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**THE STATE OF NEW HAMPSHIRE**  
**DEPARTMENT OF TRANSPORTATION**

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*William Cass, P.E.*  
*Commissioner*

*David Rodrigue, P.E.*  
*Assistant Commissioner*  
*Andre Briere, Colonel, USAF (RET)*  
*Deputy Commissioner*

His Excellency, Governor Christopher T. Sununu  
and the Honorable Council  
State House  
Concord, New Hampshire 03301

Bureau of Planning & Community Assistance  
April 24, 2023

**REQUESTED ACTION**

The Department of Transportation requests placing this item on the Consent Calendar.

Authorize the Department of Transportation to amend PO# 4011958 with the United States Geological Survey (USGS) (Vendor #175772), United States Department of the Interior, to deliver statewide high-resolution aerial orthoimagery, by extending the completion date from June 30, 2023 to December 31, 2023, effective upon Governor & Council approval. The original agreement was approved by Governor and Council on February 17, 2021, Item #23. Time extension only, no new funding.

**EXPLANATION**

This contract amendment is due to delays in the collection of the orthoimagery. The collection was extended by an additional season (From Spring 2021 to Spring 2022) due to weather and ground conditions not meeting required specifications. Other contributing delay factors include an unforeseen issue in calibration with the IMU sensor causing a processing delay in calibration and change in key staff.

Orthoimagery will provide aerial photography to the state that is compatible with the State, municipal, and federal Geographical Information Systems (GIS) technologies. The orthoimagery meets the technical requirements and specifications of the Department, and USGS's National Map Program. This program supports efforts among the USGS and other Federal, State, and local transportation planning partners to improve and deliver topographic information for the State and the Nation.

The Department will integrate the orthoimagery as a statewide GIS layer for mapping, transportation planning, land use/land cover analysis, wetland evaluation, and general reference. The Department of Safety, Division of Emergency Services & Communications will use the orthoimagery GIS layer to enhance the development and maintenance of their 9-1-1 GIS maps, upgrade the current imagery in NHVIEWW from 2015, improve their ability to support Department of Safety and local public safety agencies planning and operational activities, and provide improved support for emergency management in disaster operational support and recovery. The Department of Environmental Services will use the orthoimagery GIS layer for mapping, environmental planning, studies, and land use/land cover analysis, wetland evaluation, and general reference.

This amendment to the Agreement is to extend the contract's original completion date to allow USGS to effectively complete remaining tasks to deliver the statewide high resolution aerial imagery. The Department of Transportation, Department of Safety, and Department of Environmental Service has joint funded this project.

Of the original \$1,050,353.48 (72% Federal Funds and 14% Other Funds and 14% Restricted Revenue/Revolving Funds) \$370,399.96 is remaining (94% Federal Funds (\$348,183.67) and 6% Other Funds (\$22,216.29) and \$0 Restricted Revenue/Revolving Funds).

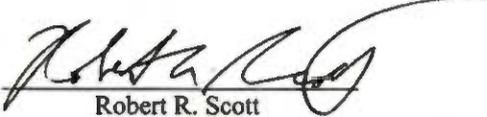
This amendment to the Agreement has been approved by the Attorney General as to form and execution. Copies of the fully executed amended Agreement are on file at the Secretary of State's Office and the Department of Administrative Services, and subsequent to Governor and Council approval will be on file at the Department of Transportation.

It is respectfully requested that authority be given to amend this Agreement for consulting services as outlined above.

Sincerely,

  
\_\_\_\_\_  
William Cass, PE  
Commissioner  
NH Department of Transportation

  
\_\_\_\_\_  
Robert L. Quinn  
Commissioner  
NH Department of Safety

  
\_\_\_\_\_  
Robert R. Scott  
Commissioner  
NH Department of Environmental Services



# United States Department of the Interior

National Geospatial Technical Operations Center

U.S. Geological Survey  
1400 Independence Road  
Rolla, Missouri 65401

U.S. Geological Survey  
Box 25046, MS 510  
Denver, Colorado 80225

## AMENDMENT #2 TO JOINT FUNDING AGREEMENT #21EGJFANH001

March 21, 2023

New Hampshire Department of Transportation  
Attn: Glenn Davison  
7 Hazen Drive, P.O. Box 483  
Concord, NH 03302-0483

This letter is to amend the Joint Funding Agreement (JFA) #21EGJFANH001 originally signed on February 17, 2021 between the New Hampshire Department of Transportation and the U.S. Geological Survey.

The JFA will expire on June 30, 2023, however a no-cost extension is needed to keep the JFA in force for the following reasons.  
to allow work, billing, and payment to be completed.

Accordingly, paragraph 2 of the JFA is hereby modified to read as follows:

2 (a). \$ 0.00 by the party of the first part during the period Date of Last Signature  
to December 31, 2023

2 (b). \$ 1,050,353.48 by the party of the second part during the period Date of Last Signature  
to December 31, 2023

This amendment does not affect any of the other terms of the agreement.

Please have the approving official sign this amendment and return a fully executed copy (PDF preferred) to [jalmekinder@usgs.gov](mailto:jalmekinder@usgs.gov)

If you have any questions or need additional information please contact:

Jim Almekinder  
GPSC Agreement Lead  
USGS-NGTOC  
573-308-3549

Thank you for your participation in this cooperative effort.

SIGNED

U.S. GEOLOGICAL SURVEY  
NATIONAL GEOSPATIAL TECHNICAL  
OPERATIONS CENTER

New Hampshire  
Department of Transportation

**KEVIN** Digitally signed  
by KEVIN WOOD  
**WOOD** Date: 2023.03.21  
08:51:49 -05'00'

Signature

Signature

Name: Kevin Wood

Name: William Oldenburg

Date: 3/21/2023

Date: 4/12/23

Title: Acting Director, NGTOC

Title: Acting Director of Project Development

**By An Authorized Official of:** the New  
Hampshire Office of the Attorney General

Name: EMILY C. GOERING

Title: AAG

Signature and Date: Emily C. Goering 5/13/2023

**By An Authorized Official of:** the New  
Hampshire Governor & Executive Council

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Signature and Date: \_\_\_\_\_



**Victoria F. Sheehan**  
Commissioner

**THE STATE OF NEW HAMPSHIRE**  
**DEPARTMENT OF TRANSPORTATION**

G+C #23  
Date 2/17/21



**William Cass, P.E.**  
Assistant Commissioner

His Excellency, Governor Christopher T. Sununu  
and the Honorable Council  
State House  
Concord, New Hampshire 03301

Bureau of Planning & Community Assistance  
November 20, 2020

**REQUESTED ACTION**

Authorize the NH Department of Transportation (NHDOT) to enter into a **Sole Source** joint funding agreement with the United States Geological Survey (USGS) (Vendor #175772), United States Department of the Interior in an amount not to exceed \$1,050,353.48, for statewide high-resolution aerial orthoimagery, effective upon Governor and Council approval, through June 30, 2023. (72% Federal Funds and 14% Other Funds and 14% Restricted Revenue/Revolving Funds)

Funding is available as follows in Fiscal Years 2021 and is contingent upon the availability and continued appropriations of funds for Fiscal Year 2022 and 2023, with the ability to adjust encumbrances between State Fiscal Years through the Budget Office if needed and justified:

	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>
Department of Transportation			
04-96-96-962515-2944 SPR Planning	\$0.00	\$330,353.48	\$20,000.00
046-500464 Consultants			
04-96-96-963515-3054 Consolidated Federal (HSIP)	\$400,000.00	\$0.00	\$0.00
046-500464 Consultants			
Department of Safety			
02-23-23-236510-1395 Bur of Emergency Communication	\$150,000.00	\$0.00	\$0.00
102-500731 Contracts for Program Services			
Department of Environmental Services			
03-44-442010-12000000 Subsurface Systems	\$7,500.00	\$0.00	\$0.00
102-500731 Contract for Program Services			
Department of Environmental Services			
03-44-442010-14360000 Terrain Alteration Program	\$10,000.00	\$0.00	\$0.00
102-500731 Contract for Program Services			
Department of Environmental Services			
03-44-442010- 36420000 Coastal Zone Management	\$10,000.00	\$0.00	\$0.00
102-500731 Contract for Program Services			
Department of Environmental Services			
03-44-442010-38550000 Wetland Fees	\$ 5,000.00	\$0.00	\$0.00
102-500731 Contract for Program Services			

Department of Environmental Services 03-44-442010-39040000 DWGW Trust 102-500731 Contract for Program Services	\$70,000.00	\$0.00	\$0.00
Department of Environmental Services 03-44-443010-91010000 Permit Fee Program 102-500731 Contract for Program Services	\$12,500.00	\$0.00	\$0.00
Department of Environmental Services 03-44-441018-47880000 CWSRF Loan Management 102-500731 Contract for Program Services	\$10,000.00	\$0.00	\$0.00
Department of Environmental Services 03-44-441018-47900000 DWSRF Loan Management 102-500731 Contract for Program Services	\$25,000.00	\$0.00	\$0.00
Total	\$700,000.00	\$330,353.48	\$20,000.00

#### EXPLANATION

The Department requests to enter into a joint funding agreement with USGS to obtain statewide high-resolution, six-inch pixel resolution aerial orthoimagery. Orthoimagery will provide aerial photography to the state that is compatible with the State, municipal, and federal Geographical Information Systems (GIS) technologies. The orthoimagery meets the technical requirements and specifications of the Department, and USGS's National Map Program. This program supports efforts among the USGS and other Federal, State, and local transportation planning partners to improve and deliver topographic information for the State and the Nation.

This joint funding agreement is sole source because USGS is uniquely qualified to provide the statewide high-resolution aerial orthoimagery services the Department is requesting. USGS has comprehensive knowledge and experience in orthoimagery data collection and data Quality Assurance and Quality Control (QA/QC). USGS also has strong working relationships with qualified vendors through their Geospatial Product and Service Contracts (GPSC).

The Department will integrate the orthoimagery as a statewide GIS layer for mapping, transportation planning, land use/land cover analysis, wetland evaluation, and general reference. The Department of Safety, Division of Emergency Services & Communications will use the orthoimagery GIS layer to enhance the development and maintenance of their 9-1-1 GIS maps, upgrade the current imagery in NHVIEWW from 2015; improve their ability to support Department of Safety and local public safety agencies planning and operational activities, and provide improved support for emergency management in disaster operational support and recovery. The Department of Environmental Services will use the orthoimagery GIS layer for mapping, environmental planning, studies, and land use/land cover analysis, wetland evaluation, and general reference.

USGS will select a qualified vendor to perform the orthoimagery data collection through their Geospatial Product and Service Contracts (GPSC). USGS will administer third party data QA/QC, and manage data deliverables. The GPSCs are awarded to qualified vendors through federal government solicitation. Current solicitation 09CR14- NoSolicitation was issued March 3, 2009. Qualified consultants are selected in accordance with Public Law 92-528 (Brooks Act) and FAR 36.6 - Architect-Engineering Services, which establishes a qualifications-based selection process, in which contracts for Architectural and Engineering services are negotiated on the basis of demonstrated competence and qualification for the type of professional services required at a fair and reasonable price. Vendor selection is based on the following 6 criteria (1) Professional qualifications necessary for satisfactory performance of required services; (2) Specialized experience and technical competence in the type of work required; (3) Capacity to accomplish the work in the required time; (4) Past performance on contracts with

Government agencies and private industry in terms of cost control, quality of work, and compliance with performance schedules; (5) Location in the general geographical area of the project and knowledge of the locality of the project and (6) Acceptability under other appropriate evaluation criteria. This process is aligned with the Department's consultant RFP and selection process.

USGS can accomplish this work for a total fee not to exceed \$1,050,353.48 (72% Federal Funds and 14% Other Funds and 14% Restricted Revenue/Revolving Funds). The Department of Transportation, Department of Safety, and Department of Environmental Service will jointly fund this project.

The funding to be used is from several sources. The federal funds portion from the Department of Transportation (\$750,353.48) is Federal Aid (involving SPR Planning (80% Federal, 20% State match) and Consolidated Federal-HSIP (90% Federal, 10% State match). Turnpike toll credit is being utilized for match requirement, effectively using 100% federal funds. The remaining portion (\$300,000.00) is equally from the Department of Safety and Department of Environmental Services.

The Capital Budget Overview Committee approved the use of Turnpike Toll Credits on June 5, 2019, item CAP19-011.

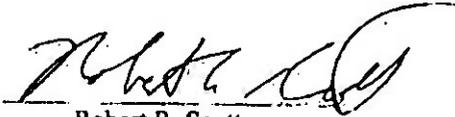
The contract has been approved by the Attorney General as to form and execution and funding for each fiscal year is contingent upon the availability and continued appropriations of funds. Copies of the fully executed contract are on file at the Secretary of State's office, and the Department of Administrative Services office and subsequent to Governor and Executive Council approval, will be on file at the Department of Transportation.

It is respectfully requested that authority be given to enter into a contract for professional services as detailed in the Requested Action.

Sincerely,

  
Victoria F. Sheehan  
Commissioner  
NH Department of Transportation

  
Robert L. Quinn  
Commissioner  
NH Department of Safety

  
Robert R. Scott  
Commissioner  
NH Department of Environmental Services

VFS/GLD/dmp  
Attachments



# United States Department of the Interior

United States Geological Survey  
National Geospatial Technical Operations Center

U.S. Geological Survey  
1400 Independence Road  
Rolla, MO 65401

U.S. Geological Survey  
PO Box 25046 MS 510  
Denver, CO 80225

Customer #:

Agreement #:

TIN#: 02-6000618

Fixed Cost: No

## Joint Funding Agreement For 2021 New Hampshire Orthoimagery Acquisition

This agreement is entered into as of the \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ by the U.S. GEOLOGICAL SURVEY, UNITED STATES DEPARTMENT OF INTERIOR party of the first part, and New Hampshire Department of Transportation (NH DOT) party of the second part.

- 1) The parties hereto agree that subject to the availability of appropriations and in accordance with their respective authorities there shall be maintained in cooperation a project to acquire and conduct quality assurance on statewide 6-inch high-resolution digital orthophotography covering the state of New Hampshire and selected portions of Maine.

herein called the program, see attached statement of work. The USGS legal authority is 43 USC 36C; 43 USC 50; and 43 USC 50b.

- 2) The following amounts shall be contributed to cover all of the cost of the necessary field and analytical work directly related to this program. 2(b) includes In-Kind Services in the amount of: \$ 0.00

- a) by the party of the first part during the period

Amount	Date	Date
<u>\$ 0.00</u>	<u>Date of Last Signature</u>	<u>June 30, 2023</u>

- b) by the party of the second part during the period

Amount	Date	Date
<u>\$ 1,050,353.48</u>	<u>Date of Last Signature</u>	<u>June 30, 2023</u>

- c) Additional Information on other potential partners contributing to this program through separate agreements (Participants and funding amounts are projected and are subject to change):

Participant	Amount
<b>Estimated Total of Separate Agreements:</b>	<b>\$ 0.00</b>

- d) All contributions are subject to the 6% on NET GPSC special rate assessment which will be deducted from the dollar figure in section 2b. This assessment is to cover GPSC (Geospatial Products and Services Contract) program management and oversight.
- e) The National Geospatial Program provides leadership for USGS geospatial coordination, production and service activities. The Program engages partners to develop standards and produce consistent and

accurate data through its National Map Liaisons. Operational support is provided by the National Geospatial Technical Operations Center. These and other Program activities that are essential to the National Spatial Data Infrastructure (NSDI) are managed as a unified portfolio that benefits geospatial information users throughout the Nation.

- f) This Agreement can be changed or amended only by a written instrument signed by the Parties. This Agreement may be terminated by either Party on sixty (60) days written notice to the other Party. In the event of an early termination, USGS shall be reimbursed for any completed work or work in progress on the effective date of termination (i.e., when the Agreement actually terminates following the receipt of written notice from the other Party). Any unspent advanced funds will be returned to Partner. The USGS shall provide a copy of the outcomes completed as of the effective date of termination in the event of an early termination of the Agreement.
- 3) The costs of this program may be paid by either party in conformity with the laws and regulations respectively governing each party.
- 4) The field and analytical work pertaining to this program shall be under the direction of or subject to periodic review by an authorized representative of the party of the first part.
- 5) The areas to be included in the program shall be determined by mutual agreement between the parties hereto or their authorized representatives. The methods employed in the field and office shall be those adopted by the party of the first part to insure the required standards of accuracy subject to modification by mutual agreement.
- 6) During the course of this program, all field and analytical work of either party pertaining to this program shall be open to the inspection of the other party, and if the work is not being carried on in a mutually satisfactory manner, either party may terminate this agreement upon 60 days written notice to the other party with compensation to USGS for work performed to that point.
- 7) The original records resulting from this program will be deposited in the office of origin of those records. Upon request, copies of the original records will be provided to the office of the other party.
- 8) Each Party is free to publish the information and data developed in the performance of the statement of work (SOW). The Parties acknowledge that scientific information and data developed using USGS funds or contracts as a result of the SOW are subject to applicable USGS Fundamental Science Practices (FSP) review, approval, and release requirements, which are available in [Survey Manual Chapter 502.4, Fundamental Science Practices: Review, Approval, and Release of Information Products](#). The USGS is required to provide timely public access to the results of scientific information and data that does not contain sensitive protected information. Data and associated metadata will be open format and publicly accessible. The data and metadata will also be open access and machine readable in accordance with USGS FSP requirements available in [Survey Manual Chapter 502.7, Fundamental Science Practices: Metadata for USGS Scientific Information Products Including Data](#) and [Survey Manual Chapter 502.8, Fundamental Science Practices: Review and Approval of Scientific Data for Release](#).
- 9) USGS will issue billings utilizing Department of Interior Bill for Collection (form DI-1040). The USGS will submit invoices on a monthly basis, based on actual expenses, independent of product delivery.

Payments of bills are due within 60 days of the billing date. If not paid by the due date, interest will be charged at the U.S. Treasury Current Value of Funds Rate for each 30-day period, or portion thereof, that the payment is delayed beyond the due date. (31 USC 3717; Comptroller General File B-212222, August 23, 1983.)<sup>1</sup>.

- 10) The Task Order issued by USGS to the selected GPSC Contractor provides full details regarding project collection requirements and resulting deliverables. A copy of the Task Order will be provided to the partner prior to the Request for Proposal.
- 11) Every effort will be made to award contract(s) to complete the objective of this program. However, if the total funding amount is not sufficient to complete the work as described, then adjustments will be made to either obtain additional funding or the project will be re-scoped to the mutual satisfaction of all stakeholders. Partners will be notified of any excess funds after task award. Upon notification, partners have 30 days to choose, in collaboration with USGS, to have excess funds applied to a re-scoped or new task order. If Partners do not make a decision within 30 days, the excess funds will be returned to the Partners.

- 12) If data acquisition cannot be completed during a single season due to unacceptable capture conditions, then it is possible that the remaining AOI would be acquired during the next suitable collection window which may or may not be in the same calendar year.
- 13) If data is to be collected over military properties then DoD clearance may be required. Should unexpected restrictions affect access to data over military properties, then only federal funds will be applied to these areas.
- 14) Data acquired concerning federally recognized Tribal lands may not be published by the USGS if the Tribe objects in writing to public release of any products identified by the Tribe as sensitive protected information resulting from the lidar acquisition over their lands. All other project area data outside of the Tribal lands boundaries will be published. Collected sensitive protected information may be released to specific third parties where written permission is granted to the USGS by affected Tribes conditioned upon that Party agreeing not to distribute the identified sensitive data and (or) information publicly.
- 15) For agreements that are associated with, or become associated with Broad Agency Announcement (BAA) proposals for 3DEP projects prior to BAA selection, the execution of this agreement does not guarantee any commitment of USGS funds, nor does the execution of the agreement constitute greater consideration of any related proposal under the BAA selection process.

**U.S. Geological Survey United States  
Department of the Interior**

**New Hampshire  
Department of Transportation**

USGS Point of Contact

Name:	Dan Walters
Address:	USGS NGP 196 Whitten Rd Augusta, Maine 04330
Telephone:	(207) 776-1293
Email:	danwalters@usgs.gov

Partner Point of Contact

Name:	Glenn Davison
Address:	NH DOT 7 Hazen Drive P.O Box 483 Concord, NH 03302-0483
Telephone:	(603) 271-7145
Email:	GDavison@dot.state.nh.us

USGS Billing Contact

Name:	Janet Anselm
Address:	1400 Independence Road, MS 323 Rolla, MO 65401
Telephone:	(573) 308-3814
Email:	janselm@usgs.gov

Partner Financial Contact

Name:	Glenn Davison
Address:	NH DOT 7 Hazen Drive P.O Box 483 Concord, NH 03302-0483
Telephone:	(603) 271-7145
Email:	GDavison@dot.state.nh.us

Signatures and Date

Signature: **DAVID BROSTUEN** Digitally signed by DAVID BROSTUEN  
Date: 2020.10.16 08:52:13 -06'00'

Date: \_\_\_\_\_

Name: David A. Brostuen

Title: Acting Director, USGS-NGTOC

Signature: **Peter E. Stamnas** Digitally signed by Peter E. Stamnas  
Date: 2021.01.20 13:51:33 -05'00'

Date: \_\_\_\_\_

Name: Peter E. Stamnas

Title: Director of Project Development

**Joint Funding Agreement  
Signature Addendum**

**U.S. Geological Survey  
U.S. Department of the Interior**

Signature DAVID BROSTUEN Digitally signed by DAVID BROSTUEN Date: 2020.10.16 09:06:07 -05'00'  
Date \_\_\_\_\_  
Name David A. Brostuen  
Title Acting Director, USGS-NGTOC

**New Hampshire  
Department of Transportation**

Signature   
Date 1/20/21  
Name Peter E. Stamnas  
Title NHDOT - Director of Project Development

*Approval Attorney General  
(Form, Substance, Execution)*

Signature   
Date 11/25/20  
Name Renato C. Buroy Jr  
Title ASST COMMISSIONER

Signature Allison B. Greenstein  
Date 1/20/2021  
Name Allison Greenstein  
Title Assistant Attorney General

*Approval by the Governor  
and Executive Council*

Signature \_\_\_\_\_  
Date \_\_\_\_\_  
Name \_\_\_\_\_  
Title \_\_\_\_\_

Signature   
Date FEB 17 2021  
Name \_\_\_\_\_

**DEPUTY SECRETARY OF STATE**

October 15, 2020

## STATEMENT OF WORK

### 2021 New Hampshire Orthoimagery Acquisition

#### 1. Purpose

The United States Geological Survey (USGS) and New Hampshire Department of Transportation (NHDOT) will collaborate to acquire and conduct quality assurance on statewide high-resolution digital orthophotography covering the state of New Hampshire and extended to portions of Maine to capture the three (3) bridges that cross between New Hampshire and Maine and the Isle of Shoals. The area covered by this agreement is 9,692 square miles, representing a 1000' buffer around the State of New Hampshire (see Section 5) with full 5,000 x 5,000 ft tiles of 6in orthoimagery.

#### 2. General Terms

USGS will select a qualified contractor to perform the high-resolution digital imagery data collection and processing and data quality control (QA/QC) via the Bureau's Geospatial Product and Service Contract (GPSC). GPSC task orders are awarded to qualified contractors through federal government solicitation. Qualified contractors are selected for base contract award in accordance with Public Law 92-528 (Brooks Act) and FAR 36.6 - Architect-Engineering Services, which establishes a qualifications-based selection process, in which contracts for Architectural and Engineering services are negotiated based on demonstrated competence and qualification for the type of professional services required.

Contractor selection is based on the following 6 criteria:

- (1) Professional qualifications necessary for satisfactory performance of required services;
- (2) Specialized experience and technical competence in the type of work required;
- (3) Capacity to accomplish the work in the required time;
- (4) Past performance on contracts with Government agencies and private industry in terms of cost control, quality of work, and compliance with performance schedules;
- (5) Location in the general geographical area of the project and knowledge of the locality of the project and;
- (6) Acceptability under other appropriate evaluation criteria.

Level of effort is negotiated on each task order issued under the base contracts. This process is aligned with the Department's consultant RFP and selection process.

The Task Order issued by USGS to the selected GPSC Contractor provides full details regarding project collection requirements and resulting deliverables. A copy of the Task Order will be provided to the partner.

**USGS will:**

- Execute separate funding agreements with partners as shown in Section 2 of the JFA in support of the total project cost.
- Prepare a Task Order for agreed upon products and services.
- Prepare a Task Order for agreed upon data quality assurance and quality control (QA/QC) services.
- Serve as Government Point of Contact during the full period of the agreement.
- Require that all land surveys conducted in support of this project be performed under the supervision of a qualified professional land surveyor.
- Provide Quality Assessment Reports from QAQC Task Order and distribute to relevant project Points of Contact.
- Return data to contractor as needed for error correction/rework.

**Partner will:**

- Provide funding for the project as described in Section 2 of the JFA.
- Shall pay contract project costs plus applicable GPSC assessment fee which is calculated by USGS as 6% of the contracted project cost, not to exceed the amount specified in the JFA.
- Assist the USGS NGTOC in resolving project issues as needed and appropriate.
- Provide available information, including informal observations from interested parties, on ground conditions to facilitate project flight planning.

**3. Specifications and Deliverables**

Unless otherwise stated all specifications and deliverables will meet or exceed the U.S. Geological Survey Digital Orthoimagery Guidelines and Base Specification, v1.0. <http://pubs.usgs.gov/tm/11/b5>.

**General Requirements**

The project requires 4 band aerial imagery of the primary study area. The delivered imagery shall meet the following specifications.

**Environmental Conditions:**

- Season: Spring leaf-off and snow-out season of 2021 (4/1 – 5/1)
- Sun Angle: A sun angles greater than 30°.
- Clouds and Haze: Clouds, cloud shadows and haze will not be accepted.
  - Acquisition may occupy an additional season if necessary to ensure there are no occurrences of cloud or haze in the data.
  - The use of low altitude sensors is preferred to increase the likelihood of cloud and haze free conditions.
- Streams and rivers must be within their banks. No flooding conditions.
- NHDOT will be provided a copy of the final task order, to include schedules and deadlines. Delivery on an external hard drives, one set to NHDOT, the other to GRANIT.

**Imagery Specifications:**

- The horizontal spatial accuracy of the imagery shall be within +/- 2.5 feet CE95 of position on the ground. Orthoimagery shall meet or exceed this as defined by the FGDC Geo-positioning Accuracy

Standards, part 3: National Standard for Spatial Data Accuracy

(<http://www.fgdc.gov/standards/projects/FGDC-standards-projects/accuracy/part3/chapter3>).

- Color balancing shall be performed on each tile with as little loss of original data as possible. Any enhancements that may be deemed radical shall be detailed in the Final Report. In addition, a full seamless individual mosaic shall then be produced and used for visual assessment of the radiometric processing. This mosaic will also be part of the delivery package.
- Each band of imagery shall be delivered as no less than 8-bit binary data. The True Color Imagery will consist of 24 bit red, green, blue (RGB) imagery. Infrared bands will be in the near infrared wavelengths of the spectrum, preferably 835-885 nm.
- The imagery shall be processed to remove atmospheric effects such as haze and to highlight the spectral response of submerged areas.
- The imagery shall have a minimal exposure variation between adjacent flight lines.
- The 4-band imagery shall be tiled and named per the partner tile schema. Tiling scheme and naming convention to be provided by the partner. A small buffer (~100 m) shall be produced with each tile to prevent gaps in coverage. The tiles shall be in GeoTIFF format.
- The contractor shall capture the imagery at a spatial resolution (pixel size) of 0.5 feet x 0.5 feet.
- Two formats will be required; uncompressed GeoTIFF with a projection file, and a tile-based MrSID version using the same index as the TIFFs in a Gen4 version.
- The tile naming convention, tile size and tile index will be the same as the as the 2010 & 2015 NH statewide orthoimagery (Section C.1.b (vii)(b) & C.1.b (viii)(b) of the NH 2010 Task Order Specifications)
- The imagery shall be delivered in New Hampshire State Plane Coordinate System, NAD83 HPGN, US Feet.
- Area of Coverage: Flight area shown on attached map.
- Horizontal Datum: Horizontal.NAD83 HPGN.
- Vertical Datum: NAVD88 using the Geoid model 18 from the National Geodetic Survey (NGS) assuming there are no compatibility issues with NH state plane NAD83 spatial projection. Data to be delivered in orthometric heights.
- Alignment: Misalignment of transportation features between adjacent image chips/tiles shall not exceed 3 times the GSD.
- All orthoimagery shall have 95% (NSSDA Confidence Interval) of all well-defined points tested fall within the specified distance listed below of true ground.

**Project Deliverables:**

- Delivery will include tile-based uncompressed GeoTIFFs and a MrSid Gen4 version, and a MrSID Gen4 mosaic.
- Survey Control Report, Survey Checkpoints, QA/QC Assessment Project Report, project level and tile-based Metadata (based on New Hampshire provided sample text), Tile Indexes.
- Data to be delivered to the partners, NHDOT and GRANIT, on separate External Hard Drives.

USGS does not perform Quality Assurance and Quality Control (QA/QC) for orthoimagery acquisitions or derived products or services. QA/QC of these will be the responsibility of the partner if no task order for 3<sup>rd</sup>

party QA/QC is issued as part of this work. If any issues with the products or services are found by the partner within one year of data delivery USGS will pursue corrections on behalf of the partner.

USGS reserves the right but does not commit to publishing these additional products and services.

#### 4. Contacts

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5. Appendix A – Project Area Map

NH\_Ortho\_2020\_D20



**Legend**

 NH\_Ortho\_2020\_D20\_AOI



Coordinate System: NAD 1983 StatePlane New Hampshire FIPS 2800 Feet  
 Projection: Transverse Mercator  
 Datum: North American 1983  
 False Easting: 984,250.0000  
 False Northing: 0.0000  
 Central Meridian: -71.6667  
 Scale Factor: 1.0000  
 Latitude Of Origin: 42.5000  
 Units: Foot US

Date: 2/4/2020