameters to bring the radiometric    characteristics of large groups of images within the Image                 Metrics ranges. For each project area the highest resolution             DEM or LiDAR was obtained and utilized for rectification of captured          imagery.

- 2022-01-10 00:00:00 - A visual inspection of the final DEM using color cycled          classification by elevation and a shaded relief was performed                 to check for gaps, corruption and gross errors.                 The predicted horizontal error for each                     point was added as an attribute in the SURDEX enterprise                 database.  An operator reviews ortho seams                 in areas these predicted errors indicate horizontal error in    excess of the contract specifications.  Any imagery errors                 introduced by source DEM required patching from an alternate           perspective or strip of photography.                     Processing hardware used included various brands of survey grade          GPS receivers, various brands and models of computers,              RAID6 storage, calibrated monitors, various brands of monitor           calibration colorimeters. Vexcel Ultramap was used for post           processing of Condor  data, and triangulation.          SURDEX software was used to orthorectify, color correct,            and remove bidirectional reflectance, vignetting and other              illumination trends.  USDA APFO Image Metrics are measured and           images corrected to conform to the Image Metrics using             SURDEX software.  GPS/IMU data was reduced to projected

coordinates in the appropriate UTM zone using                Applanix POSPac. SURDEX software was used          to calculate the optimal seam path, check seam topology and          create master tiles.  SURDEX ortho software generates                occlusion/smear polygons used during seam review          of steep terrain.  SURDEX software was used to                visually inspect master tiles for seam and image defects.          SURDEX software was used to project and cut final DOQQ image          files from masters.  SURDEX software was used to create CCM          metadata.  Lizardtech GeoExpress version 10.0.1.5035 was used          to create the CCM image file.  SURDEX software was          used to perform final formatting, QC and naming of the DOQQ.          USGS metadata parser software was used to validate the metadata.          Various versions of Microsoft Windows were used in all phases of          production. Grouping Tool was used again after DOQQ and CCM production to provide a quality assurance check. Individual          DOQQ and CCM may not meet the USDA APFO Image Metrics ranges          due to land cover.  The goal is to have the state as a          whole meet the Image Metrics. All products are reviewed          by independent personnel prior to delivery.          The delivery is checked for omissions, commissions,          naming, formatting, specification compliance and data integrity.

**5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:**

**5.2. Quality control procedures employed (describe or provide URL of description):**

## 6. Data Documentation
*The EDMC Data Documentation Procedural Directive requires that NOAA data be well documented, specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.*

**6.1. Does metadata comply with EDMC Data Documentation directive?**
No

**6.1.1. If metadata are non-existent or non-compliant, please explain:**
Missing/invalid information:
- 1.7. Data collection method(s)
- 3.1. Responsible Party for Data Management
- 4.1. Have resources for management of these data been identified?
- 4.2. Approximate percentage of the budget for these data devoted to data management
- 5.2. Quality control procedures employed
- 7.1. Do these data comply with the Data Access directive?
- 7.1.1. If data are not available or has limitations, has a Waiver been filed?

- 7.1.2. If there are limitations to data access, describe how data are protected
- 7.3. Data access methods or services offered
- 7.4. Approximate delay between data collection and dissemination
- 8.1. Actual or planned long-term data archive location
- 8.3. Approximate delay between data collection and submission to an archive facility
- 8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?

### 6.2. Name of organization or facility providing metadata hosting:
NMFS Office of Science and Technology

#### 6.2.1. If service is needed for metadata hosting, please indicate:


### 6.3. URL of metadata folder or data catalog, if known:
https://www.fisheries.noaa.gov/inport/item/67912

### 6.4. Process for producing and maintaining metadata
*(describe or provide URL of description):*
Metadata produced and maintained in accordance with the NOAA Data Documentation Procedural Directive: https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC_PD-Data_Documentation_v1.pdf


## 7. Data Access
*NAO 212-15 states that access to environmental data may only be restricted when distribution is explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.*

### 7.1. Do these data comply with the Data Access directive?


#### 7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed?


#### 7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:


### 7.2. Name of organization of facility providing data access:
NOAA Office for Coastal Management (NOAA/OCM)

#### 7.2.1. If data hosting service is needed, please indicate:

    **7.2.2. URL of data access service, if known:**
        https://coast.noaa.gov/dataviewer/#/imagery/search/where:ID=9585
        https://coastalimagery.blob.core.windows.net/digitalcoast/ME_NAIP_2021_9585/index.html

**7.3. Data access methods or services offered:**


**7.4. Approximate delay between data collection and dissemination:**


**7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:**


## 8. Data Preservation and Protection
*The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.*

**8.1. Actual or planned long-term data archive location:**
*(Specify NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, World Data Center (WDC) facility, Other, To Be Determined, Unable to Archive, or No Archiving Intended)*


**8.1.1. If World Data Center or Other, specify:**


**8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:**


**8.2. Data storage facility prior to being sent to an archive facility (if any):**
    Office for Coastal Management - Charleston, SC

**8.3. Approximate delay between data collection and submission to an archive facility:**


**8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?**
*Discuss data back-up, disaster recovery/contingency planning, and off-site data storage relevant to the data collection*


## 9. Additional Line Office or Staff Office Questions
*Line and Staff Offices may extend this template by inserting additional questions in this section.*