

Scope of Work

Location: NAS Patuxent River (NDW)
Title: FY20 NAS Patuxent River Shoreline Bathymetry and Redesign
Period of Performance: 18 months after contract award
Project Manager/ Technical Point of Contact (PM/TPOC): Adrian Dascalu 202-433-2495

Contracting Officer:	Olisha Costa, NAVFAC Washington	202-685-1257
Activity Point of Contact(s) (APOCs):	NAS Patuxent River	Jacqueline Smith 301-757-0007

Introduction:

The contract of Natural and Cultural Resources Services will be a task order on a fixed price pre-negotiated contract between the Contractor and the Government to help increase compliance with Federal Regulations. The Contractor shall comply with all federal laws, such as but not limited to, the Clean Water Act (CWA), Coastal Zone Management Act (CZMA), Endangered Species Act (ESA), the Migratory Bird Treaty Act (MBTA), National Historic Preservation Act of 1966, as amended, Archeological Resources Protection Act of 1979, Archeological and Historic Preservation Act of 1974, National Environmental Policy act of 1969, Antiques Act, Historic Sites, Buildings, Objects and Antiquities Act of 1935, DOD Instruction 400.35, OPNAVINST 5090.1D, Executive Order 11593, 36 CFR 60, 36 CFR 61, 36 CFT 63, 36 CFR 229, 36 CFR 800, 43 CFR 7, United States Navy 3.01 Data Model, SDSFIE, NAVFAC Washington GIS Data Release form, the Sikes Act, as amended and others that are applicable to NAVFAC Washington installations. Specific tasks are listed below.

Background:

Severe erosion along the shoreline of Cedar Point at NAS Patuxent River has resulted in a loss of approximately 275 feet of shoreline since 1985. Stabilization efforts to the south of Cedar Point have halted erosion in that direction but have resulted in accelerated deterioration of the adjoining shoreline and point to the north. The original 2015 stabilization project was divided into three phases. Phase 1 would utilize 1,335 LF of breakwaters to stabilize the point of Cedar Point as well as 2,358 LF of revetment and sills extending southwestward along the eastern shoreline, up to the mouth of Goose Creek. Phase 2 consisted of approximately 5,173 LF of revetment that continued the eastern shoreline stabilization downwards from Goose Creek. The final section of stabilization, Phase 3, would continue the Phase 2 revetment for an additional 2,809 LF, ending at the Chesapeake Basin. Phase 2 has already been constructed. Since the implementation of the original design, the current stabilization measures have experienced elevation changes as well as underwater topography and stability. The scope of this project is to conduct surveys and bathymetry studies, re-evaluate existing site conditions for Phases 1 and 3, redesign the existing plans in order to account for environmental changes over the past 5 years, and to ensure successful future implementation of the remaining phases.

Specific Tasks:

Task 1: Kick-off Meeting/Site Visits

- i. Neither the Contractor nor any Subcontractor shall be onsite without proper coordination and notification to the Project Manager. One (1) week prior coordination is required before conducting a site visit or kick-off meeting.
- ii. Contractor Project Manager shall set up a kick-off meeting within 3 weeks after receiving the notice to proceed.
- iii. Contractor shall present a proposed schedule of critical project milestones, including a site visit schedule, and proposed working dates for discussion at the kick-off meeting.
- iv. Contractor Project Manager and any personnel conducting the tasks identified in this contract must attend the meeting so that they may be introduced to the personnel in charge of any restricted areas.
- v. Contractor shall provide meeting minutes within 5 business days of the meeting to the Government Project Manager.
- vi. Contractor Project Manager shall make themselves available for at least two (2) status update meetings during the life of this contract.

Task 2: Surveys and Bathymetry – Naval Air Station (NAS) Patuxent River Complex

The purpose of this task is to survey, analyze, and evaluate the current site conditions for Phases 1 and 3 of the shoreline stabilization plans.

- i. The Government shall provide the Cooperator with drawings, and schematics of previous shoreline restoration designs (attachment 1).
- ii. The Cooperator shall survey and evaluate the bathymetry, topography, bottom structure, and hardness of Phases 1. Phase 1 consists of approximately 3,873 LF of shoreline. The bathymetry/topography/bottom structure survey area is approximately 23 acres. Phase 1 requires the construction of breakwaters. The surveys shall cover an appropriate acreage of underwater substrate to fully account for the future construction LOD and placement of breakwater structures. The Cooperator shall consult the APOC and TPOC on the proposed survey methods.
- iii. The Cooperator shall survey and evaluate the bathymetry, topography, bottom structure, and hardness of Phase 3. Phase 3 consists of approximately 2,809 LF of shoreline. The bathymetry/topography/bottom structure survey area is approximately 3 acres along the shoreline. The Cooperator shall consult the APOC and TPOC on the proposed survey methods.
- iv. The Cooperator shall evaluate and provide a detailed analysis of current site conditions and potential challenges. The Contractor shall also provide recommendations on the most effective methods of tying the Phase 1 and 3 stabilization into the already existing Phase 2 revetment.

Task 3: Stream Restoration Redesign– Naval Air Station (NAS) Patuxent River Complex

The purpose of this task is to adapt the current designs and plans for Phases 1 and 3 to the new site conditions.

- i. The Government shall provide the Cooperator with drawings, and schematics of previous shoreline restoration designs (attachment 1).
- ii. The Cooperator shall review the Phase 1 and 3 design plans and update the drawings to reflect current site conditions. The topography, bottom structure and stability may have changed significantly since the finalization of the original design in 2015.
- iii. The Cooperator shall redesign the current Phase 1 and 3 plans in order to account for any elevation changes that have occurred since the construction of Phase 2. The Cooperator shall also factor in future possible elevation changes when generating the new designs and plans. The updated Phase 1 designs shall seek to enhance and maximize the value of beach and shoreline habitat.
- iv. A primary concern for this project is the flexibility to construct Phases 1 and 3 in separate sections over multiple years. Historically, constructing shoreline stabilization reaches in separate sections results in increased erosion and degradation in regions of shoreline that have yet to be stabilized. The Cooperator shall incorporate a degree of modularity into the design in order to allow construction of multiple stabilization sections while maintaining the effectiveness of the stabilization measures that are already in place or that will be constructed in the near future over multiple years.
- v. The Cooperator shall provide the updated designs to MDE and USACE for review and approval. The Cooperator shall address any regulatory feedback and concerns and adjust the design plans as needed. All correspondence between the Cooperator and State and Federal regulatory agencies shall be reviewed and approved by the TPOC and APOC prior to submittal.

Submittals:

Task Summary Report

Each task shall include an individual completed task report. The report will include information obtained through investigations and analyses conducted by the contractor. Maps identifying the location of any discovered sites will be included within the reports and may be used along with tables, figures, illustrations and photographs throughout the reports to more efficiently display site related information. All text, maps and illustrations must be of high quality and easily reproducible on standard or color copiers. Measurements and/or quantities identified within the reports prepared under this contract shall be displayed in English and metric units. The contractor shall produce draft and final GIS layers. Both shall be submitted on CD-ROM. Each submittal shall include two copies.

Safety Plans

Installation approved safety plans are required for this task order. The safety plans should address safety hazards associated with construction risks and risks associated with performing field surveys. Safety plans will adhere to EM-385 standards (Appendix B). Safety Plans shall be reviewed and approved by the respective installation Safety Officer prior to beginning work (the approval process will take approximately two (2) weeks from the date of submittal).

Progress Reports

The Contractor shall prepare and submit monthly progress reports via email to the Government PM. Monthly progress reports shall address: (1) tasks completed during the reporting period, (2) any problems encountered during the reporting period, and (3) tasks to be completed in the next reporting period. In addition, the monthly progress report shall include the percentage of work completed to date, contract number, report date and period, project name, and client name.

Document Requirements:

- A. Document Standards – The Contractor shall conduct reviews as needed to ensure that all deliverables are of high technical quality, meet Federal government and Navy standards for formatting, and are free of grammatical/spelling errors. All deliverables shall adhere to Navy instructions.
- B. Draft Reports – Draft reports are considered “drafts” only in the sense that they have not been reviewed and approved by the Government.
 - i. In all respects, draft reports shall be complete, free of grammatical/typographical errors, and coherently written.
 - ii. Printed on both sides of at least 25% post-consumer recycled paper with maximum spacing of 1.5 lines.
 - iii. Documents shall display numbered lines
 - iv. Logos properly displayed
 - v. Table of Contents
 - vi. References, including copies of applicable standards and regulations
 - vii. Glossary and acronym/abbreviation definitions
 - viii. Sections of the report shall be properly tabbed and organized
 - ix. Text on drawings and figures shall be legible
 - x. The draft report should be in both hard copy and CD copy in the original format (ie. Microsoft Word, Microsoft Excel, etc) in addition to PDF format.
 - xi. Diagrams and drawings should be in the original, executable format (ie. AutoCAD, GIS) in addition to PDF format.
 - xii. Alternatively, draft reports may also be submitted electronically in PDF format for review as directed the PM and SPOC. The electronic submission should also include the original, executable file formats (i.e. Microsoft Word, Microsoft Excel, AutoCAD, etc.).
 - xiii. Include all official Government correspondence to date, including but not limited to: scope of work, meeting minutes, memorandums, and contract documents.
 - xiv. Bound in a single, durable, hard cover notebook
 - xv. State and explain all assumptions.

- C. Final reports – The reports should incorporate all items listed under “Draft reports” and include Government comments with Contractor responses
- D. Submittal Distribution List – Deliverables shall have separate deliveries to the Government Project Manager and Activity POC.
- E. GIS Deliverables – The Contractor shall develop GIS compatible layers for all data collected in association with the requirements for this project. The Contractor shall submit the GIS data in accordance with the Naval District Washington Standards for Geographic Information System (GIS) Deliverables (Appendix A). Additionally, the Contractor shall coordinate with the installation GIS POC to ensure all data will be compatible with the NAVFAC GIS database.

Documents Required by Contractor:

- A. All documents referenced in this SOW or other requested documents will be provided as needed to the Contractor for purposes of completing proposal, initiating work, or for other reasons found necessary by the NAVFAC Washington Project Manager.

General Requirements:

- A. The contractor shall coordinate installation access and security passes with the PM and APOC.
- B. The Contractor shall manage the total work effort and assure full and timely completion of services required under this Scope of Work. Included in this function shall be a full range of management duties including, but not limited to, planning, scheduling, inventory, analysis, and quality control.
- C. The Contractor shall prepare and submit all required permits to the Contracting Officer via the Project Manager prior to the initiation of any fieldwork that requires permitting. The APOC shall be copied on all permit submittals.
- D. The Contractor shall comply with all applicable laws and regulations pertaining to the provision of safe workplace and to provide a work environment free of harassment and intimidation for such party's own employees and third parties.
- E. If applicable, the Contractor shall conduct literature review, field investigations and interviews with experts and authorities as necessary to accomplish the work described within this Scope of Work. The Contractor shall, in particular, attempt to contact and utilize information from the local U.S. Navy offices and other professionals who are experienced in technical requirements under this Scope of Work.

- F.** The Contractor shall comply with all applicable federal and state laws, such as, but not limited to, the Sikes Act, CWA, CZMA, ESA, the MBTA and State Historic Preservation Office (SHPO).
- G.** The Contractor shall ensure that the data obtained under the Agreement be scientifically defensible and suitable for publication. Methods of data collection and/or analyses shall be provided in the Contractor's required submittals. The US Navy, at its discretion, may subject draft reports or draft manuscripts to external peer review.
- H.** The Contractor shall inform, in writing (via email), the Contracting Officer (via the PM) intent to publish or present any data or findings resulting from activities/research completed under this Agreement. In addition to approval from the Contracting Officer and PM, permission from the installation Public Affairs Office must also be obtained prior to such publication or presentation.
- I.** The Contractor shall inform, in writing (via e-mail), the PM and APOC of any unusual activity observed while conducting surveys in the field (e.g. trespassers or person in unauthorized areas). Information should include location, date, time and detailed facts regarding the activity. In addition, information regarding trespassers should be reported to the Installation Security Office as soon as possible via the PM and APOC.
- J.** The Contractor shall allow, throughout the term of the Agreement, the PM and APOC the opportunity to periodically observe the Contractor's field activities, to review computer or paper files of raw data, prepared data (such as data analyses, summaries, maps, figures, tables, etc.), or any record deemed appropriate by the Contracting Officer in establishing the Contractor's performance in fulfilling the requirements of the Agreement.
- K.** The Contracting Officer, via the PM, may request updated data (presented on maps, figures and/or tables). The Contractor shall forward the requested data electronically within ten (10) days from the date of request. If the requested data cannot be provided within this time frame, the Contractor shall forward electronically the most updated raw data to the Contracting officer, via the PM. The US Navy understands that facilitating the requested most updated data may reduce the amount of work that would normally be accomplished during the period of time required to complete the request. The Contractor shall document the amount of efforts and its translated cost estimate that would have been incurred by the Contractor to complete the request for updated data. This document shall be electronically forwarded to the Contracting Officer (via PM) to review so that the US Navy will have a good grasp on the amount of work displaced that would have normally been accomplished during the period of time required to complete the request.
- L.** The Government will not be responsible for the loss of or damage to property of the Contractor, or for personal injuries to the Contractor arising from or incident to the use of Government facilities or equipment.

- M.** The Contractor shall indemnify and save harmless the Government, its officers, agents, servants and employees from all liability under the Federal Tort Claims Act (28 U.S.C. Sec 2671 et seq.) or otherwise, for death or injury to all persons, or loss or damage to the property of all persons resulting from the use of the premises by the Contractor. This covenant shall survive the termination of the Agreement.
- N.** In the event of damage, including damage by contamination, to any Government property by the Contractor, its officers, agents, servants, employees, or invitees, the Contractor, at the election of the Government, shall promptly repair, replace, or make monetary compensation for the repair or replacement of such property to the satisfaction of the Government.
- O.** The Contractor will be required to obtain insurance. All insurance required by the Agreement shall be in such form, for such periods of time, and with such insurers as the Contracting Officer may require or approve. A certificate of insurance or a certified copy of each policy of insurance taken out hereunder shall be provided to the Contracting Officer's local representative prior to use of the premises and facilities. The Contractor agrees that not less than thirty (30) days prior to the expiration of any insurance required by the Agreement, it will deliver to the Contracting Officer's local representative a certificate of insurance or a certified copy of each renewal policy to cover the same risks. Contractor shall furnish the insurance specified as follows and each policy of insurance covering bodily injuries and third party property damage shall contain an endorsement reading substantially as follows:
- i. The insurer waives any right of subrogation against the United States of America which might arise by reason of any payment made under this policy.
 - ii. NAVFAC Washington shall be given thirty (30) days written notice prior to making any material change in or the cancellation of the policy.
 - iii. The United States of America (Dept. of the Navy) is added as an additional insured in operations of the policy holder at or from premises designated under the Agreement and owned by the United States.
 - iv. This insurance certificate is for use of facilities under the Agreement.
 - v. Loss, if any, under this policy shall be adjusted with the Contractor and the proceeds, at the direction of the Government, shall be payable to the Contractor, and proceeds not paid to the Contractor shall be payable to the Treasurer of the United States of America.
- P.** The Contractor shall coordinate the work to be accomplished with the PM in the specified work area. In addition, the Contractor ensures all staff or personnel working under the Agreement shall not violate the Archeological Resources Protection Act, National

Historic Protection Act or the Endangered Species Act while completing work required under the Agreement.

- Q.** Unexploded ordnance may be encountered while conducting fieldwork. The Contractor shall not touch or attempt to pick-up any suspected ordnance. The Contractor shall place flagging in the general area of the ordnance and notify the APOC and PM of the exact location of the ordnance immediately. The contractor shall leave the work site and suspend all work activities until the appropriate installation personnel have assessed the site/ordnance and authorized work to resume.
- R.** The Contractor shall comply with all security rules, regulations, requirements, and day-to-day operational changes thereto. Unannounced changes to day-to-day operational procedures may, at times, prohibit the Contractor access to the project area. The primary use of the Installation is for its military mission. Without prior notice, designated areas may become closed to the activities of the Contractor. In some cases, due to operations or other circumstances, it may be necessary to deny the Contractor access to the Installation for short periods of time. In such cases, the Contractor will reschedule this work to the maximum extent possible. Should the U.S Navy require the Contractor to leave the Installation, for a period greater than thirty (30) days (such as in the case of a national emergency), the Agreement may be terminated by either party unless an alternative agreement is reached between the Contractor and the U.S Navy through a formal amendment of the Agreement. If the Agreement is terminated, the Contractor shall not bill for work not completed subsequent to the termination date of the Agreement.
- S.** Photography is restricted on the Installation. The Contractor is required to obtain permission from the U.S Navy prior to taking any photographs on the Installation. Only photographs of Agreement related activities will be permitted. Coordination to obtain a camera permit shall be conducted through the PM.
- T.** Access. All Contractors and Sub-Contractors shall submit a DBIDS Access Request form to the PM and APOC for long term project access. At the same time, all Contractors shall submit the SECNAV 5512/1 (DEPARTMENT OF THE NAVY LOCAL POPULATION ID CARD/BASE ACCESS PASS REGISTRATION) vetting form for all employees to the designated installation security POC for processing via the PM/APOC prior to being authorized for installation access. All Contractor Sub-Contractor employees approved for access shall be issued a DBIDS photo badge at the Main Installation Pass and ID Office. The DBIDS photo badge shall provide installation access from 05:00 to 20:00, Monday through Friday for the length of the contract. Each employee shall wear their badge over the front of the outer clothing. When an employee is no longer employed by the Contractor or Sub-Contractor, the employee's badge shall be returned to the Installation the same day. Failure to return the badge as required may be deemed a violation of the contract leading to immediate termination. Employee identification shall not be substituted for the station required badge. Alternatively, a temporary expected visitor pass may be issued to grant access if the contractors and/or

sub-contractors will be on site for less than 60 days. If necessary, the temporary pass may be renewed/extended as specified by installation policy.

- U. In order for personnel to access U.S Government property in an automobile, a valid driver's license, vehicle registration and proof of insurance are required. Copies of these documents shall be provided to the installation Security Office. All employees assigned to this job must be US citizens.
- V. Installation Permits. In addition to any regulatory required permits, the Contractor shall coordinate with the APOC and PM to obtain any installation specific permits (i.e. Dig Permits and Comprehensive Work Approval Permit (CWAP)) required prior to the initiation of any field work. Please be aware that CWAPs may take up to 14 days for approval and will be coordinated by the PM. The Contractor must adhere to any installation specific requirements regarding work approval process.
- W. Utilities. If necessary, in addition to using any government or utility company locating services available (i.e. Miss Utility), the Contractor shall utilize a qualified private utility locating service company to locate all underground utilities in the work area. Any markings made during the utility investigation must be maintained throughout the duration of the field work. The Contractor must physically verify underground utility locations by hand digging using wood or fiberglass handled tools when any adjacent exploration, excavation or construction work is expected to come within three (3) feet of the utility. The PM will provide current GIS data for utilities, however, these are not guaranteed and additional survey work required as described above.
- X. Any contact/discussion in regards to this project with regulatory agencies shall be initiated/conducted by the PM.

Security Requirements:

No classified information shall be presented in any document prepared under this Task Agreement. The Contractor shall not release any information regarding the project, particularly the results developed under this Task Agreement, to any Federal, State or local (public or private) agencies or organizations without permission of the Government.

Schedule:

Task 1	
Milestone	Date Due
Kickoff Meeting Task	CA+15 days

Task 2	
Milestone	Date Due
APP	30 days before start of task
Completed Surveys	CA+ 10 months
Draft Surveys Report	CA+ 11 months
Final Surveys Report	CA+ 12 months

Task 3	
Milestone	Date Due
Begin Draft Redesign	CA+ 13 months
Finalize Redesign	CA+ 16 months
Draft Overall Project Report	CA+ 17 months
Final Overall Project Report	CA+ 18 months

The Period of Performance completion date will be 18 months from contract award date.

APPENDIX: A - Geographic Information System (GIS) Deliverable Specifications:

The NAVFAC Washington GeoReadiness Center (GRC) is the single, authoritative source and distribution point for all geospatial shore installation data within the Naval District Washington (NDW) region.

1. Government Source GIS Data:

- a. The government shall provide a copy of any government-held GIS data required for the project to the contractor. All data shall be returned in the same format and structure unless the government specifies otherwise.
- b. A completed NAVFAC Washington GIS Data Release form is required for all data release.

2. Submittals, Government Review and Acceptance:

- a. All submittals shall be reviewed for structure and adherence to the required standards by an NDW GeoReadiness Program GIS Analyst before acceptance.
 - i. Review for accuracy and completeness according to the scope of work is the responsibility of the Project Manager or other designated subject matter expert personnel. NDW GeoReadiness, as part of the NAVFAC Asset Management Business Line, is not responsible for the accuracy and completeness of data acquired by other NAVFAC Business Lines, Navy organizations and commands.
- b. The government shall have two weeks to assess the submittal; the contractor shall then have two weeks to make any corrections and submit the final deliverable.
- c. All source code (ex. Python scripts, html files) and map files (ESRI ArcGIS (mxd)) shall be provided to the government.
- d. Failure to adhere to any of the stated delivery specifications could result in rejection of deliverables and nonpayment.
- e. Contractors should, at a minimum, submit data and documentation samples at 25% and 75% project completion to avoid the rejection of final deliverables.

3. GIS Data Specifications:

- a. **Data Structure:**
 - i. Unless specifically directed otherwise, all data shall be structured according to the current version of the Spatial Data Standards (SDSFIE) (4.x as of July 2019) in use by NAVFAC.
 - ii. The government shall provide a copy of the current data model implementation (specific GIS layers and any required associated tables) to the contractor.

- iii. **Data Format:** All data submittals shall be delivered in a version compatible with ESRI version 10.5. NAVFAC's GIS data is in **version 10.5 as of November 2019**.

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b. Data Collection and Attribution:

- i. The U. S. Navy Installation Geospatial Information and Services (IGI&S) GIS Data Collection Guide (DCG) provides the requirements for GIS data collection, extraction and attribution. The government shall provide a copy of the latest DCG to the contractor before GIS work begins.
- ii. As of November 2019, the DCG does not yet include Stormwater and several other types of GIS data. The government will provide the required direction for any data not covered in the DCG.
- iii. The contractor shall consult with the government GIS POC before populating attribute tables to ensure the results meet the scope requirements.
- iv. The contractor shall identify the classification, type, location, ID number, and any other necessary attributes (specified by the Government) for all new/updated/edited features.

c. Required Standard Attributes, including Metadata*

Refer to the DCG for the required attributes for each Feature Class.

This excerpt is typical for most, **see the DCG for complete list with definitions:**

- INSTALLATIONID
- FACILITYFK
- OWNER
- AREASIZE
- AREAUNIT
- DATERECORDED*
- CREATOR*
- DATECREATED*
- COLLECTIONSOURCE*
- LOCACCY*
- EDITOR*
- DATEEDITED*

d. Feature Class (Layer) Metadata:

Populate these elements for each layer in the ArcCatalog Description tab:

- TITLE: Current SDS version layer name
- TAGS: ex. vegetation, hydrology, roads, etc.
- SUMMARY (PURPOSE): Briefly describe the purpose of the data.
- DESCRIPTION (ABSTRACT): SDS 4.x layer definition
- CREDITS:
 - o Data Delivery Date

- o Contract #
- o Task Order Title
- o Company Name
- USE LIMITATIONS: Populate with *"For Official Use Only"*

4. Quality Control and Quality Assurance:

The contractor shall take all appropriate and needed QA/QC measures to ensure that data is complete, topologically correct, accurate, structured correctly, and formatted correctly per the scope of work and complete (to include):

- a. ****All data shall be visually inspected by the contractor before submittal to the government.****
- b. **The contractor shall add an attribute text field named "QA" to all GIS layer deliverables, and populate each with "Add", "Modify", or "Delete" as appropriate. This is necessary for the government to accurately and quickly evaluate the work.**
- c. The numbers of records for all joined tables shall match, or the specific unmatched records shall be identified and explained to the satisfaction of the government.
- d. **All domain constraints shall be adhered to, unless approved by the government, prior to submittal.**
- e. No erroneous overshoots, undershoots, dangles, intersections or slivers.
- f. All area type features shall be closed polygons.
- g. Line features shall be snapped together where appropriate to support networks. For example, do not break linear features for labeling or other aesthetic purposes.
- h. Lines shall be continuous and point features shall be digitized as points. For example, point features, such as manholes, shall not be drawn using only a circle (polygon) to represent its location.
- i. Digital representation of the common boundaries for all graphic features must be coincident, regardless of feature layer
- j. Geometric network connectivity shall be maintained for utility networks, where specified by the scope of work.

5. Field Collection

- a. Where field data collection is stipulated in the contract, the contractor shall utilize conventional and other methods, such as a total station, or Global Positioning System (GPS) in accordance with the applicable Geospatial Positioning Accuracy Standards published by the Federal Geographic Data Committee (FGDC).
- b. At a minimum, the contractor shall provide, resource grade GPS collection at an accuracy level of +/- < 1m and shall use differential correction to target accuracies of +/- .5 m.

- c. Where appropriate (as stipulated in the contract or as otherwise determined by the Government), the contractor shall use survey grade GPS, at an accuracy level of +/- 2 cm. Global Positioning System (GPS) data collection activities will be based on a post-processed environment using an accurately sighted base station. Base station files for post processing acquired locally (off-site CORS Continuous Operating Reference Station) will be verified for accuracy.
 - d. GPS data on the location of utility lines and other features shall be captured at a minimum every 50ft and at each turn or bend in the line and processed as a line feature type. GPS data on the location of utility points and other features shall be captured at the centroid of the feature unless signal obstruction or access prohibits; otherwise points will be captured at a uniform distance and direction from the centroid and the offset captured in the metadata for that feature. Data on polygon features shall be collected at every vertex of the feature and processed as a polygon.
 - e. All survey-grade data collected shall be provided to the Government in a digital format with an attached Survey Report identifying survey method, equipment list, calibration documentation, survey layout, description of control points, control diagrams, quality control report and field survey data.
 - f. A digital Survey Control Database (consisting of a survey marker database and a survey traverse database) will be produced for all survey control points established under this contract, including the horizontal and vertical order and coordinate location of each point.
 - g. Digitizing/Conversion: Where Digitizing/Conversion is stipulated in the contract, the contractor shall digitize/convert features from designated sources (including remotely sensed data, hardcopy scans and vector data) to support various GIS applications. Digitizing/conversion routines will insure that 90 percent of all features will measure within 0.01 inches when reproduced at the scale of original imagery or data source.
- 6. CAD Format Deliverables:**
- a. CAD drawings may be accepted as GIS deliverables, but only when specified as such in the scope of work.
 - b. All files must be accurately georeferenced and adhere to the requirements regarding the coordinate system, metadata, and the specified data Quality Control and Quality Assurance requirements.
 - c. The government shall specify whether files are to adhere to either the SDSFIE or A/E/C CAD standard.

Nothing Follows