



Federal Geodetic Control Subcommittee
Meeting, September 8, 2009

*Federal Geographic Data Committee
Federal Geodetic Control Subcommittee*



Agenda for September 8, 2009 Meeting:

1. Identify new Secretariat
2. Discuss FGDC overview
3. Present and discuss FY10 Plans
 Include discuss of MOAs such as NPS
4. Identify benefits from including other Agencies and stakeholders
 activities in FGCS activities
5. Open discussion about FGCS role

Attendance: Juliana Blackwell (Chair, FGCS & NGS Director), Nancy Doyle (Secretariat, FGCS), Ronnie Taylor (NGS Deputy Director), Kendall Fancher (Chair, Instrument WG), Bill Henning (Chair, Fixed Reference Station WG), Joe Evjen (Chair, Methodology WG), Renee Shields (Vertical Reference System WG), Larry Hothem (Spectrum WG), Tim Smith (NPS), Ajit Singh (NGS), Dave Doyle (NGS) and Christine Gallagher (NGS).

Key Issues:

- The FGCS Secretariat has been reassigned, so the position is open to NGS personnel. Interested parties should contact Juliana Blackwell.
- The FGDC Coordination Group is continuing to meet to define itself. The next meeting is September 9, 9:00am-noon.
- Working Groups were represented and provided the attached drafts of FY10 work plans and accompanying material (Hothem will submit a brief plan in the near future). Henning and Shields provided the attached updates to their working groups lists.
- Discussion was held of NPS projects for which justification could be found in the NOAA-NPS umbrella agreement signed this fall. Information on the two projects is attached, as well as the agreement. Other existing or possible MOAs could help FGCS find more opportunities for joint projects that would benefit all parties.
- A GRAV-D workshop to be sponsored by NGS in Boulder will be held October 21-23, 2009. It is an opportunity to reach out to other Federal agencies and international parties. FEMA will be meeting with NGS September 15 to discuss GRAV-D.
- Concern was voiced by Tim Smith and Ronnie Taylor about the required frequency government agencies must use for real-time GNSS receivers (410-430MHz) versus that used by others (450-470MHz). Larry Hothem is interested in hearing from others with similar problems, since he represents spectrum protection. NGS' Products and Services Committee will be determining whether traditional blue-booking is still necessary or whether methods under development, such as OPUS-Projects, can replace it.
- General concern over how to garner active participants from other agencies (besides NGS) was voiced. Larry Hothem mentioned that NGS and FGCS should be better represented at positioning and navigation (POS/NAV) and other such working groups or committees, and that this would help other agencies recognize the importance of FGCS. Many of the representatives

currently listed on the FGCS page are non-responsive. In specific, it was suggested that obtaining more participation from the Department of Homeland Security would be advisable.

- The next meeting should be scheduled for the second or third week of January.

DRAFT

FGCS FIXED REFERENCE STATION WORK GROUP 2010 WORK PLAN

National Geodetic Survey
FGCS Fixed Reference Station Work Group

Background:

The rapid growth of networks of active reference station infrastructure across the USA demands that standards, specifications and guidelines are available to ensure accurate, repeatable, homogeneous coordinates for geospatial professionals. At this writing, there are in excess of 80 real time active reference station networks (RTN) supplying GNSS data with sub-two second latencies in the USA and over 200 RTN world-wide. In addition to these, many national active stations (national CORS) are used to post process GNSS data in user and NGS supplied programs- such as OPUS-S, OPUS-RS and OPUS-DB.

The geodetic positioning community is transitioning from positioning primarily from passive monumentation to positioning using these active stations.

Objectives:

The basic mission of the Work Group is:

1. To prevent duplication of effort and facilitate the multiple use of GNSS reference stations to meet all Federal agencies' needs where possible.
2. To assure that reference stations produce positions compatible with the NSRS coordinate system, i.e., North American Datum of 1983 (NAD 83) at a certain accuracy.
3. To support the GPS Interagency Advisory Council (GIAC) by developing and providing required information concerning fixed reference stations.

The mission of the work group can be accomplished by reviewing existing documents, drafts and guidelines and also by garnering available technical information to support the crafting of new specifications, standards or guidelines.

Benefits or Justification/Legal Mandate:

As caretaker of the National Spatial Reference System (NSRS), NOAA's NGS, in collaboration with other federal agencies, is mandated to promote its use, including the use of active reference station networks, to maintain a cohesive, accurate, reliable three dimensional data base across the USA and its territories in support of all the geospatial positioning community. The rapid growth of these RTN operated by

public, private, academic and scientific agencies in a wide variety of applications, requires that the obtained data fit seamlessly together to prevent waste, damage, liability, loss of property or even loss of life. Furthermore, incompatible data from overlapping or abutting RTN could result in severe problems in surveying, engineering, agriculture, shipping, transportation, GIS, emergency management and national security.

Scope of Work:

- 1) Promote the work group membership to facilitate current and future work.
- 2) Review and comment on existing NGS draft guidelines on user best methods for real-time positioning in conjunction with the Methodologies work group
- 3) Collect and review existing specifications and pertinent information from other sources.
- 4) Review and comment on existing NGS draft guidelines on operating a RTN in conjunction with the Methodologies work group
- 5) Deliver proposed documents to the FGCS for review

Milestones, Schedule, and Budget :

| Action | Date | Who? | Others? | Budget |
|--|--|------------------------|------------------------|--------|
| Submit work plan to FGCS secretariat | By September 5th, 2009 | Bill Henning | | None |
| Fixed Reference Station Work Group meeting | Quarterly by teleconference, as required | Bill Henning | All Work Group Members | None |
| Comments on existing guidelines | Spring 2010 | All Work Group Members | | |
| Revise Charter | By 1/1/2010 | Bill Henning | | None |
| | | | | |

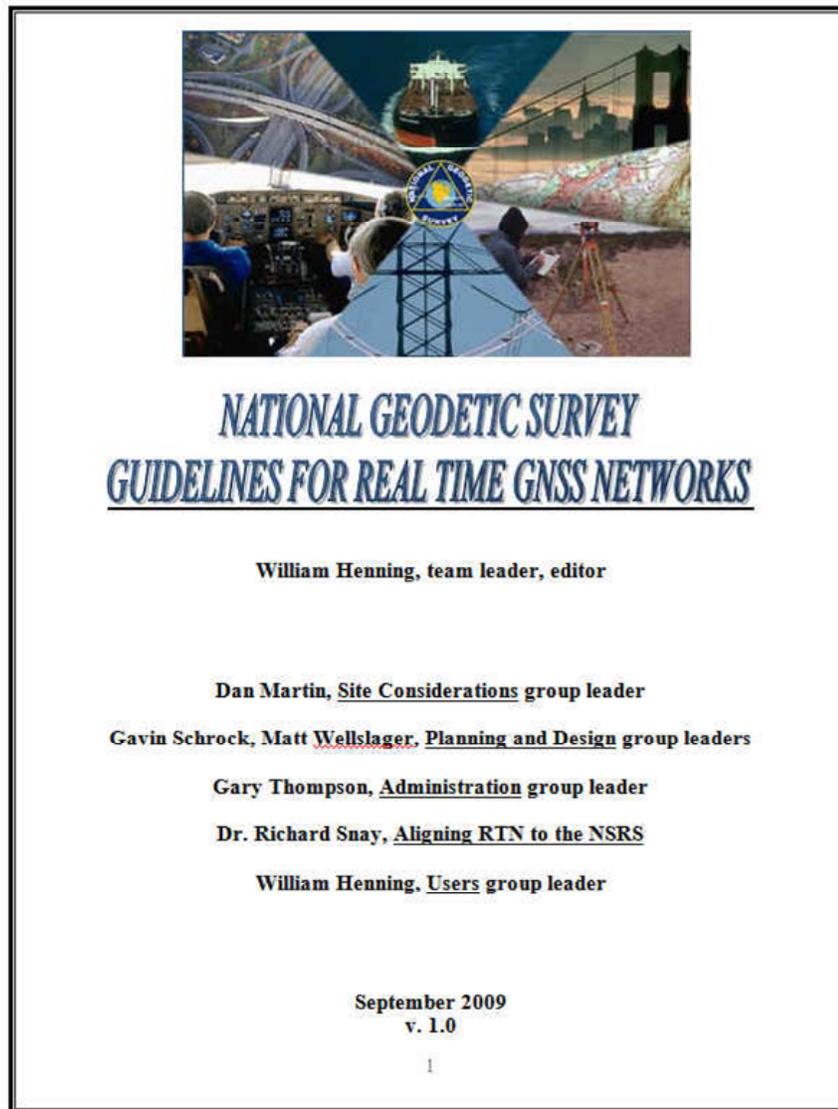
Performance Indicators:

Supporting documentation gathered and assimilated
Edits combined for existing guidelines
Draft report submitted to FGCS

Point of Contact:

FGCS Fixed Reference Station Chair:
 Bill Henning
 1315 East-West Highway, SSMC-3, N/NGS 21
 Silver Spring, MD 20910
 301-713-3196, ext. 111
William.henning@noaa.gov

FGCS FIXED REFERENCE STATION WORK GROUP



60 Individuals – NGS Advisors, DOT RTN Administrators, NC & SC Geodetic Surveys, SRCs, GNSS Manufacturers

AAGS Government Programs Committee review – December 2009?

NGS Internal Vetting October 2009

For FGCS Review – October 2009

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**FGCS INSTRUMENTS WORK GROUP
2010 WORK PLAN**

FGCS Instruments Work Group

Background:

Great technological advances have been made in surveying or positioning systems in recent years. Some of these new or emerging systems hold great promise regarding increased efficiency and improved precision in point data collection. It is important for the FGCS to investigate these new and emerging technologies to determine their potential for meeting agency objectives regarding point positioning.

Objectives:

The Instruments Work Group will investigate new and emerging surveying systems and report their findings to the FGCS.

Benefits or Justification/Legal Mandate:

Raise awareness of FGCS members of new and emerging surveying technologies.

Scope of Work:

- 1) Revise Instruments Work Group charter
- 2) Compile and categorize a list of new surveying technologies
- 3) Identify one new surveying technology to investigate.
- 4) Deliver findings in the form of a report to the FGCS for review
- 5) Update the Instruments Work Group Charter

Milestones, Schedule, and Budget:

| Action | Date | Who? | Others? | Budget |
|---|------------------------------------|------------------------|---------|--------|
| Submit work plan to FGCS secretariat | By September 5th, 2009 | Kendall Fancher | | None |
| Compile and categorize a list of new surveying technologies | By January 15 th , 2010 | All Work Group Members | | None |
| Investigate a new surveying technology | By June 1 st , 2010 | All Work Group Members | TBD | None |
| Report to FGCS on Investigation of a new surveying technology | By Aug 1 st , 2010 | Kendall Fancher | | None |
| Instrumentation Work | Quarterly by | All Work | | None |

| | | | | |
|----------------|--------------------------------|------------------------------|--|------|
| Group meeting | teleconference, as required | Group Members | | |
| Revise Charter | By 1/1/2010 | All Work Group Members | | None |

Performance Indicators:

Supporting documentation gathered and assimilated
Instrumentation evaluation test methods identified and carried out
Instrumentation evaluation data analyzed
Draft report submitted to FGCS

Point of Contact:

FGCS Instruments Work Group Chair:
Kendall Fancher
Chief – NGS/Instrumentation & Methodologies Branch
(540) 373-1243
kendall.fancher@noaa.gov

Current Instruments Work Group members:

NGS:
Steve Breidenbach
Charles Geoghegan
Dennis Lokken
Kendall Fancher
Mark Eckl

NPS:
Karl Brown
Tim Smith

NASA:
John LaBreque

BLM:
Mike Londe

USGS:
R Spengle
Larry Hothem

CENSUS:
Harold Saintelien

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FGCS METHODOLOGY WORK GROUP
2010 WORK PLAN

Background:

Methodology work group maintains survey accuracy standards & guidelines.

Objective:

Maintain NGS-authored FGDC & FGCS standards.

Benefits or Justification/Legal Mandate:

Contributor to FGDC Standards Work Group.

Scope of Work. :

- 1) Maintain required documentation (work plan, charter, standards).
- 2) Arrange meeting with USACE & other interested Federal partners.
- 3) Assist NGS team (R.Taylor et al.) to meet FGCS interest in bluebooking via NGSIDB vs. OPUS-DB methods and address concerns for evolution of passive control archive.

Milestones, Schedule, and Budget:

| Action | Date | Who? | Others? | Budget |
|---|---------------------------------------|-----------|--------------------------------|--------|
| Meeting with FGCS stakeholders re. OPUS-DB vs NGSIDB bluebooking, evolution | 30 Sep 2010 | R. Taylor | FGCS stakeholders | None |
| Maintain FGDC standards | 30 Sep 2010 | Evjen | All members review and comment | None |
| Submit work plan to FGCS secretariat | 05 Sep 2009 | Evjen | | None |
| Work Group meetings | Quarterly teleconference, as required | Evjen | All Work Group Members | None |
| Revise Charter | 01 Jan 2010 | Evjen | | None |

Performance Indicators:

- FGDC standard maintenance date reset
- Meeting agendas and notes
- Work plan submitted to FGCS
- Charter submitted to FGCS

Point of Contact:

Mr. Joseph Evjen, Chair
FGCS Methodology Work Group

National Geodetic Survey

Vertical Reference System Work Group Update

Federal Geodetic Control Subcommittee
Semi Annual Meeting

Silver Spring, MD
September 8, 2009

 National Oceanic and Atmospheric Administration

Renee Shields, Chair, VRSWG
Height Modernization Manager,
National Geodetic Survey

National Geodetic Survey

VRSWG Status Report

- Membership – no further progress reaching possible candidates. Providing updates to Nancy Doyle for web site contact list.

 National Oceanic and Atmospheric Administration

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VRSWG Status Report

- Outreach
 - Local: numerous state forums and briefings, including meetings in NJ and DE
 - Regional:
 - Central and Gulf Coast have had some forums
 - SE Region meet every 6 months
 - Great Lakes has really been the star, with teleconferences every other months, forums and workshops every 6 months, with each state in Region taking a turn at hosting.



VRSWG Status Report

- Outreach Planned
 - Forums
 - National: Hoping to hold a Federal forum Spring of 2010. Likely here in DC area.
 - Regional: 2 forums planned for Alaska (Fairbanks, Anchorage); New England Surveyors conference in NH in December
 - GRAV-D Symposium planned for Boulder in Spring. Have international participation.
 - Need to begin developing papers for trade magazines to prepare for new vertical datum



VRSWG Status Report

- Guidelines, Models, Tools
 - GEOID09 – complete
 - GRAV-D – Gulf Coast complete, much of AK done (Hydropalooza); lots of data but we have not seen a report on the processed results
 - Other products:
 - LOCUS – vertical version of OPUS, for leveling data; Complete and in review by NGS Products and Services Committee
 - Jim Tomlin has created group to evaluate publication priority algorithms for selection of heights for datasheets



VRSWG Status Report

- Guidelines, Models, Tools
 - Digital level tool – TAMUCC now working on Topcon level; has yet to get info from Trimble for their digital level
 - OPUS Projects – Mark Schenewerk continues to make progress.



FY10 Action Plan

- Federal symposium
- Coordinate with GRAV-D team for outreach opportunities
- Draft technical document on future of vertical datums in the U.S.
 - Develop list of questions technical publication should address – NGS constituents and partners for input
 - Contributing writers identified to draft sections of publication
 - Document will be basis for future whitepapers, articles, reports



Questions

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VERTICAL REFERENCE SYSTEMS WORK GROUP

ACTION PLAN

October 1, 2009 – September 30, 2010

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1. Maintain communications with international community (Mexico, Canada) with regards to Vertical Reference Frame issues at common borders.
 - a. Canadian participation in Great Lakes Regional Height Modernization meetings encouraged
 - b. Canadian participation in annual Alaska Surveying and Mapping Conference, Feb 22-26, 2010
 - c. GRAV-D and geoid model group are in active dialog with Canada; possible participation in GRAV-D symposium planned in Boulder in October
2. Continue to build membership in Work Group.
 - a. Not successful yet likely because of no meetings held. Federal forum in Spring (see below) should provide opportunity to solicit more participation.
3. Develop technical document on the future of vertical datums in the U.S. Document will be starting point for other white papers, 1-pagers, and articles addressing issues related to Vertical Reference Systems. Document will include Case studies highlighting today's issues and how a new vertical datum will support those applications.
 - a. List was developed in preparation for workshop presented at ACSM 2009 in Salt Lake City. This will become the starter list.
 - b. Technical document will be the basis for guidance for NGS partners to focus their activities in a direction that will support the transition to the new vertical datum. HM Partners are asking for this kind of guidance.
4. From technical publication in 3, topics for other papers and target audiences will be identified, including but not limited to:
 - a. What will be the impact of a new vertical datum. i.e. What will various agencies need to do to implement a new datum, and what will the roles be for each agency.
 - b. Develop presentation material aimed at managers and other agencies.
 - c. Target 2-3 papers for publication by end of FY2010.
5. VRSWG will reconvene quarterly, currently planned for the first Thursday of each 3rd month, beginning with October 1, 2009, from 10:00-11:30. If necessary, additional meetings will be held more frequently.

Current Vertical Reference System Work Group members

| | | | | |
|----------------------------|--|-----------|-----------------------|--------------|
| Ms. Renee Shields | Renee.Shields@noaa.gov | DOC-NOAA | 301-713-3231x116 | 301-713-4324 |
| Mr. Ajit Singh | Ajit.Singh@noaa.gov | DOC-NOAA | 301-713-3182 x109 | 301-713-4327 |
| Ms Theresa Singh | theresa_singh@usgs.gov | DOI-USGS | 303-202-4240 | 301-202-4219 |
| MR. James A. Slater | slaterj@nga.mil | DOD-NGA | 301-227-2899 | 301-227-4749 |
| Dr. Dru Snith | Dru.Smith@noaa.gov | DOC-NOAA | 301-713-3222 x144 | 301-713-4175 |
| Mr. Bill Belton | wbelton@fs.fed.us | USDA | 202-205-1428 | 202-205-0861 |
| Mr. Dave Doyle | dave.doyle@noaa.gov | DOC-NOAA | 301-713-3178 x 117 | 301-713-4324 |
| Dr. Dan Roman | Dan.Roman@noaa.gov | DOC-NOAA | 301-713-3202 x 161 | 301-713-4176 |
| Mr. Jason Woolard | jason.woolard@noaa.gov | DOC-NOAA | 301-713-0665 | 301-713-4572 |
| Mr. Tom Landon | thomas.landon@noaa.gov | DOC-NOAA | 301-713-2897 x 191 | 301-713-4435 |
| Mr Paul Rooney | Paul.Rooney@dhs.gov | DHS-FEMA | 202-646- 3123 | |
| Mr. James Garster | garster@tec.army.mil | DOD-TEC | 703-428-6766 x2482 | 703-428-8176 |
| Mr. Larry D. Hothem | lhothem@usgs.gov | DOI-USGS | 703-648-4663 | 703-648-4165 |
| Mr. Karl Brown | karl_brown@nps.gov | DOI-NPS | 970-225-3591 | 970-225-3585 |
| Mr. Don Buhler | dbuhler@wo.blm.gov | DOI-BLM | 202-452-7781 | 202-452-7708 |
| Ms. Sally L. Frodge, | Sally.Frodge@ost.dot.gov | DOT - FAA | 202-267-7040 | |
| Mr. Donald Draper Campbell | dcampbel@fcc.gov | IND-FCC | 202-418-2405 | 202-418-1918 |

GENERAL AGREEMENT

Between the

National Oceanic and Atmospheric Administration U.S. Department of Commerce And the

National Park Service
U.S. Department of the Interior

I. PARTIES AND PURPOSE

- A. The National Oceanic and Atmospheric Administration, in the U.S. Department of Commerce, and the National Park Service, in the U.S. Department of the Interior, share common goals of conserving the natural and cultural resources and recreational values of oceans, coasts and uplands and of enhancing scientific and public understanding of the ecological, climatic, and oceanographic processes that affect these resources. Both agencies are confronting increasingly complex and profound impacts to these resources and processes caused by climate variability and change, cumulative uses and degradation of marine resources, development of land and water resources, and other factors. This Agreement will serve the conservation, management, educational and scientific mission of both agencies, by enhancing interagency partnerships and communication on these mutual goals and interests.
- B. The mission of the NPS is to preserve the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future generations. The NPS cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world. The NPS has significant ocean and coastal stewardship responsibilities in 74 units of the National Park System that contain and interpret ocean and Great Lakes resources, and significant land, water and cultural resource stewardship responsibilities across all 391 units of the National Park System. The National Park System receives more than 274 million recreation visits per year and accounts for more than \$11.7 billion in economic benefits to local communities.
- C. The mission of NOAA is to understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs. NOAA is an agency that enriches life through science, service, and stewardship as it works to keep citizens informed of the changing environment around them in every state and territory of the Nation and many other nations.

D. The agencies recognize that cooperative efforts will mutually enhance their abilities to achieve their organizational missions. This General Agreement (Agreement) is intended to:

1. Articulate and establish formal working relationships to provide the means for cooperation that can be carried out at national, regional, and local levels;
2. Facilitate inter-agency communication and coordination of programs on an immediate and continuing basis; and
3. Provide a means to share knowledge, resources, and staff, consistent with the authorities and missions of the Agencies.

II. AUTHORITIES

This Agreement is entered into under the authorities of various statutes, including but not limited to the National Park Service Organic Act (16 U.S.C. 1, et seq., as amended and supplemented); the National Marine Sanctuaries Act (NMSA; 16 U.S.C. 1431, et seq., as amended and supplemented); the Coastal Zone Management Act (CZMA; 16 U.S.C. 1456c, et seq., as amended and supplemented), Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801, et seq., as amended and supplemented), Fish and Wildlife Conservation Act (16 U.S.C. 2901, et seq., as amended and supplemented), Endangered Species Act (16 U.S.C. 1531, et seq., as amended and supplemented), Marine Mammal Protection Act (16 U.S.C. 1361, et seq., as amended and supplemented), Weather Service Organic Act (15 U.S.C. 313, et seq., as amended and supplemented), National Climate Program Act (15 U.S.C. 2901, et seq., as amended and supplemented).

III. STATEMENT OF WORK

A. Outcomes and Strategies

The Agencies, while recognizing individual agency mandates, will form a working partnership to achieve a higher level of public and scientific understanding and resource stewardship through effective interagency coordination. To this end, consistent with their statutory authorities and responsibilities, the Agencies should share technical expertise, knowledge, and resources in areas where the Agencies share mutual scientific interests, resource stewardship concerns, and educational goals. Whenever feasible and within the budgetary constraints of each agency, the following outcomes should be sought:

1. *Scientifically assess and promote the conservation of coastal and marine fauna, flora and habitat resources, including threatened and endangered species and species of concern, and address impacts of aquatic invasive species.* NOAA and NPS seek to restore and conserve assemblages of coastal and marine fish, mammals, and invertebrate species, and ecological processes and communities, in the face of fisheries declines and the loss of ecological functions and recreational 2

opportunities in many ocean and coastal parks and neighboring areas. The Agencies further seek to address the profound impacts caused by introductions of harmful exotic species to the biodiversity, ecological integrity, and economic value of ocean and coastal resources. Finally, the Agencies seek to protect threatened and endangered species and species of management concern that utilize coastal and ocean parks and adjacent areas for habitat and foraging grounds. Accordingly, the Agencies agree to develop and implement the following:

- a. Science-based assessments to characterize the distribution, abundance, and status of living marine resources in and around parks and adjacent state and federally managed and protected coastal and marine areas, along with anthropogenic (human) use data in these environments, to evaluate ecosystem and species responses to management and restoration actions over time;
- b. Dependent and independent studies of fisheries, and social scientific surveys of human uses, with the goal of promoting the recovery of coastal and marine ecosystems, and long-term sustainability of fishery resources and the related services they provide;
- c. Early detection mechanisms for potential introduction of coastal and marine invasive species, rapid response strategies to control these invasions, and outreach and education efforts to prevent potential introductions from recreational and commercial activities and other vectors;
- d. Collaboration with other federal agencies, states, academia, and private partners as appropriate, to develop joint coastal and marine research, assessment, monitoring, and education to meet these priorities;
- e. Management and restoration actions to utilize the potential for NPS units to aid in the recovery of threatened and endangered species and species of management concern.

2. *Increase cooperation to acquire observations and to develop and deliver climate information, products, and services.* Understanding historical, contemporary, and projected patterns in climate is crucial for research and management goals of parks. Climate variability and change, particularly rapid or abrupt change, presents significant threats to natural and cultural resources, coastal communities, and to infrastructure managed by the NPS and NOAA. This Agreement should foster a collaborative effort between NOAA and NPS to develop, identify, and facilitate the use of climate observations, data, information, forecasts, and projections to contribute to the preservation, enjoyment, and interpretation of the human and natural resources of the United States. The NPS identified that parks can serve as important "listening posts" for climate change, a goal that would be 3

supported through collaboration with NOAA by coordinating between NPS measuring sites, the modernization of the Historical Climatology Network (HCN), and the NOAA Climate Reference Network (CRN).

a. Climate data management and access. The Agencies agree to develop implementing agreements to provide for collection, management, access to, and delivery of useful climate data, information and knowledge to accomplish their missions. The agreement(s) should identify appropriate collaborations and establish specific goals with roles and responsibilities for effective climate data management and access.

b. Applied research in climate variability and climate change. As the science progresses, NOAA and the NPS agree to collaborate to identify applied climate variability and change products and services, which may include assessments, syntheses, communication products, and decision support tools for managing parks. Due to the mission responsibilities of both Agencies, the coastal regions of the United States are a possible starting point for collaboration. The initial goal is to assess and articulate how NOAA and NPS climate data, information, research, and services can assist NPS, NOAA, and their partners, in meeting their mission responsibilities. Once this is determined, the Agencies intend to enter an implementing agreement(s) establishing specific goals with roles and responsibilities for effective development, use, and evaluation of climate information and services.

1. *Produce maps and digital geospatial data on coastal and marine habitats and ocean circulation.* The Agencies recognize that maps and digital geospatial data describing the type, geographic extent, and condition of benthic and open water habitats are critical to effective ecosystem-based monitoring and management of ocean and coastal park resources. Additionally, maps and circulation models of currents, tides and waves predict distribution and transport of marine and estuarine species, oil spills and pollution, and improve understanding of sediment transport and geologic processes around islands and coastal features as they relate to sea level rise and other impacts. The NPS should work with the NOAA to identify necessary mapping products and decision tools for benthic habitats and for understanding coastal processes in and around park units. The NOAA should build on existing habitat mapping and biogeographic assessments and seek to expand coastal circulation mapping to provide these maps and tools, in collaboration with public and private partners. The NPS and NOAA should work together and with other agencies to develop and maintain standards for these data, including ecological classification standards for coastal and marine habitats, control and dissemination of sensitive data pertaining to submerged cultural resources, and geodetic information under the National Spatial Reference System.

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1. *Expand public awareness and education of ocean and coastal resources.* In order to strengthen public awareness and education regarding ocean and climate science and stewardship responsibilities of the public and resource managers, the Agencies should work together to inform and educate visitors, interested parties, constituents, media, students, and the general public. The Agencies should develop media, educational, and information products to interpret natural and cultural resources in parks and climate and ocean science issues. The NPS and NOAA should disseminate these products through their organizations, through schools and academia, and through public and private media distribution channels.
2. *Implement existing agreements regarding marine area management.* The NPS and NOAA should continue and expand implementation of existing agreements to strengthen their organizational capacity to collaboratively conserve marine managed areas, including but not limited to, the August 2006 "*General Agreement Among the National Marine Sanctuary Program and Estuarine Reserves Division, NOAA, U.S. Department of Commerce and the NPS and Fish and Wildlife Service, Department of the Interior,*" (NOS Agreement Code: MOA2006-036/7196), and the August 2005 "*Memorandum of Agreement/or General Enforcement*" entered into by NOAA's National Ocean Service and National Marine Fisheries Service and the Department of the Interior's National Park Service and Fish and Wildlife Service (NOS Agreement Code MOA-2005021/6876; and " *DOC Department Organizational Order DOO 25-5.* "
3. Create greater efficiencies in the use of law enforcement resources. The DOC, NOAA, National Marine Fisheries Service (NMFS), through the Office of Law Enforcement (OLE) and the DOI, through the NPS, while recognizing individual agency mandates, should form a working partnership to create greater efficiencies in the use of law enforcement resources that may serve to enhance compliance with marine resource related laws and regulations that may otherwise have been achieved by the Agencies working independently, while establishing site-specific enforcement partnerships among staff and offices responsible for nearby, adjacent, or overlapping refuges, sanctuaries, and parks. The Assistant Administrator for Fisheries shall be responsible for enforcing laws and regulations regarding the protection of fisheries, marine sanctuaries, marine mammals, endangered species, and all other NOAA laws and regulations.
4. Build upon existing agreements and collaborative programs regarding submerged cultural resources. For more than thirty years, the NOAA and NPS have worked cooperatively to locate, study, manage, and interpret valuable elements of our nation's maritime history and cultural heritage for the American public, such as shipwrecks and other submerged resources in the National Park System, the National Marine Sanctuaries, and other sites. The NPS and NOAA should continue and expand these collaborations while seeking opportunities for joint projects and programs that build upon the individual strengths, capabilities and mandates of each agency.

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B. Implementation

1. The Agencies should immediately identify points of contact (POCs) at the national level for inter-agency coordination in the dissemination and implementation of this Agreement.
2. The POCs should facilitate this Agreement by identifying national, regional and site level personnel to participate on working groups that should develop detailed plans to achieve the outcomes and strategies for priority issues enumerated under Section A of this Agreement. Other public and private partners should be included as appropriate. Interagency working groups, as appropriate, should be formed within sixty days of signature. Their recommendations should be included in the first year evaluation as required in Sec. III.C.
3. The POCs should identify each Agency's review and clearance personnel that are needed in order to clear any proposed actions that require a review (i.e., interagency transfer of funds). This shall include General Counsel, Responsible Program Managers, and Signatory authorities. The POCs should develop estimates for the time needed to complete internal review and clearance, so that field staff are aware of this for planning purposes.
4. The POCs should identify existing activities already underway that reflect the priorities in this Agreement, to take advantage of immediate opportunities for exchanging resources and to learn from experiences.

C. Evaluation

1. The Agencies' POCs should confer annually to evaluate the progress of the implementation of this Agreement. Factors to be considered for measuring the effectiveness of this Agreement should include:
 - a. Results and outcomes of cooperative efforts to share resources and expertise among the Agencies;
 - b. Products or outcomes from the working groups, including detailed plans, joint pilot projects, and sub-agreements to achieve these plans or projects under this Agreement; and
 - c. Progress toward mutually agreed upon national, regional, and site level priorities and projects as identified the prior year.
2. The annual evaluation should provide a brief written report, provided by the POCs for further processing within DOC and 001, that:
 - a. summarizes the conclusions of the discussion;

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b. makes reconunendations for improving implementation of the Agreement as may be identified; and

c. identifies the next year's priorities for cooperation and coordination

IV. FINANCIAL ADMINISTRATION

— . Perfornance of the activities outlined in this Agreement is subject to the availability of appropriated funds.

— . This Agreement does not authorize the transfer of funds. If future activities require the transfer of funds, a Support Agreement to this Agreement will be entered into by the Agencies involved in the transfer of funds (since there are only two Agencies, there would not be an instance when one or the other was not involved.) The Support Agreement must include a detailed statement of work, estimated budget, legal authorities, and all required OMB fiscal data and be executed by the Agencies involved in the transfer of funds. Each agency will fund its own activities and personnel.

— . V. DURATION, MODIFICATION, AND TERMINATION

— . This Agreement will become effective upon the completion of signatures of the approving officials and will remain in effect for five years from the date of the last signature, unless terminated pursuant to Subsection 3 of this section. The parties will review this agreement at least once every three years to detennine whether it should be revised, renewed, or canceled. (Because Support Agreements cannot extend past the expiration of the underlying Agreement, I reconunend extending this one ten years, if possible.)

— . This Agreement may be amended within its scope, or extended prior to its expiration through written approval of each Agency.

— . Any Agency may tenninate its participation in this Agreement with 90 days written notice to the other Agency.

VI. OTHER PROVISIONS

1. Nothing herein is intended to conflict with current DOC or DOI regulations, directives, or policies. If the tenns of this Agreement are inconsistent with existing regulations, directives, or policies of either of the Agencies, those portions of this Agreement that are determined to be inconsistent shall be invalid but the remaining terms and conditions not affected by the inconsistency shall remain in full force and effect. All necessary changes will be accomplished by either a modification to this Agreement or by execution of a new agreement.

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1. Should disagreement arise on the interpretation of the provisions of this agreement, or amendments and/or revisions thereto, that cannot be resolved at the operating level, the area(s) of disagreement shall be stated in writing by each party and presented to the other parties for consideration. If agreement on interpretation is not reached within thirty days, the parties shall forward the written presentation of the disagreement to respective higher officials for appropriate resolution.

BY: _____
Dr. Jane Lubchenko
Undersecretary of Commerce for Oceans and Atmosphere
DATE: JUN 22 2009

ACCEPTED AND APPROVED FOR THE DEPARTMENT
OF THE INTERIOR NATIONAL PARK SERVICE

BY: _____
Daniel N. Wenk
Acting Director

Scope of Work for PMIS 155443

Title: Map Predicted Sea Level Rise Impacts on Park Resources Using Geodetic Ground Control Points for NER Coastal Parks

Overview:

This project assesses the impacts of predicted sea-level rise (SLR) on coastal parks in the Northeast Region and makes possible future high-accuracy mapping throughout the National Park Service by developing the requisite data infrastructure and field protocols.

The results of this project will have major benefits from three independent perspectives. For the coastal parks in the Northeast Region (NER), the primary results of this project would be to comprehensively and accurately map predicted sea level rise in relation to specific park resources and settings. This project will also support other ongoing high accuracy mapping in the coastal zone. Benefits to all National Parks include an enterprise computer application providing access to the all data on geodetic monumentation for all parks, as well as the development of protocols for high accuracy mapping throughout the NPS. From a national perspective, this project will enhance and strengthen the National Geodetic Survey (NGS) network of monuments that are used by public, private and commercial entities throughout the country.

Problem Statement:

Widely circulated reports of predicted sea level changes associated with climate change suggest that coastal regions of the northeastern United States will see water levels rise between 7 and 74 cm. Although results vary with the model used and the values given the input parameters, the preponderance of evidence suggests that coastal parks will be significantly affected by long term inundation as well as that associated with storms. The results from both global and regional models as well as simple local “bathtub models” of sea level rise delineate dramatic decreases in terrestrial area. Many highly valued natural and cultural resources as well as park infrastructure will be affected. Managers in coastal parks need to know which resources are likely to be impacted under different scenarios so they can plan mitigation and adaptation strategies.

There are currently two major issues adversely impacting our ability to make accurate and comprehensive assessments of SLR impacts on the coastal parks. The first is a discrepancy in the precision between sea level rise predictions and park resource elevation data. The second is the difference of scale between most sea-level rise models, which are typically applied at a regional scale, and the anticipated impacts at the local scale, where landscape setting and other local factors must be taken into account. These two issues make it difficult to credibly assess the effects of changing water levels on either site specific resources or at a broader scale in the coastal zone parks. The proposed project resolves these issues, in the first case by using a far more precise source of elevation data, geodetic monumentation, and in the second case by utilizing SLR models that operate on a local scale appropriate to the coastal National Parks of the Northeast.

**Department of the Interior Project Proposal
To the Position, Navigation and Timing Executive Committee**

**Real Time Navigation and Positioning
With HA-NDGPS and RTNs**



**Department of the
Interior**

SUMMARY

The Nationwide Differential Global Position Service (NDGPS) has been designated a national utility and will continue to provide a valued service for all GPS users. NDGPS as it is presently configured supplies code-phase correction information to the user. In the future, it has the potential to provide dual frequency carrier-phase corrections in real-time. Theoretically, dual frequency, real-time corrections should provide the user with several centimeters of precision but there have been very few field tests completed using existing HA-NDGPS sites. This project is designed to systematically observe GPS locations using high accuracy, real-time differential GPS augmentation techniques for navigating and positioning in real world environments. It will build on previous equipment testing projects conducted by the Interagency GPS Challenge Team. We will compare at least two different methods of high accuracy augmentations to the GPS system and the associated equipment that provide field operators with real-time, 10 cm. or better accuracy. Traditional means of scientific investigation and analysis will be used, focusing on accuracy and precision. Reporting for the project will include equipment lists, methods and recommendations for achieving the desired survey results. This funding request to the Position, Navigation and Timing Executive Committee is for a total of \$65,000.

PROPOSAL

This proposal is for a project to observe, collect, analyze, and report on real time navigation and geospatial positioning using High Accuracy National Differential Global Positioning Service (HA-NDGPS) and Real Time Networks (RTN).

Thousands of federal civilians throughout the U.S. are using GPS for hundreds of applications in support of government programs and activities, often in challenging environments and sometimes in dangerous environments. Since a large part of the surface area of the U.S. and U.S. territories has topographical relief, earth cover, and/or climate factors that can effect real time navigation and positioning, it is important to provide operational guidance based on actual observed performance of GPS and GPS augmentations.