January 15, 2008

MEMORANDUM FOR: Michael C. O'Hargan
Chief, Field Operations Division

FROM: Michael W. Szabados
Director, Center for Operational Oceanographic Products and Services (CO-OPS)

SUBJECT: 2008 Project Instructions – Coastal and Great Lakes Water Level Station Components

The enclosed document, "Project Instructions: Installation, and Maintenance of Coastal and Great Lakes Water Level Stations for 2008," is forwarded for implementation.

The Project Instructions are divided into three parts. PART A, General Requirements, and PART B, Standing Project Instructions for the Coastal and Great Lakes Water Level Stations, Updated March 2007, are applicable to all stations. PART C, Specific Requirements, addresses NWLON and subordinate station project support, specific categories of priority work, and individual station requirements. These instructions apply to both the coastal "sea level" and Great Lakes water level stations.

PART B, the Standing Project Instructions, provides general requirements essential for maintenance of station integrity and the collection of high quality data for the National Water Level Program, and does not reflect changing budget situations in CO-OPS. These instructions apply to all types of stations and all field parties - FOD and contractor. The requirements are explicit; actual accomplishments at each station will be governed by available resources throughout the year.

PARTS A and C provide background information and list individual station requirements. An Excel file, 2008 Station Operational Lists, has been prepared to replace the pages of priority lists and stations supporting various programs such as PORTS®, hydro, international treaties, tsunami/storm surge, or COASTAL. The list also groups the stations according to the NOAA mission goals they support. Counters are provided at the end of the list to indicate the number of stations supporting each type of project as well as the groupings of NOAA mission goals. The specific requirements for each station in PART C, Section 2.0; have been prioritized in descending order of importance. Field personnel will accomplish as many of the requirements as possible based on the order listed in PART C, Section 2.0.

FOD shall perform maintenance activities at stations, based on the available resources, for the directed priorities in descending order as described here: PORTS® and navigational safety, stations providing tsunami support, international treaties, new or relocated station installations, stations not receiving a complete maintenance visit during the previous year or years, and stations with a malfunctioning primary or backup sensor. The 2008 Station Operational Lists provide information about all the various projects and mission goals that each station supports; this will serve as a relative priority ranking.

In CY 2008, CO-OPS intends to install meteorological sensors at 33 stations as identified in the "FY08 NWLON Met Upgrade Plan" spreadsheet, and also in the station specific requirements for the affected stations in PART C. An additional seven stations with existing barometer and air temp sensors will have dual wind sensors installed (not part of corporate milestone). Section 2.9 of the Standing Project Instructions provides requirements and guidance for measuring the meteorological sensor heights. FOD shall make every effort to measure the sensor heights for the installed sensors during the annual maintenance visits and report that information as required.

In an effort to standardize the requirements for all of CO-OPS field efforts, and to ensure that the critical information is verified immediately by OET, submissions of draft site report (e-site report when available) and level abstract within one working day requirement applies to all annual maintenance and emergency maintenance activities for FOD and contractors. The intent is to verify that the station specific requirements are completed, or explained if not completed. This includes also the standard requirements for an annual head swap for acoustic sensors and the leveling of all bench marks at least every two years. The draft site report will indicate if both these requirements are being completed. Final documentation shall be submitted to OET within 30 calendar days of completion of annual maintenance and leveling. OET will evaluate the station package (final documentation) within 10 working days and then inform the person or appropriate party who submitted the documentation of any corrective actions.

OET will provide FOD and contractors stability reports that indicate which marks were not leveled the previous year, as an aid to help ensure that all marks are leveled every two years.

FOD should update the planned monthly schedule of stations to visit and work to be accomplished based upon the maintenance requirements specified in PART C, Section 2.0, and the best use of their available resources. CO-OPS has set corporate targets of 175 annual inspections and 25 met sensor upgrades in FY08; monthly accomplishments towards these deliverables are reported to NOS. Development of a monthly schedule and availability over the web at the FOD web site is desirable since it can be accessed real time and information can be updated dynamically by FOD. PRO has an Outlook-based calendar available via internet; ISD is working on a similar calendar for ARO.

Enclosures

cc:

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2008 PROJECT INSTRUCTIONS

INSTALLATION, OPERATION, MAINTENANCE, AND REMOVAL OF COASTAL AND GREAT LAKES WATER LEVEL STATIONS FOR CALENDAR YEAR 2008

PART A: GENERAL REQUIREMENTS

These Project Instructions provide the requirements for installation, maintenance, and removal of water level stations in the National Ocean Service (NOS) National Water Level Observation Network (NWLON), Physical Oceanographic Real Time Systems® (PORTS®), Coastal Oceanographic Applications and Services of Tides and Lakes (COASTAL) Program, Hydrographic and Photogrammetry Survey Operations, and reimbursable special projects. These stations provide critical data to support the following activities: ensure safe navigation; determine tidal datums for the National Nautical Charting Program; determine the baseline from which marine boundaries are delineated; determine flow rates to support International treaties; National Weather Service tsunami/storm surge warning programs; coastal resource restoration and management; and long term sea level trend analyses. The NWLON supports the following four NOAA Mission Goals: Ecosystem Management, Climate, Weather and Water, and Commerce and Transportation. The objective of this data collection effort is to acquire continuous, reliable, defect-free data that can be efficiently analyzed.

1.0. GENERAL MAINTENANCE GUIDANCE

1.1. Operational Maintenance Decision-Making Support

All NWLON and other subordinate water level and met stations support a variety of NOAA mission goals and projects. The relative ranking of stations in regards to operational decisions for maintenance issues is provided below, realizing that the ultimate goal is to collect high quality data from all stations and sensors continuously. The establishment of new, or relocation of existing stations, will also be assigned the appropriate importance each year. Changes in priority may occur and will be at the direction of the Director of CO-OPS.

Relative Ranking

- PORTS® sites and stations in support of Hydrographic Surveys (Commerce and Transportation goal); Great Lakes (GL) stations supporting navigation safety and treaties; GL master control stations; stations not meeting the NWLON operational status performance criteria in 2007; and GL station upgrades under CELRE contract.

- NWLON stations supporting NWS tsunami/storm surge warning programs (Weather and Water goal); NOAA Climate Program (Climate goal); and coastal ecosystem management objectives through the CO-OPS' COASTAL Program (Ecosystems goal).

- Reimbursable and special project stations and all other stations.

A listing of stations and the programs they support, such as PORTS®, hydrographic and photogrammetry surveys, treaties, tsunami, or COASTAL, are provided in the attached file, 2008 Station Operational Lists.xls. Counters are provided at the end of the list to indicate the number of stations supporting each type of project as well as the groupings of NOAA mission goals. The following provides a brief overview of the four NOAA mission goals supported by NWLON coastal water level stations. Some of the NWLON stations are supporting multiple program categories.

- **Mission Goal 1: Ecosystems**
  Stations supporting CO-OPS COASTAL program

- **Mission Goal 2: Climate**
  Stations supporting various climate monitoring programs and stations supporting special projects

- **Mission Goal 3: Weather and Water**
  Stations supporting NOAA Tsunami program; NOAA Storm Surge program, and NOAA Coastal Storms Program.

- **Mission Goal 4: Commerce and Transportation**
  Stations supporting PORTS® program, Hydrographic survey control stations, navigation safety, treaties, and other stations supporting reimbursable and special projects

There are a total of 34 stations which have been identified as critical for Climate (program) Monitoring, 33 of which are NWLON. Bermuda is the 34th station, and is considered both a Global Sea Level station and a Tsunami-Capable station, but not a part of the NWLON.

1.2. Maintenance Requirements and Reference Document

Water level station standard annual maintenance shall be accomplished in accordance with the Standing Project Instructions for the Coastal and Great Lakes Water Level Stations, Updated March 2007, and specific station requirements in PART C, Section 2. All other applicable reference documents are provided in the Standing Project Instructions, Section 2.1. There are no maintenance requirements for stations where the funding is not identified, or not appropriated to perform the annual maintenance, or the annual maintenance is not required for some other reason.

Maintenance for reimbursable special projects shall be performed in accordance with the agreements and all associated travel and supplies shall be charged to the appropriate reimbursable task numbers as approved in the project spending plans.

1.3. Field Operations Division (FOD) Maintenance Responsibilities

It is the responsibility of FOD to assess available resources and perform annual and emergency maintenance at any station with operational problems to restore the site to full operational capabilities with a minimum loss of data. The weekly Operations Meeting will review any

station problems of concern, and the Operations Manager shall provide direction should multiple problems compete for available resources.

There are many online resources available to field and HQ personnel to assist in the evaluation of station and sensor status. A few of the more useful resources are provided below.

Online IP Address	Description of Resource
http://neap.pactide.noaa.gov/fod/	FOD QA/QC Tools – For PRO calendar
https://corms.nos.noaa.gov/	CORMS Control Panel – status of primary and ancillary sensors (not backup sensor)
http://extranet.co-ops.nos.noaa.gov/ssboard.shtml	WL Station Status Board – operational status of all stations and associated sensors
http://extranet.co-ops.nos.noaa.gov/mambo/index.php	CO-OPS Extranet panel
http://extranet.co-ops.nos.noaa.gov/cgi-bin/diag_diagnostics.cgi	Diagnostic single station plotting tool
http://extranet.co-ops.nos.noaa.gov/invalid/	Invalid sensor report – Non configured sensors in DMS

2.0. COORDINATION GUIDANCE FOR THE INSTALLATION, MAINTENANCE, AND REMOVAL OF WATER LEVEL STATIONS

2.1. PORTS®

Installation, maintenance, and removal of stations for PORTS® shall be coordinated between Darren Wright, Task Managers, and FOD. Nearly all PORTS® projects are maintained by contractors or local user groups; FOD shall support these maintenance groups as necessary.

2.2. Hydrographic and Photogrammetric Surveys

Installation and removal of subordinate water level stations for hydrographic and photogrammetric surveys shall be coordinated between the Field Operations Division (FOD) and the Operations Branch (OB) of the Hydrographic Surveys Division of the NOS Office of Coast Survey, or the Remote Sensing Division (RSD) of NGS, through Peter Stone of the Center for Operational Oceanographic Products and Services Division (PSD). Peter Stone is the CO-OPS point of contact for all hydro and photo support matters. The DCP, sensor, and other equipment gauging activities shall also be coordinated between FOD and OB/RSD. The selection and installation of subordinate stations and sensors by FOD for these surveys shall be coordinated with OB/RSD and approved by Peter Stone, in concurrence with the Requirements and Development Division (RDD).

CO-OPS instituted a new policy in FY 06 whereby subordinate stations are installed by CO-OPS IDIQ contractors for Hydro/Photo surveys that are conducted by the government (OCS/NGS). In that case CO-OPS is responsible for maintaining control and subordinate stations. For contract

Hydro/Photo surveys, the subordinate stations are installed by OCS/NGS contractors according to the Hydrographic Surveys Specifications available on the OCS website at http://nauticalcharts.noaa.gov/hsd/specs/specs.htm.

Generally, the portable acoustic system shall be preferred for hydrographic subordinate station installation; in cases where acoustic wells can not be installed due to terrain, installation of a portable digital bubbler system is authorized. For projects in the Great Lakes, the shaft angle encoder sensor shall be preferred.

The Commanding Officer of the survey ship or the Chief, Hydrographic Field Party, together with CO-OPS personnel, will be jointly responsible for monitoring the proper operation of these stations during the periods of survey operations. Problems shall be reported to FOD for corrective actions. Tom Landon (east coast) and Manoj Samant (west coast) of RDD are designated as technical points of contact for NOAA in-house and contract hydrographic survey projects and may be contacted for daily activities related to hydro operations. Contact Monica Cisternelli of PSD regarding hydro project planning activities.

2.3. NWLON Water Level Stations

Installation, maintenance, and removal of subordinate stations performed by CO-OPS personnel for future NWLON, PORTS®, and COASTAL programs shall be coordinated among the Operations Manager, Tom Landon, Darren Wright, Allison Allen, and the appropriate operational personnel in RDD and FOD.

Reporting of NWLON performance metrics is coordinated by Tom Landon, through the Deputy Director of CO-OPS, and on to NOS management. Data availability, number of met sensor upgrades, and number of annual inspections performed are reported monthly usually no later than the 7th of the month. These details must be reported well in advance of the preparation of monthly reports, and it is the responsibility of the ARO and PRO field managers to ensure Tom has these statistics by the 5th of the month.

2.4. COASTAL Program

Installation, maintenance, and removal of stations performed by CO-OPS personnel for the COASTAL Program shall be coordinated between Allison Allen and her project team, as well as any additional operational RDD and FOD personnel as appropriate.

2.5. Special Projects and Contract Projects

Installation, maintenance, and removal of NWLON stations and subordinate stations for special projects shall be coordinated between the Task and Project Manager, RDD, and FOD, and shall follow the guidelines and specifications provided in “Standing Project Instructions for the Coastal and Great Lakes Water Level Stations, Updated March 2007”.

3.0. WORK PLAN AND REPORTING

To systematize operations and handle the tremendous growth, CO-OPS instituted a new operating procedure called the Reliable Operating System (ROS) in FY 06. ROS has been subcategorized into eight steps as follows:

Step 1: Project Scoping and Approval
Step 2: Requirements Analysis and Project Planning
Step 3: System Design and Resource Allocation
Step 4: Procurement, Assembly, and Testing
Step 5: Installation and Operational Acceptance
Step 6: Operation and Maintenance
Step 7: Data Management and Product Delivery
Step 8: Assessment

Each of the steps has identified necessary products such as Standard Operating Procedures (SOP), templates, checklists, guidelines, handbooks, etc., that are relevant to the tasks for that step. CO-OPS ROS coordinators are developing these tools. All of the activities conveyed by these Project Instructions must follow the ROS guidelines as they are developed. As these products are developed these products are made available on CO-OPS wiki page. The products that are relevant for CO-OPS' contracts are made available on CO-OPS web page at http://www.tidesandcurrents.noaa.gov/pub.html.

3.1. Schedule, Reports, and Training

FOD has developed a monthly schedule of stations to visit and work to be accomplished given the maintenance items required in PART C, Section 2.0, and the best use of their available resources. Development of a monthly schedule and availability over the web at the FOD web site is desirable since it can be accessed in real time and information can be updated dynamically by FOD. Contractors shall coordinate their schedules through their task managers, who in turn will coordinate with FOD.

An annual Tides Training Class shall be offered to interested personnel of the NOAA hydrographic survey ships and Hydrographic Field Parties. The training class shall cover all aspects of tide station installation, operation, and maintenance. In addition, RDD/PSD shall participate with FOD, as appropriate, in the annual OCS field procedures workshop held each winter to coordinate survey activities.

PART B: STANDING PROJECT INSTRUCTIONS FOR THE COASTAL AND GREAT LAKES WATER LEVEL STATIONS, UPDATED MARCH 2007

See attachment at the end of this document.

PART C: SPECIFIC REQUIREMENTS

1.0 STATION OPERATIONAL GROUPS

All operational NWLON and subordinate stations are listed in the Excel file "2008 Station Operational Lists.xls". The file contains three worksheets: 1) FY08 NWLON Station Project Support Status; 2) FY08 NWLON Great Lakes Station Project Support Status; and 3) FY08 Subordinate Station Project Support Status (all other non-NWLON). The Great Lakes stations are distinguished from the coastal stations since they support projects not common to the coastal stations. Stations supporting various programs and NOAA mission goals are indicated with an "X". These three worksheets are provided as reference for the field parties.

1.1. PORTS® Support

Thirty-seven stations on the NWLON list provide support for the PORTS® navigational operations. PORTS® stations having meteorological sensors only are denoted on the subordinate station list.

Also, in the Great Lakes, five master control stations and 18 stations supporting International treaties shall be considered highest priority for continuous data collection. These stations provide water level and flow data to support International Treaties, the International Joint Commission (IJC) and the International Boards supporting the IJC, the International Forecast, Lake Regulations and Modeling efforts by the Corps of Engineers and Environment Canada as well as monitoring the sharing of the water for power generation between the United States and Canada.

1.2. Hydrographic and Photogrammetric Survey Support

Designated control stations on both the NWLON and Subordinate lists shall provide support for Hydrographic and Photogrammetric Survey Operations. Survey dates, platforms, and the required subordinate stations, and any changes or additions to this list will be provided in the hydro and photo project status sheet file under a separate cover. The dates listed in the time frame are preliminary and might change, but dates are provided for preliminary planning of field trips, as appropriate. Some of the planned hydro and photo subordinate installations may be handled through task orders under the IDIQ contract.

1.3. Operational Stations Not Maintained in CY07 and Emergency Repairs

Some stations were determined to be not fully operational during 2007 and some stations did not receive full annual maintenance (including dive inspection) in 2006 or 2007. The not fully operational status is explained as follows, and may be found in the specific requirements for each station:

PS: Primary sensor data < 90% collected
BS: Backup sensor data < 80% collected
ND = No Dive performed to investigate/clean underwater components
NPD = Sump not pumped, no dive inspection for GL station
NO AI = No annual inspection/maintenance
H/S = station damage/destruction due to hurricane or storm surge

Emergency repairs to stations with sensor/system problems shall be addressed immediately; routine maintenance may follow at a later date. See the CORMS control panel for station sensor status, https://corms.nos.noaa.gov/ccp_tol_mod.html Stations not visited in CY07 **MUST** be visited as early as possible in 2008 - maintenance shall include a dive inspection, full maintenance of the equipment, and levels to bench marks specified in the individual station requirements or as appropriate.

The seven stations supporting the Soo Locks PORTS® shall be visited each year in March for at least an abbreviated maintenance visit to ensure full operational status prior to the opening of the Soo Locks in late March.

1.4. New, Relocated, or Upgraded Stations

The following stations are classified as new, relocated, or upgraded stations. The upgrades necessary are listed in the specific station requirements in PART C, Section 2.0. It is also understood that construction/relocation schedules may impact the planned priorities, and that some stations may need to be treated as lower priorities for this reason. The priority order for these installations, relocations, and upgrades is as follows.

1.4.1. New Station Installations

The following stations shall be installed as new or rebuilt NWLON stations in the Great Lakes. The priority order for these installations/rebuilds will be variable depending on the progress of the US Army Corps of Engineers' contract for each site. As the contracts are awarded and construction begun, a more certain schedule will become available.

9052000	Cape Vincent, Lake Ontario, NY (upgrade temporary site through contract)
9052036	Olcott, Lake Ontario, NY (contract to owner's specs)
9014071	Algonac, St. Clair River, MI
9014091	MBR, St. Clair River, MI
9075079	Mackinaw City, Lake Huron, MI
9076032	Little Rapids, St. Marys River, MI
9087031	Holland, Lake Michigan, MI
9087068	Kewaunee, Lake Michigan, WI
9087079	Green Bay, Lake Michigan, WI
9087088	Menominee, WI

New stations built during FY06 and FY07 at Alpena and West Neebish Island shall be operated and maintained simultaneously with Harrisville and Lookout #4, respectively. Harrisville and

Lookout #4 will be removed after a year of simultaneous observations. Alpena and West Neebish Island have replaced Harrisville and Lookout #4 on the NWLON list.

In addition to supporting the existing PORTS® activities in FY08, the following water level and meteorological stations have been planned at the following new PORTS. The sensors are listed in parentheses. The current meter locations are not listed here but are available in PORTS® plans.

(A) Pascagoula/Gulfport PORTS®

(1) 8741041 Pascagoula Dock E (WL only)
(2) 8741533 Pascagoula NOAA lab (WL only)
(3) 8741003 Petit Bois (Full Met only including 2 wind sensors)
(4) 8741094 Rear Range A (Full Met only including 2 wind sensors)
(5) 8741501 Pascagoula Dock C, MS (Full Met only including 2 wind sensors)
(6) 8745651 Gulfport West Dock (Full Met only including 2 wind sensors and a current meter)
(7) 8744707 Ship Island (Full Met only including 2 wind sensors)

(B) Lower Mississippi River PORTS

(1) 8761955 Carrollton, LA (WL only)
(2) 876XXXX Crescent City Bridge (Air gap and side looker)
(3) 876XXXX Huey Long Bridge (Air Gap only)

(C) Sabine Neches, TX, PORTS®

(1) 8770570 Sabine Pass (existing NWLON - add full Met including 2 wind sensors)
(2) 8770539 Mesquite Point, TX (TCOON WL station – add full Met + side looker)
(3) 8770520 Rainbow Bridge, TX (TCOON WL station – add side looker)

(D) Cherry Point, WA, PORTS®

(1) 9449424 NWLON and Met Station South Dock (Full Met only including 2 wind sensors)
(2) 9449419 Met Station North Dock (Full Met only including 2 wind sensors)

1.4.2. Upgraded Stations

The following stations need facilities upgrades as described. See PART C, Section 2.0. for specific requirements at each site.

8729108 Panama City, FL – replace support base for the tide house
8761724 Grand Isle, LA – install new tide house and supporting platform

1.4.3. Upgraded Stations through the Climate Program Office (CPO)

The Office of Global Programs (OGP) through the Integrated Ocean Observing System (IOOS) generally provides funding to upgrade the redundant stations/DCPs and/or for upgrading the geodetic network. Funding shall also be used for O&M support and performance of GPS observations at all Pacific Island sites and Bermuda on the east coast. See PART C, Section 2.0 for specific requirements for each site.

1.4.4. Hurricane Station Reconstruction/Relocations

The following 18 stations are proposed relocations, future NWLON stations, or were affected by hurricanes, typhoons, and/or storm surge over the last several years and need infrastructure improvements. All 18 are listed here for documentation. **Stations listed in BOLD are the final selections for task order contracting in the Gulf of Mexico. Task Orders 18 and 19 have been cancelled and a new task order 22 was issued in FY 07.** See PART C, Section 2.0. for specific requirements for each site.

8635150 Colonial Beach, VA (hurricane destruction)
8654400 Cape Hatteras, NC (hurricane destruction)
8722670 Lake Worth Pier, FL (NDBC partner, pier being rebuilt in 2007-2008)
8723214 Virginia Key, FL (to be relocated by MDI)
8723962 Key Colony Beach, FL (hurricane destruction)
8725858 Venice Pier, FL (NDBC partner – data acceptance still under consideration)
8727520 Cedar Key, FL (hurricane damage; pier to be rebuilt in 2008)
8728690 Apalachicola, FL (needs relocation)
8729210 Panama City Beach, FL (to be relocated – pier to be rebuilt in 2008)
8743281 Ocean Springs, MS (to be reinstalled through future IDIQ task order, if funding is identified)
8747437 Bay Waveland YC, MS (to be reinstalled through IDIQ task order 22)
8761305 Shell Beach, LA (to be installed through IDIQ task order 22)
8764227 LAWMA, Amerada Pass, LA (to be upgraded through IDIQ task order 22)
8764044 Tesoro Marine Terminal, LA (upgrade postponed, to be done in the future)
8766072 Freshwater Bayou Locks, LA (to be upgraded through IDIQ task order 22)
8767416 Lake Charles, LA (to be upgraded through IDIQ task order 22)
8768094 Calcasieu Pass, LA (to be upgraded through IDIQ task order 22)
8774770 Rockport, TX (to be upgraded through Texas O&M contract)

1.4.5. Stations Planned for Continuously Operating Reference Station (CORS) Installation

CO-OPS is partnering with NGS to install a CORS site at the NWLON stations listed below. These stations were selected jointly by NGS and CO-OPS as representatives of the longest data series on the east coast. NGS personnel are in the process of performing a reconnaissance of these stations to determine the feasibility of a CORS installation co-located with the NWLON station. The NWLON stations at Boston, MA, and Wilmington, NC, have been determined to be unsuitable for a CORS. CORS sites were established at Key West, FL and Charleston, SC during 2007. FOD or contractor personnel are tasked to level to the CORS GPS reference marks

at these sites, which should require only the routine leveling to the station bench marks every two years.

8418150	Portland, ME
8518750	The Battery, NY
8670870	Fort Pulaski, GA
8720218	Mayport (Bar Pilots Dock), FL

NGS also purchased CORS equipment in FY07 to be installed at NWLON stations in Alaska. Coordination of this effort will continue in FY08, pending further developments in NGS operational planning.

1.5. Stations with Malfunctioning Primary or Backup Sensor(s)

Stations with malfunctioning primary (A1) sensors or backup bubbler (B1) sensors, indicated on the CORMS control panel and the Backup Water Level Gain and Offset web page, need repair or replacement in a timely manner. Bear in mind that transmission failures will also cause station sensors to appear on these lists as failed. Failure status of a given station backup sensor may not necessarily indicate a failed sensor, but does indicate that the sensor cannot be used if needed to replace the primary sensor data for dissemination. Refer to the following link for the resources:

https://corms.nos.noaa.gov/ccp_tol_mod.html

1.6. Stations Supporting CO-OPS COASTAL Program Projects

The stations listed on the COASTAL Program web site will be supporting projects that are part of the COASTAL Program. Continuous data collection at these sites, both NWLON and subordinate, is critical to the success of the projects. See the following link for the list of stations: http://tidesandcurrents.noaa.gov/coastal.shtml

1.7. Stations Supporting NOAA Tsunami and Storm Surge Requirements

NWLON stations supporting the NOAA Tsunami Warning Network and Storm Surge Network are indicated on the 2008 Station Operational Lists. Data collection platforms at all NWLON stations in the Pacific Islands, Alaska, West coast, most of the East coast and Gulf coast have been upgraded and are designated as “Tsunami-Capable”, and these stations are considered to be part of the tsunami warning network.

As of January 14, 2008, only 9 NWLON stations (excluding the 4 non-operational NWLON stations) on the East Coast and Gulf Coast are not Tsunami-Capable and shall be made Tsunami-Capable in FY08. Every effort shall be made to upgrade the software at these during the annual maintenance visits or emergency trips.

8452660 Newport, RI	8723214 Virginia Key, FL *
8454000 Providence, RI	8747766 Waveland, MS *
8516945 Kings Point, NY	8768094 Calcasieu Pass, LA *
8638610 Sewells Point, VA	8772440 Freeport, TX *
8720218 Mayport, FL	

* Once the stations are upgraded, then they should be made Tsunami-Capable.

In addition 4 other NWLON stations are not Tsunami-Capable because they are not operational. These stations are 8635150 Colonial Beach, VA; 8654400 Cape Hatteras, NC; 8723962 Key Colony Beach, FL; and 8743281 Ocean Springs, MS.

1.8. Planned Reimbursable Projects for CY08

The NWLON stations listed below (in **BOLD**) are operating or will be operational in CY 2008 in support of reimbursable, partnership, and special projects. Specific station requirements are provided for stations being maintained by CO-OPS.

Project Station Number	**Name**	**Partner**	**Task Number**	**Control Station Number and Name**
1631428	Guam, Pago Bay	WES	1RK6EGM	**1630000 Guam**
8662245	Oyster Landing, SC	Baruch	NA	**8665530 Charleston, SC**
9411406	Platform Harvest	NASA/JPL	BK6EJP	**9410660 Los Angeles, CA**

1.9. Global Sea Level Program

NOS is responsible for maintenance at the following station:

Station Number	**Station Name**
2695540	ESSO Pier, Bermuda

NOS is also responsible for technical support to other countries such as Argentina. This includes technical guidance as requested, procurement of equipment, and shipping. The logistics of such support will be coordinated between FOD and RDD.

1.10. Other Technical Support

FOD shall provide technical support to various groups outside NOS as part of agreements, grants, or developing new programs. For several years, FOD has provided technical support to both the Florida Department of Environmental Protection (FDEP) and the Texas Coastal Ocean Observation Network (TCOON). The Carolinas Coastal Ocean Observing and Prediction System (CARO-COOPS), a regional observing program, has been supported by FOD and is not funded in FY08. Technical support shall also be provided to the Great Lakes Observing System (GLOS) as required, and perhaps other developing Regional Associations.

The Puerto Rican water level observation network managed by the Puerto Rican Seismic Network (PRSN) has received technology transfer support during FY07, and PRSN has installed six water level stations at Mayaguez, Penuelas (Guayanilla), Yabucoa, Fajardo, Arecibo, and northern Vieques during 2007. Allison Allen, CO-OPS project manager, will prepare a Memorandum of Agreement between CO-OPS and PRSN, and a project plan for FY08. Allison Allen shall co-ordinate CO-OPS support for this project with CO-OPS resource managers. There is no funding identified for this effort as of January 2008.

2.0 INDIVIDUAL STATION REQUIREMENTS

The following individual station requirements, in addition to the required maintenance listed in the Standing Project Instructions (PART B), are based on the information obtained from review of field, data processing, and datum records. FOD and contractors are responsible for reviewing the NGWLMS status reports, e-mails, and CORMS morning reports for a station to determine recent station problems as part of the staging process for the annual inspection. Additional requirements or changes will be addressed in an amendment to Project Instructions. L-numbers for digital leveling are for calendar year 2008. NGS Permanent ID (PID) for the primary bench mark and station GPS mark, where available, are identified below in parenthesis for each station.

Station specific requirements are grouped by Regions and Tasks Numbers as follows:

FOD/ARO	East coast stations
FOD/ARO	Gulf coast and Caribbean Islands stations
MDI - Task XVI	Florida through Louisiana Stations
MDI – Task XXVIII	Lower Mississippi PORTS®
Woods Hole and MDI - Task XXII	Gulf Coast Stations (Subtask I and II respectively)
Texas A&M DNR - Task XX	Mobile PORTS®
Texas A&M DNR - Task XXIV	Gulfport and Pascagoula PORTS®
Texas A&M DNR - Task XIII	Houston Galveston PORTS®
Texas A&M DNR – (Tasks XXIII)	Sabine-Neches PORTS®
Texas A&M DNR - Tasks XXVII	Texas stations
FOD/ARO	Great Lakes Stations
FOD/PRO	Hawaii, Pacific Islands, and West Coast stations
EHI - Task XXI	California and Oregon stations
DEA - GSA Contract	Alaska stations.

FOD/ARO - EAST COAST STATIONS

8410140 Eastport, ME **L27063** **Part 1**

Primary Bench Mark: 841 0140 TIDAL 3 (PD0006) PBM above SD: 15.685 m
Station GPS Bench Mark: 841 0140 TIDAL 4 (PD0007) MSL above SD: 4.420 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
2. Put wind-bird on a hinge plate with a Shakespeare pole.
3. Provide sensor heights and digital photos of all installed sensors as specified in section 2.9 of the Standing Project Instructions, Updated March 2007.

8411250 Cutler, ME **L27063** **Part 2**

Primary Bench Mark: 841 1250 M TIDAL (AJ2727) BM above SD: 15.725 m
Station GPS Bench Mark: 841 1250 M TIDAL (AJ2727) MSL above SD: 8.921 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. **Unresolved from 2007 Project Instructions.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8413320 Bar Harbor, ME **L27063** **Part 3**

Primary Bench Mark: 841 3320 TIDAL 13 (NO PID ASSIGNED) PBM above SD: 7.544 m
Station GPS Bench Mark: 841 3320 TIDAL 1 (AI8315) MSL above SD: 2.786 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. Replace the old tide house with a new one; the harbor master's office needs to be called to remove camera and electronic equipment from building in advance. Harbor master phone number: 207-288-9690.
3. **Unresolved from 2007 Project Instructions.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8418150 Portland, ME **L27063** **Part 4**

Primary Bench Mark: TIDAL 31 STA 84 (OC0005) PBM above SD: 8.406 m
Station GPS Bench Mark: 841 8150 TIDAL (AJ2726) MSL above SD: 4.113 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temp sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Unresolved from 2007 Project Instructions. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
3. Contact the Maine State Pier regarding plans for its redevelopment and relocation of the water level station.

8419317 Wells, ME **L27063** **Part 5**
Primary Bench Mark: 841 9317 PUMP (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: LORD (OC2106) MSL above SD: 5.933 m
GPS Observation Frequency: NA
Dive Inspection Frequency: Annually

1. Coordinate the annual inspection with the COASTAL program manager and Wells Project Manager.
2. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8423898 Fort Point, NH **L27064** **Part ?**
Primary Bench Mark: 842 3898 TIDAL 2 (NO PID ASSIGNED) PBM above SD: 7.510m
Station GPS Bench Mark: Undetermined MSL above SD: 2.258 m
GPS Observation Frequency: NA
Dive Inspection Frequency: Annually

1. Run levels to all marks – **MUST** be done.
2. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8443970 Boston, MA **L27065** **Part 1**
Primary Bench Mark: K 12 (MY0555) PBM above SD: 6.858 m
Station GPS Bench Mark: 844 3970 D TIDAL (AJ4030) MSL above SD: 2.660 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (winds not feasible, air temp sensor, and barometer only) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. **Unresolved from 2007 Project Instructions.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8447386 Fall River, MA (PORTS) **L27065** **Part 2**

Primary Bench Mark: STATE (LW2264) PBM above SD: 10.000 m
Station GPS Bench Mark: Undetermined MSL above SD: 7.029 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8447387 Borden Flats Light, MA (PORTS)

1. Replace wind sensor nose cone.
2. Take one general location photo showing the met station in relationship to its supporting structure and the local body of water.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8447930 Woods Hole, MA **L27065** **Part 3**

Primary Bench Mark: 844 7930 TIDAL 11 (LW1571) PBM above SD: 3.447 m
Station GPS Bench Mark: 844 7930 B TIDAL (AJ4031) MSL above SD: 1.096 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (winds not feasible, air temp sensor, and barometer only) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. **Unresolved from 2007 Project Instructions.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8449130 Nantucket, MA **L27065** **Part 4**

Primary Bench Mark: 844 9130 TIDAL 25 (NO PID ASSIGNED) PBM above SD: 3.147 m
Station GPS Bench Mark: 844 9130 K TIDAL (AJ4032) MSL above SD: 1.454 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. **Unresolved from 2007 Project Instructions.** There is an available Coast Guard 3-D bench mark on the Nantucket Yacht Club property however it is covered by a wood piling. Ask the Coast Guard if the wood piling can be removed so that the mark can be leveled.
3. **Unresolved from 2007 Project Instructions.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8452660 Newport, RI (PORTS) **L27066** **Part 1**

Primary Bench Mark: 845 2660 TIDAL 6 (LW0493) PBM above SD: 2.813 m
Station GPS Bench Mark: 845 2660 TIDAL 6 (LW0493) MSL above SD: 1.106 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Pier pilings have deteriorated and the pier is off limits to vehicles and pedestrians. The pier is slated to be replaced in September 2007. Make plans to install a temporary gauge and relocate the station.
2. Upgrade the tsunami software.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8452944 Conimicut Light, RI (PORTS) **L27066** **Part 2**
Primary Bench Mark: 845 2944 BOLT PBM above SD: 10.532 m
Station GPS Bench Mark: Undetermined MSL above SD: 6.290 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Only four bench marks exist at this station. If nearby marks are not found in the NGS database, then establish, describe, and connect via levels one mark stamped 2944 C 2008.
2. Update the bench mark sketch with the new mark.
3. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
4. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8452951 Potter Cove, RI (PORTS)

1. Replace wind sensor nose cone.
2. Take one general location photo showing the met station in relationship to its supporting structure and the local body of water.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8454000 Providence, RI (PORTS) **L27066** **Part 3**
Primary Bench Mark: 845 4000 TIDAL 6 RESET (LW0150) PBM above SD: 4.493 m
Station GPS Bench Mark: 845 4000 L TIDAL (AJ4033) MSL above SD: 1.749 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
2. Upgrade the tsunami software.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8454049 Quonset Point, RI (PORTS) **L27066** **Part 4**
Primary Bench Mark: 845 4049 D (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Undetermined MSL above SD: 7.580 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2006 Project Instructions.** Replace the Vitel gage due to multiple sensor problems.
2. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8461490 New London, CT **L27067** **Part 1**
Primary Bench Mark: 846 1490 TIDAL 15 (LX0157) PBM above SD: 4.880 m
Station GPS Bench Mark: 846 1490 K TIDAL (LX3418) MSL above SD: 1.542 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2006 Project Instructions.** A dive inspection **MUST** be performed during this site visit; last dive was done in 7/04.
2. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (winds not feasible, air temp sensor, and barometer only) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
3. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8465705 New Haven, CT (PORTS) **L27067** **Part 2**

Primary Bench Mark: 846 5705 D (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Undetermined MSL above SD: 6.622 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2006 Project Instructions.** A dive inspection **MUST** be performed during this site visit; last dive was done in 7/04.
2. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
3. Search the NGS database for any geodetic marks within one mile leveling distance; if recovered, add to the station network and include them in the level run. NGS marks V 34 (LX0389) and W 34 (LX0393) are located at the head of the harbor but their distance from the station is uncertain.

8467150 Bridgeport, CT **L27067** **Part 3**

Primary Bench Mark: 846 7150 A (AI1725) PBM above SD: 3.544 m
Station GPS Bench Mark: 846 7150 D TIDAL (AJ4034) MSL above SD: 1.708 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. **Unresolved from 2007 Project Instructions.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8510560 Montauk, NY **L27068** **Part 1**

Primary Bench Mark: 851 0560 J (AH6725) PBM above SD: 3.618 m
Station GPS Bench Mark: TIDAL 9 STA 2 50 (LW0831) MSL above SD: 1.554 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. **Unresolved from 2007 Project Instructions.** A dive inspection **MUST** be performed during this site visit; last dive was done in 10/04.
3. **Unresolved from 2007 Project Instructions.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8516945 Kings Point, NY (PORTS) **L27068** **Part 2**

Primary Bench Mark: 851 6945 A (NO PID ASSIGNED) PBM above SD: 9.662 m
Station GPS Bench Mark: 851 6945 TIDAL 5 (NO PID ASSIGNED) MSL above SD: 5.103 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions.** Only seven bench marks exist at the station. If nearby marks are not found in the NGS database, then establish, describe, and connect via levels three marks stamped 6945 F 2008, 6945 G 2008, and 6945 H 2008.
2. **Unresolved from 2007 Project Instructions.** Update the bench mark sketch with any new bench marks.
3. Take digital photos of the setting (waist or chest high view) and general location of bench marks 851 6945 TIDAL 2 and 851 6945 A.
4. Upgrade the tsunami software.
5. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8518750 The Battery, NY (PORTS) **L27068** **Part 3**
Primary Bench Mark: 851 8750 TIDAL 7 (AB6736) PBM above SD: 5.470 m
Station GPS Bench Mark: R 340 (KV0587) MSL above SD: 1.785 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Install a met tower and met sensors during FY08 (barometer and air temperature sensors only, winds are not feasible – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. **Unresolved from 2007 Project Instructions.** Only seven good bench marks exist at the station. If nearby marks are not found in NGS database, then establish, describe, and connect via levels three new marks, at least one being a 3D rod mark. Stamp the marks 8750 B 2008, 8750 C 2008, 8750 D 2008.
3. Update the bench mark sketch and take digital photos of any new bench marks.
4. **Unresolved from 2007 Project Instructions.** Level all bench marks. Station can not be published until more elevations are obtained.
5. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of bench marks 851 8750 TIDAL 6 and 851 8750 TIDAL 748. Take face, setting, and location photos for any newly established marks.

8519461 Bayonne Bridge Air Gap, NY (PORTS)

1. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8519483 Bergen Point, NY (PORTS) **L27068** **Part 4**
Primary Bench Mark: 851 9483 B TIDAL (AH6737) PBM above SD: 6.428 m
Station GPS Bench Mark: 851 9483 E (NO PID ASSIGNED) MSL above SD: 2.137 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8530973 Robins Reef, NY (PORTS)

1. Take one general location photo showing the met station in relationship to its supporting structure and the local body of water.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8531680 Sandy Hook, NJ (PORTS) **L27069** **Part 1**

Primary Bench Mark: 853 1680 A TIDAL (KV3519) PBM above SD: 3.578 m
Station GPS Bench Mark: SIMPSON 2 RM 3 (KV0707) MSL above SD: 1.551 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions.** Include in the leveling run one GPS reference mark: AB3784.
2. **Unresolved from 2007 Project Instructions.** Update the bench mark sketch.
3. **Unresolved from 2006 Project Instructions.** Relocate station back to pier.
4. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of bench marks 853 1680 A, 853 1680 F, and 853 1680 SIMPSON 2. Take face, setting, and location photos for any newly established marks.
5. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8534720 Atlantic City, NJ **L27069** **Part 2**

Primary Bench Mark: 853 4720 F (NO PID ASSIGNED) PBM above SD: 10.554 m
Station GPS Bench Mark: Undetermined MSL above SD: 2.186 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions.** Develop plans for relocation of the gauge and recon new sites for bench marks, if needed. Install a temporary gauge when given notice to remove the NWLON gauge, as appropriate.
2. **Unresolved from 2007 Project Instructions.** Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks.
3. Perform a reconnaissance of the site (at new location) to find an appropriate location for installing a meteorological sensor package (winds not feasible, air temp sensor, and barometer only) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.

8536110 Cape May, NJ (PORTS) **L27069** **Part 3**
Primary Bench Mark: 853 6110 TIDAL 1 (HU1194) PBM above SD: 4.892 m
Station GPS Bench Mark: J 79 (HU1197) MSL above SD: 1.521 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions.** A dive inspection **MUST** be performed during this site visit; last dive was done in 8/04.
2. **Unresolved from 2007 Project Instructions.** Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8537121 Ship John Shoal, NJ (PORTS) **L27069** **Part 4**
Primary Bench Mark: 853 7121 TIDAL 1 (NO PID ASSIGNED) PBM above SD: 8.666 m
Station GPS Bench Mark: Undetermined MSL above SD: 6.498 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions.** Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8538886 Tacony-Palmyra, NJ (PORTS) **L27069** **Part 5**
Primary Bench Mark: 853 8886 A (NO PID ASSIGNED) PBM above SD: 10.084 m
Station GPS Bench Mark: Undetermined MSL above SD: 6.395 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions.** A dive inspection **MUST** be performed during this site visit (last dive date?)
2. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8539094 Burlington Bridge, NJ (PORTS) **L27069** **Part 6**
Primary Bench Mark: 853 9094 F (NO PID ASSIGNED) PBM above SD: 9.731 m
Station GPS Bench Mark: Undetermined MSL above SD: 6.313 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8540433 Marcus Hook, PA (PORTS) **L27070** **Part 1**
Primary Bench Mark: 854 0433 E (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Undetermined MSL above SD: 7.546 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8545240 Philadelphia, PA (PORTS) **L27070** **Part 2**
Primary Bench Mark: 854 5240 A (NO PID ASSIGNED) PBM above SD: 4.688 m
Station GPS Bench Mark: 854 5240 J TIDAL (AJ2129) MSL above SD: 2.211 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8548989 Newbold, PA (PORTS) **L27070** **Part 3**
Primary Bench Mark: 854 8989 A (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Undetermined MSL above SD: 5.634 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2006 Project Instructions.** A dive inspection **MUST** be performed during this site visit; last dive was done in 9/02.
2. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8551762 Delaware City, DE (PORTS) **L27071** **Part 1**
Primary Bench Mark: 855 1762 C (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Undetermined MSL above SD: ?
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8551910 Reedy Point, DE (PORTS) **L27071** **Part 2**
Primary Bench Mark: R 41 (JU2187) PBM above SD: 2.031 m
Station GPS Bench Mark: 855 1910 B TIDAL (JU2189) MSL above SD: 1.301 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. **Unresolved from 2007 Project Instructions.** Verify the destruction of bench mark PORT PENN RM 2.
3. Update the bench mark sketch and station chartlet.
4. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8551910 Reedy Point Air Gap, DE (PORTS)

1. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8555889 Brandywine Shoal Light, DE (PORTS) **L27071** **Part 3**

Temp. Primary Bench Mark: 855 5889 BOLT 1 (NO PID ASSIGNED) PBM above SD: 8.478 m
Station GPS Bench Mark: Undetermined MSL above SD: 6.590 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2005 Project Instructions.** Take digital photographs of 855 5889 BOLT 3 and any new marks installed.
2. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8557380 Lewes, DE (PORTS) **L27071** **Part 4**

Primary Bench Mark: 855 7380 TIDAL 20 (AJ8038) PBM above SD: 3.990 m
Station GPS Bench Mark: 855 7380 TIDAL 20 (AJ8038) MSL above SD: 1.528 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8570283 Ocean City Inlet, MD **L27072** **Part 1**
Primary Bench Mark: 857 0283 J (NO PID ASSIGNED) PBM above SD: 4.979 m
Station GPS Bench Mark: SPEICHER (HU0266) MSL above SD: 2.829 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8571359 Snow Hill, MD **L27072** **Part 20**
Primary Bench Mark: 21 BALTO (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Undetermined MSL above SD: 4.057 m
GPS Observation Frequency: NA
Dive Inspection Frequency: Annually

1. This station will remain in operation to support Photogrammetry.
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8571421 Bishops Head, MD **L27072** **Part 11**
Primary Bench Mark: 857 1421 A (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Undetermined MSL above SD: 9.111 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Coordinate with the COASTAL program manager to ensure that educational material is provided to the Karen Noonan Center. This was a condition of our agreement to establish the station.
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8571559 McCready's Creek, MD **L27072** **Part 8**
Primary Bench Mark: 857 1559 B (NO PID ASSIGNED) PBM above SD: 3.157 m
Station GPS Bench Mark: Undetermined MSL above SD: 2.400 m
GPS Observation Frequency: NA
Dive Inspection Frequency: Annually

1. A dive inspection **MUST** be performed during this site visit; last dive was done in 2003. This station will remain in operation to support COASTAL Program and the Photogrammetry project in Chesapeake Bay.
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8571702 Beaverdam Creek, MD **L27072** **Part 23**
Primary Bench Mark: 857 1702 E (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Undetermined MSL above SD: 9.258 m
GPS Observation Frequency: NA
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions (no documents submitted).** Run closing levels to all marks and remove the gauge.
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8571773 Vienna, MD **L27072** **Part 21**
Primary Bench Mark: 857 1773 X5 RESET (HU0640) PBM above SD: 10.000 m
Station GPS Bench Mark: Undetermined MSL above SD: 6.907 m
GPS Observation Frequency: NA
Dive Inspection Frequency: Annually

1. This station will remain in operation to support Photogrammetry project.
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8571892 Cambridge, MD **L27072** **Part 2**
Primary Bench Mark: 857 1892 D TIDAL (AC6854) PBM above SD: 3.344 m
Station GPS Bench Mark: 857 1892 D TIDAL (AC68540) MSL above SD: 1.060 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions. Dive not performed as required in 2007 and no explanation was provided for not completing this task.** A dive inspection **MUST** be performed during this site visit; last dive was done in 2004.
2. **Unresolved from 2007 Project Instructions. No comments were provided in the Site Report indicating if this task was completed.** Wind sensor cable needs to be lengthened and the 3/4" conduit needs to be made longer to allow the tower to be lowered per 2005 work request.
3. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
4. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8573349 Crumpton, MD **L27072** **Part 26**
Primary Bench Mark: 857 3349 A (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Undetermined MSL above SD: 3.714 m
GPS Observation Frequency: NA
Dive Inspection Frequency: Annually

1. This station will remain in operation to support Photogrammetry project.
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8573364 Tolchester, MD (PORTS) **L27072** **Part 3**
Primary Bench Mark: 857 3364 A (NO PID ASSIGNED) PBM above SD: 2.963 m
Station GPS Bench Mark: 857 3364 B TIDAL (AJ8034) MSL above SD: 1.295 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8573927 Chesapeake City, MD (PORTS) **L27072** **Part 4**
Primary Bench Mark: U 2 (JU1833) PBM above SD: 3.158 m
Station GPS Bench Mark: Undetermined MSL above SD: 1.417 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions. No comments were provided in the Site Report indicating if this task was completed, no photos were submitted, and bench mark sketch was not sent.** Recover bench mark 857 3927 A. Provide digital photos, add the mark to the bench mark sketch, and include it in the level run.
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8573928 Chesapeake City Air Gap, MD (PORTS)

1. Leveling requirements not yet determined for air gap sensors; no action necessary this year unless this requirement is defined at a later date.

8574680 Baltimore, MD (PORTS) **L27072** **Part 5**
Primary Bench Mark: 857 4680 TIDAL 32 (JV0586) PBM above SD: 3.158 m
Station GPS Bench Mark: 857 4680 TIDAL BASIC (JV0578) MSL above SD: 1.495 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. **Unresolved from 2007 Project Instructions.** A dive inspection MUST be performed during this site visit; last dive was done in 3/01.

8574728 Francis Scott Key Bridge, MD (PORTS)

1. Replace wind sensor nose cone.
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the met station in relationship to its supporting structure and the local body of water.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8574729 Francis Scott Key Bridge NE Tower, MD (PORTS)

1. Replace wind sensor nose cone.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
3. Take one general location photo showing the met station in relationship to its supporting structure and the local body of water.

8575432 Bay Bridge Air Gap, MD (PORTS)

1. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8575512 Annapolis, MD (PORTS) **L27072** **Part 6**

Primary Bench Mark: 857 5512 TIDAL 7 (HV0207) PBM above SD: 2.877 m
Station GPS Bench Mark: 857 5512 D TIDAL (AJ8035) MSL above SD: 1.596 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site (at new location) to find an appropriate location for installing a meteorological sensor package (winds not feasible, air temp sensor, and barometer only) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. FOD was denied permission to relocate the station outside of the lab. FOD will continue to investigate other locations for the station.

8577330 Solomons Island, MD (PORTS) **L27072** **Part 7**

Primary Bench Mark: 857 7330 E TIDAL (AJ8036) PBM above SD: 4.456 m
Station GPS Bench Mark: 857 7330 E TIDAL (AJ8036) MSL above SD: 1.366 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8577018 Cove Point, MD (PORTS)

1. Replace wind sensor nose cone.
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the met station in relationship to its supporting structure and the local body of water.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8578240 Piney Point, MD (PORTS)

1. Replace wind sensor nose cone.
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the met station in relationship to its supporting structure and the local body of water.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8579542 Lower Marlboro, MD **L27072** **Part 28**
Primary Bench Mark: 857 9542 TIDAL 5 PBM above SD: 10.000 m
Station GPS Bench Mark: Undetermined MSL above SD: 2.879 m
GPS Observation Frequency: NA
Dive Inspection Frequency: Annually

1. This station will remain in operation to support Photogrammetry projects..
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8594900 Washington, DC (PORTS) **L27073** **Part 1**
Primary Bench Mark: 859 4900 TIDAL 1 (HV1980) PBM above SD: 4.115 m
Station GPS Bench Mark: 859 4900 TIDAL 4 (HV9068) MSL above SD: 1.859 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. **Unresolved from 2007 Project Instructions**. Install a special clamp made to attach to the lower unprotected section of the well.
3. Batteries need to be changed by contractor, battery dates are from 2004.

8631044 Wachapreague, VA **L27074** **Part 1**

Primary Bench Mark: 863 1044 B (NO PID ASSIGNED) PBM above SD: 4.130 m
Station GPS Bench Mark: 863 1044 K TIDAL (AJ4587) MSL above SD: 1.401 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8632200 Kiptopeke, VA (PORTS) **L27074** **Part 2**

Primary Bench Mark: L 418 (FW0303) PBM above SD: 4.093 m
Station GPS Bench Mark: 863 2200 B TIDAL (AJ4588) MSL above SD: 1.539 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions. No comments were provided in the Site Report indicating why task was not completed.** Only nine bench marks exist at the station. If nearby bench marks are not found in the NGS database, then install, describe, and connect via levels one surface bench mark, and stamp it as 2200 M 2008.
2. **Unresolved from 2007 Project Instructions.** Update the bench mark sketch with the new mark.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8632837 Rappahannock Light, VA (PORTS)

FULL ANNUAL MAINTENANCE NOT PERFORMED SINCE CY99 (or no site reports submitted).

1. Replace wind sensor nose cone.
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the met station in relationship to its supporting structure and the local body of water.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8635150 Colonial Beach, VA (PORTS) **L27074** **Part 3**

Primary Bench Mark: 863 5150 E (NO PID ASSIGNED) PBM above SD: 2.729 m
Station GPS Bench Mark: 863 5150 TIDAL 8 (HV8249) MSL above SD: 1.099 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions**. Rebuild the station if an appropriate location and structure are identified; the city has declined permission for using the city pier. The station was destroyed by Hurricane Isabel in 2003.
2. If station rebuild is feasible, then perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.

8635750 Lewisetta, VA (PORTS) **L27074** **Part 4**

Primary Bench Mark: R 462 (GV0156) PBM above SD: 2.874 m
Station GPS Bench Mark: 863 5750 J TIDAL (AJ4589) MSL above SD: 1.685 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8636580 Windmill Point, VA (PORTS) **L27074** **Part 5**

Primary Bench Mark: 863 6580 B (NO PID ASSIGNED) PBM above SD: 1.842 m
Station GPS Bench Mark: Undetermined MSL above SD: 0.903 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually
FULL ANNUAL MAINTENANCE NOT PERFORMED IN CY 2006 or CY 2007.

1. **Unresolved from 2007 Project Instructions.** A dive inspection **MUST** be performed during this site visit; last dive was done in 6/98.
2. **Unresolved from 2007 Project Instructions.** Investigate moving protective well to a deeper location. Well consistently silts in and the data becomes degraded.
3. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8637611 York River East Rear Range Light, VA (PORTS)

1. Replace wind sensor nose cone.
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the met station in relationship to its supporting structure and the local body of water.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8637689 Yorktown, VA (PORTS) **L27074** **Part 6**

Primary Bench Mark: 863 7689 B (NO PID ASSIGNED) PBM above SD: 5.070 m
Station GPS Bench Mark: Undetermined MSL above SD: 1.981 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. A dive inspection **MUST** be performed during this site visit; last dive was done in 5/06.
2. **Unresolved from 2007 Project Instructions.** One deep rod mark should be installed to be designated as the future PBM, but before installing the mark, contact Commander Fred Sommer at 757-856-2113. Commander Sommer will have grounds marked for underground utilities and is aware of the need for a deep rod mark and has good working knowledge of where mark should be installed.
3. **Unresolved from 2007 Project Instructions.** Update the bench mark sketch.
4. **Unresolved from 2007 Project Instructions. No comments were provided in the Site Report indicating why task was not completed.** Add grout around the edge of bench mark FUEL.
5. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
6. The tower needs to be disconnected and all the solar panels, GOES, windbird, etc. need to have their wires lengthened, to allow the tower to be lowered for service.
7. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8638511 Dominion Terminal, VA (PORTS)

1. Replace wind sensor nose cone
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8638595 South Craney Island, VA (PORTS)

1. Replace wind sensor nose cone
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8638614 Willoughby Degaussing Station, VA (PORTS)

1. Replace wind sensor nose cone
2. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8638610 Sewells Point, VA (PORTS) **L27074** **Part 7**

Primary Bench Mark: TIDAL 6 STA 97 (NO PID ASSIGNED) PBM above SD: 5.197 m
Station GPS Bench Mark: L 308 RESET (FX4422) MSL above SD: 1.748 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. A dive inspection **MUST** be performed during this site visit; last dive was done in 9/06.
2. Upgrade the tsunami software.

8638863 Chesapeake Bay Bridge Tunnel, VA (PORTS) L27074 Part 8

Primary Bench Mark: 863 8863 NO 2 TIDAL (AJ4591) PBM above SD: 15.914 m
Station GPS Bench Mark: 863 8863 NO 2 TIDAL (AJ4591) MSL above SD: 8.135 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions.** A dive inspection **MUST** be performed during this site visit.
2. **Unresolved from 2007 Project Instructions.** Station interior needs to be refurbished. The top cap needs to be removed and new additional aluminum wells need to be jacked into ocean bottom and secured to building floor with additional access holes.
3. **Unresolved from 2007 Project Instructions.** Only eight bench marks remain at the station. Obtain permission from the bridge authority and establish, describe, and level two new marks stamped 8863 D 2008 and 8863 E 2008. If V 422 can be leveled without stopping traffic, only one mark needs to be established.
4. **Unresolved from 2007 Project Instructions.** Update the bench mark sketch.
5. **Unresolved from 2007 Project Instructions.** Take digital photos of the well, gauge shelter exterior, bench mark DE GRASSE disk face, and any new marks. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
6. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8638979 Chesapeake Light, VA (PORTS)

1. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
3. Replace wind sensor nose cone

8638999 Cape Henry, VA (PORTS)

1. Replace wind sensor nose cone
2. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8639348 Money Point, VA (PORTS) **L27074** **Part 9**

FULL ANNUAL MAINTENANCE NOT PERFORMED IN CY2007.

Primary Bench Mark: 863 9348 E (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: 863 9348 D TIDAL (AJ4592) MSL above SD: 7.067 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions.** A dive inspection **MUST** be performed during this site visit.
2. **Unresolved from 2007 Project Instructions.** Replace the brass section of the sounding tube. Replace wind sensor nose cone.
3. **Unresolved from 2007 Project Instructions (no photos submitted).** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8639207 Rudee Inlet, VA **L27074** **Part 12**

Primary Bench Mark: 863 9207 C PBM above SD: 2.44 m
Station GPS Bench Mark: undetermined MSL above SD: 1.317 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Perform closing levels to all marks and remove the hydro gauge.

8651370 Duck, NC **L27075** **Part 1**

Primary Bench Mark: 865 1370 B TIDAL, (FW0688) PBM above SD: 10.061 m
Station GPS Bench Mark: 865 1370 C (FW0686) MSL above SD: 6.202 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
2. Last dive was done 6/04/2006; dive **MUST** be performed during this inspection.
3. **Unresolved from 2007 Project Instructions:** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
4. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8652587 Oregon Inlet Marina, NC **L27075** **Part 5**

Primary Bench Mark: 865 2587 NO 3 TIDAL (EX0150) PBM above SD: 5.214 m
Station GPS Bench Mark: 865 2587 NO 3 TIDAL (EX0150) MSL above SD: 0.979 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
2. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
3. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8654400 Cape Hatteras, NC **L27075** **Part 2**

Primary Bench Mark: 865 4400 NO 1 TIDAL (EX0250) PBM above SD: 3.408 m
Station GPS Bench Mark: 865 4400 NO 2 TIDAL (EX0249) MSL above SD: 1.453 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions:** FOD has evaluated the new pier structure to be unacceptable for long term data collection. An alternate site is being investigated at the Coast Guard Station at Hatteras Inlet. The station shall be relocated if this site is determined to be acceptable and permission is obtained. The DCPs shall be upgraded to the Sutron Xpert and Xpert Dark when the station is installed.
2. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
3. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.

8656483 Duke Marine Lab, NC **L27075** **Part 3**

Primary Bench Mark: 865 6483 NO 11 (AI9505) PBM above SD: 3.097 m
Station GPS Bench Mark: 865 6483 E TIDAL (DE7961) MSL above SD: 1.083 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
3. Search for and redescribe bench mark 865 6483 D. If this bench mark is recovered include it in leveling. Include in the leveling run the new NGS bench mark, NCCOS BEAUFORT (DG9239) set in 2004; prepare description in NOS format, and update the bench mark sketch.
4. **Unresolved from 2007 Project Instructions:** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
5. Install new battery for Waterlogger.

8658120 Wilmington, NC **L27075** **Part 4**

Primary Bench Mark: 865 8120 D (NO PID ASSIGN.) PBM above SD: 2.454 m
Station GPS Bench Mark: 865 8120 C TIDAL RM 1 (EA3063) MSL above SD: 1.490 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (winds not feasible, air temp sensor, and barometer only) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
3. **Unresolved from 2007 Project Instructions:** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8658163 Wrightsville Beach, NC **L27075** **Part 11**
Primary Bench Mark: 865 8163 A (NO PID ASSIGN.) PBM above SD: 10.000 m
Station GPS Bench Mark: C 163 (EA0631) MSL above SD: 6.446 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
2. **Unresolved from 2007 Project Instructions:** Last dive was done 4/26/2004; dive **MUST** be performed during this inspection.
3. Check field barometer per barometer calibration guidelines for existing barometer installation. Compute and store new barometer coefficient C2.
4. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8659084 Southport, NC **L27075** **Part 8**
Primary Bench Mark: PBM above SD: m
Station GPS Bench Mark: MSL above SD: m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. MDI will operate and maintain this station until it is no longer needed for hydro support. The contractor will be notified when the station is cleared for removal.

8661070 Springmaid Pier, SC **L27076** **Part 1**
Primary Bench Mark: 866 1070 J TIDAL (DD1542) PBM above SD: 11.948 m
Station GPS Bench Mark: K 137 (DD0853) MSL above SD: 9.754 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Replace the hinges on the trap door in the pier deck.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8662245 Oyster Landing, SC **L27076** **Part 8**
Primary Bench Mark: 866 2245 A TIDAL (DD1345) PBM above SD: 2.962 m
Station GPS Bench Mark: 866 2245 A TIDAL (DD1345) MSL above SD: 2.007 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Add the standard title block to the bench mark sketch.

8665530 Charleston, SC **L27076** **Part 2**
Primary Bench Mark: 866 5530 TIAL 13 (CJ0085) PBM above SD: 4.020 m
Station GPS Bench Mark: 866 5530 TIDAL 13 (CJ0085) MSL above SD: 1.733 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. **Unresolved from 2007 Project Instructions:** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

8670870 Fort Pulaski, GA **L27077** **Part 1**
Primary Bench Mark: 867 0870 TIDAL 5 (CK0697) PBM above SD: 4.877 m
Station GPS Bench Mark: 867 0870 TIDAL 5 (CK0697) MSL above SD: 2.230 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8677344 St. Simons Island, GA **L27077** **Part 2**
Primary Bench Mark: PBM above SD: m
Station GPS Bench Mark: MSL above SD: m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
2. Remove the station when notified that it is no longer needed for hydro support.

8721147 Ponce de Leon Inlet, FL **L27078** **Part 23**
Primary Bench Mark: PBM above SD: m
Station GPS Bench Mark: MSL above SD: m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. This station is maintained by FDEP and is being operated to support hydro operations.

FOD/ARO – GULF COAST & CARIBBEAN ISLANDS STATIONS

8723962 Key Colony Beach, FL **L27078** **Part 6**
Primary Bench Mark: 872 3962 A TIDAL (AA0883) PBM above SD: 2.758 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 1.371 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

This station may be installed under the new IDIQ contract; installation during FY08 is uncertain.

1. Perform a reconnaissance of the site (at new location) to find an appropriate location for installing a meteorological sensor package (winds not feasible, air temp sensor, and barometer only) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.

8726384 Port Manatee, FL (PORTS) **L27078** **Part 20**
Primary Bench Mark: 872 6384 E TIDAL (AG7341) PBM above SD: 2.666 m
Station GPS Bench Mark: 872 6384 E TIDAL (AG7341) MSL above SD: 0.419 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

NOTE: All maintenance for Tampa Bay PORTS® stations shall be coordinated with Brad Wynn and Dr. Mark Luther, Chief Operating Officer of GTBMAC/PORTS® (727-553-1528).

1. **Revisions from 2007 Records Evaluations never submitted. Please submit these documents.**
2. **Unresolved from 2007 Project Instructions.** Install and stamp a 3D rod mark as 6384 M 2008; and update the bench mark sketch.
3. Please recover and connect the bench mark 6384 J 1991 which is not connected since February 2003.
4. **Unresolved from 2007 Project Instructions.** Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
5. **Annual Dive Inspection not performed in 2007 as required.** Complete this task or provide explanation.

8726413 C-Cut, FL (PORTS) (MET only)

1. Replace the wind sensor nose cone.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8726520 St. Petersburg, FL (PORTS) **L27078** **Part 11**
Primary Bench Mark: 872 6520 F (NO PID ASSIGNED) PBM above SD: 4.023 m
Station GPS Bench Mark: 872 6520 A TIDAL (AG9358) MSL above SD: 1.394 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

NOTE: All maintenance for Tampa Bay PORTS® stations shall be coordinated with Brad Wynn and Dr. Mark Luther, Chief Operating Officer of GTBMAC/PORTS® (727-553-1528).

1. **Revisions from 2007 Records Evaluations never submitted. Please submit these documents.**
2. **Unresolved from 2007 Project Instructions.** Take digital photo of bench mark 6520 M and 6520 L (not clear in 2001 photo).
3. **Annual Dive Inspection not performed in 2007 as required.** Complete this task or provide explanation.
4. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8726607 Old Port Tampa, FL (PORTS) **L27078** **Part 21**
Primary Bench Mark: 872 6607 A (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: 872 6607 A (NO PID ASSIGNED) MSL above SD: 9.018 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

NOTE: All maintenance for Tampa Bay PORTS® stations shall be coordinated with Brad Wynn and Dr. Mark Luther, Chief Operating Officer of GTBMAC/PORTS® (727-553-1528).

1. **Revisions from 2007 Records Evaluations never submitted. Please submit these documents.**
2. **Unresolved from 2007 Project Instructions.** Replace wind sensor nose cone. Install a Shakespeare met sensor mast and remount met sensors.
3. **Annual Dive Inspection not performed in 2007 as required.** Complete this task or provide explanation.

8726667 CSX Rockport Terminal, FL (PORTS) **L27078** **Part 22**
Primary Bench Mark: 872 6667 J (NO PID ASSIGNED) PBM above SD: 3.120 m
Station GPS Bench Mark: 872 6667 C TIDAL (AG7506) MSL above SD: 0.542 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. **Revisions from 2007 Records Evaluations never submitted. Please submit these documents.**
2. **Annual Dive Inspection not performed in 2007 as required.** Complete this task or provide explanation.

8726669 Berth 223, FL (PORTS) (MET only)

1. Replace wind sensor nosecone.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8726673 SEABULK, FL (PORTS) (MET only)

1. Replace wind sensor nosecone.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8726694 TPA Cruise Terminal 2, FL (PORTS) (MET only)

1. Replace wind sensor nosecone.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8735181 Dauphin Island, AL (Hydro) **L27079** **Part 2**
Primary Bench Mark: 873 5180 TIDAL 1 (BH1756) PBM above SD: 6.288 m
Station GPS Bench Mark: 873 5180 TIDAL 1 (BH1756) MSL above SD: 1.058 m
GPS Observation Frequency: NA
Dive Inspection Frequency: Annually

1. Perform closing levels, if not done in FY 2007, and then remove the hydro gauge.

8732828 Weeks Bay, AL (NERRS) **L27079** **Part 11**
Primary Bench Mark: 873 2828 A (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
2. Coordinate requirements with COASTAL Program manager and Weeks Bay Project Manager.

8743281 Ocean Springs, MS **L27080** **Part 4**

Primary Bench Mark: 874 3281 A (NO PID ASSIGNED) PBM above SD: 10.000m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 9.458m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

This station may be installed under the new IDIQ contract; installation during FY08 is uncertain.

1. If funding is approved, then perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temperature sensor, and barometer) in a future year, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection. Reconnaissance during FY08 is uncertain.

8745557 Gulfport Harbor, MS **L27080** **Part 5**

Primary Bench Mark: 874 5557 C (NO PID ASSIGNED) PBM above SD: 2.934 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 0.996 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.

8765251 Cypremort Point, LA **L27081** **Part 7**

Primary Bench Mark: 876 5251 CYPR (NO PID ASSIGNED) PBM above SD: 8.495 m
Station GPS Bench Mark: CYPR (NO PID ASSIGNED) MSL above SD: 7.556 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
2. **Unresolved from 2007 Project Instructions.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

9751364 Christiansted Harbor , St. Croix, VI **L27084** **Part 3**

Primary Bench Mark: 975 1364 A (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 8.362 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
3. **Revisions from 2007 Records Evaluations never submitted. Please submit these documents.**
4. **Unresolved from 2007 Project Instructions.** Take digital photos of the setting (waist or chest high view) and general location of bench marks missed during the FY07 Annual Inspection. Take face, setting, and location photos for any newly established marks.
5. **Annual Dive Inspection not performed in 2007 as required.** Complete this task or provide explanation.
6. Coordinate through COASTAL program manager to notify local partner (Puerto Rico Seismic Network) after the met upgrade is completed.

9751381 Lameshur Bay, St Johns, VI **L27084** **PART 4**

Primary Bench Mark: 975 1391 A (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 8.924 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
2. **Revisions from 2007 Records Evaluations never submitted. Please submit these documents.**
3. **Unresolved from 2007 Project Instructions.** In the HA file, ensure that all bench marks have a detailed to reach statement at the start of the text description, have handheld GPS positions at the end of the description, have a minimum of three reference ties, and are coded in the APP field for suitability for GPS observations.
4. **Unresolved from 2007 Project Instructions.** Establish, describe, and connect via levels five surface marks or marks on rock outcrop, designation/stamping: 975 1381 C/1381 C 2008, 975 1381 D/1381 D 2008, 975 1381 E/1381 E 2008, 975 1381 F/1381 F 2008, and 975 1381 G/1381 G 2008.
5. **Unresolved from 2007 Project Instructions.** Update bench mark sketch with new marks.

9751401 Limetree Bay, St. Croix, VI **L27084** **Part 1**

Primary Bench Mark: 975 1401 M (NO PID ASSIGNED) PBM above SD: 13.612 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 10.501 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
2. **Revisions from 2007 Records Evaluations never submitted. Please submit these documents.**
3. **Unresolved from 2007 Project Instructions.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take digital photos of the setting (waist or chest high view) and general location of bench marks missed during the FY07 Annual Inspection.
4. Install new 6" adjustable face clamp for the top of the Aquatrak well.
5. Drop the four bench marks that are on the Hovensa Oil Company property and establish, describe, and connect via levels four surface marks or marks on rock outcrop, designation/stamping: 975 1401 P/1401 P 2008, 975 1401 Q/1401 Q 2008, 975 1401 R/1401 R 2008, and 975 1401 S/1401 S 2008.
6. Update bench mark sketch with new marks and remove bench marks from Hovensa Oil Company property from sketch.
7. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

9751639 Charlotte Amalie, St. Thomas, VI **L27084** **Part 2**

Primary Bench Mark: 975 1639 F (NO PID ASSIGNED) PBM above SD: 3.267 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 1.715 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
2. **Revisions from 2007 Records Evaluations never submitted. Please submit these documents.**
3. **Unresolved from 2007 Project Instructions.** In the HA file, ensure that all bench marks have handheld GPS positions at the end of the description, and are coded in the APP field for suitability for GPS observations.
4. **Unresolved from 2007 Project Instructions.** As noted on the 2004 Site Report, replace GOES antenna and move it inside gage house if possible.
5. **Unresolved from 2007 Project Instructions.** Replace parallel plates.
6. **Unresolved from 2007 Project Instructions.** Station needs a new bottle of snoop.
7. **Unresolved from 2007 Project Instructions.** West coast mounting plate needs to be installed.
8. **Unresolved from 2007 Project Instructions.** Establish, describe and connect via levels surface mark on rock outcrop; designation/stamping: 975 1639 S/1639 S 2008.
9. **Unresolved from 2007 Project Instructions.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of bench marks missed during the FY07 Annual Inspection. Take face, setting, and location photos for any newly established marks.
10. Update bench mark sketch with new mark.
11. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

9752235 Culebra, PR **L27083** **Part 6**

Primary Bench Mark: 975 2235 A TIDAL (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 8.523 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
3. **Revisions from 2007 Records Evaluations never submitted. Please submit these documents.**
4. **Unresolved from 2007 Project Instructions.** Establish, describe, and connect via levels four surface marks or marks on rock outcrop, designation/stamping: 975 2235 H/2235 H 2008, 975 2235 J/2235 J 2008, and 975 2235 K/2235 K 2008.
5. **Unresolved from 2007 Project Instructions.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of bench marks missed during the FY07 Annual Inspection. Take face, setting, and location photos for any newly established marks.
6. Update bench mark sketch with new marks.
7. Coordinate through COASTAL program manager to notify local partner (Puerto Rico Seismic Network) after the met upgrade is completed.

9752695 Vieques Island, PR **L27083** **Part 7**

Primary Bench Mark: 975 2295 A TIDAL (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 8.035 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
3. **Revisions from 2007 Records Evaluations never submitted. Please submit these documents.**
4. **Unresolved from 2007 Project Instructions.** Take Establish, describe, and connect via levels four surface marks or marks on rock outcrop, designation/stamping: 975 2695 H/2695 H 2008, 975 2695 J/2695 J 2008, and 975 2695 K/2695 K 2008.
5. **Unresolved from 2007 Project Instructions.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of bench marks missed during the FY07 Annual Inspection. Take face, setting, and location photos for any newly established marks.
6. **Unresolved from 2007 Project Instructions.** Update bench mark sketch with new marks
7. Coordinate through COASTAL program manager to notify local partner (Puerto Rico Seismic Network) after the met upgrade is completed.

9755371 San Juan, PR **L27083** **Part 3**

Primary Bench Mark: 975 5371 A TIDAL (TV1513) PBM above SD: 2.600 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 1.266 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
2. **Revisions from 2007 Records Evaluations never submitted. Please submit these documents.**
3. **Unresolved from 2007 Project Instructions.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of bench marks missed during the FY07 Annual Inspection. Take face, setting, and location photos for any newly established marks.
4. Perform an evaluation for a total station rebuild during a separate visit. Determine requirements, obtain all necessary permissions, and prepare a report for the return crew.
5. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

9759110 Magueyes Island, PR **L27083** **Part 4**

Primary Bench Mark: 975 9110 BM 1 (NO PID ASSIGNED) PBM above SD: 4.755 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 1.191 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
2. **Revisions from 2007 Records Evaluations never submitted. Please submit these documents.**
3. **Unresolved from 2007 Project Instructions. No photos were submitted from the 2007 Annual Inspection.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
4. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

9759412 Aguadilla, PR **L27083** **Part 8**

Primary Bench Mark: 975 9938 A (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 7.100 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
3. **Revisions from 2007 Records Evaluations never submitted. Please submit these documents.**
4. **Unresolved from 2007 Project Instructions.** Establish, describe, and connect via levels surface mark or marks on rock outcrop, designation/stamping: 975 9412 E/9412 E 2008.
5. **Unresolved from 2007 Project Instructions.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of bench marks missed during the FY07 Annual Inspection. Take face, setting, and location photos for any newly established marks.
6. **Unresolved from 2007 Project Instructions.** Update bench mark sketch with new mark.
7. Coordinate through COASTAL program manager to notify local partner (Puerto Rico Seismic Network) after the met upgrade is completed.

9759938 Mona Island, PR **L27083** **Part 9**

Primary Bench Mark: 975 9938 A (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 8.869 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
2. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (air temp sensor and barometer only; winds not feasible) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
3. **Revisions from 2007 Records Evaluations never submitted. Please submit these documents.**
4. **Unresolved from 2007 Project Instructions.** Establish, describe, and connect via levels five surface marks or marks on rock outcrop, designation/stamping: 975 9938 G/9938 G 2008, 975 9938 H/9938 H 2008, 975 9938 J/9938 J 2008, and 975 9938 K/9938 K 2008.
5. **Unresolved from 2007 Project Instructions (bench mark sketch never submitted).** Update the bench mark sketch with new marks. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of bench marks missed during the FY07 Annual Inspection. Take face, setting, and location photos for any newly established marks.

2655540 Bermuda Esso Pier **L27088** **Part 1**

Primary Bench Mark: 265 5540 A PBM above SD: 14.298 m
Station GPS Bench Mark: N/A MSL above SD: 1.410 m

Note: maintenance costs for this station shall be charged to the Global Sea Level task number.

1. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements. GPS observations cost could be charged to OGP funding, if funding is available.

MDI - TASK XVI - FLORIDA THROUGH LOUISIANA STATIONS

Brad Wynn, Task Manager/Technical Representative (TR)

8720030 Fernandina Beach, FL **L27078** **Part 1**
Primary Bench Mark: 872 0030 TIDAL 34 (BC0166) PBM above SD: 4.770 m
Station GPS Bench Mark: CONTAINER (BC2488) MSL above SD: 1.522 m
GPS Observation Frequency: Every five years (performed in 2007, waived this year)
Dive Inspection Frequency: Annually

1. Verify the condition of: 872 0030 TIDAL 22 and 872 0030 TIDAL 38, these marks were reported as destroyed in the past and we need confirmation.

8720218 Mayport Bar Pilots Dock, FL **L27078** **Part 2**
Primary Bench Mark: 870 0218 A TIDAL (BC2486) PBM above SD: 5.000 m
Station GPS Bench Mark: 872 0220 A TIDAL (BC2486) MSL above SD: 3.509 m
GPS Observation Frequency: Every five years (performed in 2007, waived this year)
Dive Inspection Frequency: Annually

1. Upgrade the tsunami software.

8721604 Trident Pier, FL **L27078** **Part 19**
Primary Bench Mark: 872 1604 A (NO PID ASSIGNED) PBM above SD: 9.303 m
Station GPS Bench Mark: 872 1604 C TIDAL (AJ2449) MSL above SD: 6.006 m
GPS Observation Frequency: Every five years (performed in 2007, waived this year)
Dive Inspection Frequency: Annually

1. No additional requirements.

8723214 Virginia Key, FL **L27078** **Part 5**
Primary Bench Mark: 872 3214 B (AH5251) PBM above SD: 5.000 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 3.431 m
GPS Observation Frequency: Every five years (performed in 2007, waived this year)
Dive Inspection Frequency: Annually

1. Station has relocated to a new temporary location due to pier construction. RSMAS will provide storage for all station equipment during pier refurbishment (contact Ray Alfonso for schedule of refurbishment activities).
2. Replace the 1x1 aluminum fence that surrounds the aluminum enclosure and holds the three section tower.
3. Leveling standards were not followed during 2007 Annual Inspection- bench marks U 313 and MI 6 RESET must be leveled to during this year's inspection.
4. Upgrade tsunami software.

8723970 Vaca Key, FL **L27078** **Part 7**
Primary Bench Mark: 872 3970 TIDAL 1 (AA0896) PBM above SD: 2.073 m
Station GPS Bench Mark: R 273 (AA0302) MSL above SD: 0.931 m
GPS Observation Frequency: Every five years (performed in 2007, waived this year)
Dive Inspection Frequency: Annually

1. No additional requirements.

8724580 Key West, FL **L27078** **Part 8**
Primary Bench Mark: 872 4580 E TIDAL (AJ2450) PBM above SD: 3.116 m
Station GPS Bench Mark: 872 4580 E TIDAL (AJ2450) MSL above SD: 1.662 m
GPS Observation Frequency: Every five years (performed in 2007, waived this year)
Dive Inspection Frequency: Annually

The City now owns the property where the tide station is located and City has plans to develop the area in the near future, crew has been in touch with the city and no need to move station anytime soon.

1. No additional requirements.

8725110 Naples Pier, FL **L27078** **Part 9**
Primary Bench Mark: 872 5110 TIDAL 7 (AD5731) PBM above SD: 4.225 m
Station GPS Bench Mark: 872 5110 C TIDAL (AD6337) MSL above SD: 1.155 m
GPS Observation Frequency: Every five years (performed in 2007, waived this year)
Dive Inspection Frequency: Annually

1. No additional requirements.

8725520 Ft. Myers, FL **L27078** **Part 10**
Primary Bench Mark: 872 5520 A TIDAL (AD7888) PBM above SD: 2.746 m
Station GPS Bench Mark: 872 5520 A TIDAL (AD7888) MSL above SD: 1.522 m
GPS Observation Frequency: Every five years (performed in 2007, waived this year)
Dive Inspection Frequency: Annually

1. Significant corrosion has taken place in some sections of the concession stand near the tide house where supplies are stored. The shelter's support frame is corroded and some arms are totally gone. The frame shall be replaced in 2008.

8726724 Clearwater Beach, FL **L27078** **Part 12**
Primary Bench Mark: LP 10 1 FLHD (AG7197) PBM above SD: 2.234 m
Station GPS Bench Mark: 872 6724 N TIDAL (AG9359) MSL above SD: 0.970 m
GPS Observation Frequency: Every five years (performed in 2007, waived this year)
Dive Inspection Frequency: Annually

1. The radio for the display of the water level information in the store was found not functioning and needs to be replaced. A working display is required in the license agreement.

8727520 Cedar Key, FL **L27078** **Part 13**
Primary Bench Mark: TIDAL STATION 3-60 TIDAL 8 (AR1204) PBM above SD: 2.347 m
Station GPS Bench Mark: PARK (AR1851) MSL above SD: 1.171 m
GPS Observation Frequency: Every five years (performed in 2007, waived this year)
Dive Inspection Frequency: Annually

This station was temporarily relocated due to the reconstruction of the existing pier in 2007. A recon has been made to select a new gage site at the end of the city pier.

1. Install the NWLON station on the elevated platform when the city pier is rebuit and ready to be occupied.

8728690 Apalachicola, FL **L27078** **Part 15**
Primary Bench Mark: TIDAL STA 3-66 TIDAL 1 (AS0240) PBM above SD: 5.669 m
Station GPS Bench Mark: APALACHICOLA (AS0246) MSL above SD: 1.584 m
GPS Observation Frequency: Every five years (performed in 2007, waived this year)
Dive Inspection Frequency: Annually

This station needs to be relocated based on the recon performed by MDI in 2005 – cost is not covered under the O&M task order.

Station is under consideration for relocation to the south end of Water Street at Battery Park Marina or relocated to river side of pier. Points of contact, with the city, for relocation. Jim Silva harbor master (850) 653-7274; and Michael Moron administrative assistant (850) 653-9319.

1. Remove the silt around the Aquatrak well, if the station is not relocated.
2. Determine and report status of bench mark STA 3-66 WEST POINT NO. 2.
3. Update Bench mark sketch with any new changes.

8729108 Panama City, FL **L27078** **Part 16**
Primary Bench Mark: 872 9108 L TIDAL (BE3028) PBM above SD: 3.965 m
Station GPS Bench Mark: 872 9108 L TIDAL (BE3028) MSL above SD: 1.222 m
GPS Observation Frequency: Every five years (performed in 2007, waived this year)
Dive Inspection Frequency: Annually

1. Replacement of the support base (foundation) for the tidal house is required in 2008, it has become seriously corroded.
2. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological tower with dual wind birds and air temp sensor (station already has the barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.

8729210 Panama City Beach, FL **L27078** **Part 17**
Primary Bench Mark: 872 9210 A (NO PID ASSIGNED) PBM above SD: 13.725 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 8.440 m
GPS Observation Frequency: Every five years (performed in 2007, waived this year)
Dive Inspection Frequency: Annually

1. The pier is going to be rebuilt starting in October 2007, and will be closed for about 2 years. Relocate the station to a temporary location during this reconstruction.
2. Coordinate with the city on plans for a new station once the pier is rebuilt. The cost is not covered under the O&M task order.
3. Many station bench marks have been destroyed in the last two years. Recon possible sites for new marks to be installed in 2008 or 2009; ensure that the station has a minimum of three rod marks. If construction in the area is settled, proceed with the installation of the following new marks and include in the leveling.
4. Establish and level two 3D rod marks, designation and stamping as follows: 872 9210 P/9210 P 2008; 872 9210 Q/9210 Q 2008.
5. Establish and level one surface mark, designation and stamping as follows: 872 9210 R/9210 R 2008.
6. Update the bench mark sketch with the new marks.

8729840 Pensacola, FL **L27078** **Part 18**
Primary Bench Mark: 872 9840 M TIDAL (BG4867) PBM above SD: 4.368 m
Station GPS Bench Mark: 872 9840 M TIDAL (BG4867) MSL above SD: 2.757 m
GPS Observation Frequency: Every five years (performed in 2007, waived this year)
Dive Inspection Frequency: Annually

1. No additional requirements.

8760922 Pilots Station East, SW Pass, LA **L27081** **Part 2**
Primary Bench Mark: 876 0922 C (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: 876 0922 C (NO PID ASSIGNED) MSL above SD: 9.313 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Install a new Redundant Water Level Sensor system.
2. Install new Dry Air Pump system because of its portability.

8761724 Grand Isle, LA **L27081** **Part 1**
Primary Bench Mark: 10 (AT0687) PBM above SD: 2.810 m
Station GPS Bench Mark: 876 1724 C TIDAL (AT0681) MSL above SD: 1.947 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Tide house is in very bad shape and requires replacement in 2008. Pile stability needs to be checked, and a new elevated pile platform installed if warranted. Water was found inside the primary enclosure. Water is filtering from the roof of the tide house into the DCP's. The existing house may not stand strong winds.

8761927 USCG New Canal Station, LA **L27081** **Part 10**
Primary Bench Mark: ALCO (BJ1342) PBM above SD: 3.149 m
Station GPS Bench Mark: ALCO (BJ1342) MSL above SD: 1.350 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Determine and report status of bench marks: 876 1927 B; X 374; and 876 1927 A.
2. Update bench mark sketch with any new changes.

8762075 Port Fourchon, LA **L27081** **Part 33**
Primary Bench Mark: 876 2075 A (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 9.163 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. This is a hydro survey support station; no additional requirements.

8762372 East Bank 1, LA **L27081** **Part 3**
Primary Bench Mark: 876 2372 E (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: 876 2372 F (NO PID ASSIGNED) MSL above SD: 9.847 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Rerun the conduit from the wells to the DCP to prevent high water from reaching the cable joints and causing false temperature readings.

8762482 West Bank 1, LA **L27081** **Part 4**
Primary Bench Mark: 876 2482 A (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: 876 2482 E (NO PID ASSIGNED) MSL above SD: 9.662 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. No additional requirements.

8764044 Tesoro Marine Terminal, LA **L27081** **Part 34**

Primary Bench Mark: 876 4044 E (NO PID ASSIGNED) PBM above SD: 5.000 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 5.781m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

Upgrade of the station with hurricane funding has been postponed.

1. Perform closing levels for hydro and continue operation of the station as a future NWLON station.

MDI - TASK XXVIII - LOWER MISSISSIPPI RIVER PORTS®

John Stepnowski, Task Manager/Technical Representative (TR)

8761955 Carrollton, LA (PORTS) **L27081** **Part 36**
Primary Bench Mark: DISTRICT 1 A (AU2196) PBM above SD: 3.45 m
Station GPS Bench Mark: Undetermined MSL above SD: Undetermined
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Install 9210 DCP for the water level station as per the contract. The well for this site is already installed.
2. Station needs a local network of 5 bench marks. The preliminary information indicates currently four marks may exist as follows: DISTRICT 1 A, DISTRICT 1, TBM FIRST AID, TBM NOD B. Install one additional 3-D mark with logo cap stamping/designation as follows: 1955 A 2008/876 1955 A.
3. Perform GPS observations on the most appropriate mark. Refer to CO-OPS' "User's Guide for GPS Observations", Updated March 2007.

876xxxx Crescent City Bridge, LA (PORTS) (Air Gap and Side looker)

1. Install Air Gap Sensor- Crescent City Bridge had a previous Air Gap installation and ladder, man cage and sensor bracket are already in place.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

876xxxx Huey Long Bridge, LA (PORTS) (Air Gap only)

1. Install Air Gap Sensor.
2. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

WOODS HOLE AND MDI - TASK XXII - GULF COAST STATION HARDENING

Bruce Servary, Task Manager/Technical Representative (TR)

8747437 Bay Waveland YC, MS **L27080** **Part 3**
Primary Bench Mark: 874 7437 TIDAL 1 (BH0937) PBM above SD: 2.473 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 0.990 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Install a Single Pile Instrumentation Platform.
2. After successful installation, data transmission, receipt of good data, and period of dual operation of no less than 30 days, remove the subordinate station.
3. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8761305 Shell Beach, LA **L27081** **Part 35**
Primary Bench Mark: *To be determined* PBM above SD: *Undetermined*
Station GPS Bench Mark: *Undetermined* MSL above SD: *Undetermined*
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Install a Single Pile Instrumentation Platform.
2. All historical bench marks were destroyed. Establish and level five 3D rod marks, designations and stampings as follows: 876 1305 J/1305 J 2008; 876 1305 K/1305 K 2008; 876 1305 L/1305 L 2008; 876 1305 M/1305 M 2008; and, 876 1305 N/1305 N 2008.
3. Perform simultaneous GPS observations on a suitable station bench mark and the NGS bench mark SHELL BEACH (description to be provided).
4. Update bench mark sketch with new marks.

8764227 LAWMA, Amerada Pass, LA **L27081** **Part 11**
Primary Bench Mark: 876 4227 A (NO PID ASSIGNED) PBM above SD: 8.759 m
Station GPS Bench Mark: GPS GAGE 36 (NO PID ASSIGNED) MSL above SD: N/A
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Install a Single Pile Instrumentation Platform.
2. After successful installation, data transmission, receipt of good data, and period of dual operation of no less than 30 days, remove the subordinate station.
3. Bench mark covers were incorrectly stamped and need to be replaced. Bench mark 4227 E is a surface mark that is also stamped incorrectly but can be fixed. The year should be 2005 on all bench marks with 4227 followed by B, C, D, and E (Bench mark 4227 A is the only mark stamped correctly).
4. Include bench mark GPS GAGE 36 in the levels to the new platform.

8766072 Freshwater Canal Locks, LA **L27081** **Part 8**
Primary Bench Mark: 876 6072 A (NO PID ASSIGNED) PBM above SD: 8.887m
Station GPS Bench Mark: 876 6072 A (NO PID ASSIGNED) MSL above SD: 6.760m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Install an Elevated Frame Storm Surge Hardened NWLON Station.
2. Establish and level one 3D rod mark, designation and stamping as follows: 876 6072 D/6072 D 2008.
3. Update bench mark sketch with new mark.

8767816 Lake Charles, LA (PORTS) **L27081** **Part 9**
Primary Bench Mark: A 269 (BK1489) PBM above SD: 10.000 m
Station GPS Bench Mark: CIVIC (BK3291) MSL above SD: 8.323m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Install an Elevated Frame Storm Surge Hardened NWLON Station.

8768094 Calcasieu Pass, East Jetty LA (PORTS) **L27081** **Part 5**
Primary Bench Mark: 876 8094 A (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: 876 8094 E TIDAL (NO PID ASSIGNED) MSL above SD: 8.549 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Install a Single Pile Instrumentation Platform.
2. Establish and level one 3D rod mark, designation and stamping as follows: 876 8094 F/8094 F 2008 and repair 876 8094 D/8094 D 2004.
3. Update bench mark sketch with new mark.
4. After successful installation, data transmission, receipt of good data, and period of dual operation of no less than 30 days, remove the subordinate station.

TEXAS A&M DNR - TASK XX - MOBILE PORTS®

Brad Wynn, Task Manager/Technical Representative (TR)

8734673 Fort Morgan, AL (PORTS) (MET only)

1. Provide heights of met sensors above SD according to standing project instructions.

8735180 Dauphin Island, AL (PORTS) **L27079** **Part 1**
Primary Bench Mark: 873 5180 TIDAL 1 (BH1756) PBM above SD: 6.288 m
Station GPS Bench Mark: 873 5180 TIDAL 1 (BH1756) MSL above SD: 1.049 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Install DAA pump for the redundant Druck sensor.
2. DNR shall perform an underwater inspection of the pilings and submit a report on their findings.
3. Install a vertical access ladder.
4. Install IP cellular modem (Verizon is reported to be the best service provider at this location).

8736897 US Coast Guard Sector, AL (PORTS) **L27079** **Part 7**
Primary Bench Mark: 873 6897 A PBM above SD: 10.000 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: *undetermined*
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. No additional requirements.

8737048 Mobile, AL (PORTS) **L27079** **Part 10**
Primary Bench Mark: 7048 A 1980 (NO PID ASSIGNED) PBM above SD: 10.000m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 0.721m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (winds not feasible, air temp sensor, and barometer only) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Perform GPS observations on one mark near the water level station and on the commemorative mark in the city park; simultaneous observations on the two marks is desirable but not required if only one set of GPS equipment is available.

TEXAS A&M DNR - TASK XXIV - GULFPORT AND PASCAGOULA PORTS®

John Stepnowski, Task Manager/Technical Representative (TR)

8741003 Petit Bois Island, MS (PORTS) (MET only)

1. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8741041 Pascagoula Dock E, MS (PORTS) L27080 Part 7

Primary Bench Mark: *undetermined* PBM above SD: *undetermined*
Station GPS Bench Mark: Select most stable mark observable MSL above SD: *undetermined*
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8741094 Range A Rear, MS (PORTS) (MET only)

1. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8741501 Dock C, MS (PORTS) (MET only)

1. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8741533 Pascagoula NOAA Lab, MS (PORTS) L27080 Part 6

Primary Bench Mark: 874 1533 B (NO PID ASSIGNED) PBM above SD: 9.145 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 6.898m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Upgrade the station DCP to Xpert and Xpert Dark.
2. Provide sensor heights and digital photos as specified in the Standing Project Instructions.

8744707 Ship Island, MS (PORTS) (MET only)

1. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

8745651 West Pier, MS (PORTS) (MET only)

1. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

TEXAS A&M DNR - TASK XIII - HOUSTON/GALVESTON PORTS®

Mark Bailey, Task Manager/Technical Representative (TR)

8770613 Morgans Pont, TX (PORTS) **L27082** **Part 8**
Primary Bench Mark: 877 0613 A TIDAL (AW4858) PBM above SD: 7.0048 m
Station GPS Bench Mark: 877 0613 A TIDAL (AW4858) MSL above SD: 1.813 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

2. **Unresolved from 2007 Project Instructions.** Determine and report status of bench marks E1007, E1205, and include them in levels if in good condition.
3. **Unresolved from 2007 Project Instructions.** Take digital photos of well and gage shelter inside and out.
4. Arrange for transfer of all station and bench mark photos in the DNR database to CO-OPS to ensure CO-OPS has the full set of photos with photo files named according to NOS standards.

8771013 Eagle Point, TX (PORTS) **L27082** **Part 13**
Primary Bench Mark: 877 1013 B (NO PID ASSIGNED) PBM above SD: 3.913 m
Station GPS Bench Mark: 877 1013 A (AJ4424) MSL above SD: 1.446 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

2. **Unresolved from 2007 Project Instructions.** Determine status and report on bench marks EAGLE POINT 1932, EAGLE POINT NO 1 and NO 2 1932, 4 1973, and 5 1973 at the old site north of the present site.
3. Arrange for transfer of all station and bench mark photos in the DNR database to CO-OPS to ensure CO-OPS has the full set of photos with photo files named according to NOS standards.

8771341 Galveston North Jetty, TX (PORTS) **L27082** **Part 41**
Primary Bench Mark: 877 1314 A (NO PID ASSIGNED) PBM above SD: 4.180 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 3.082 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Arrange for transfer of all station and bench mark photos in the DNR database to CO-OPS to ensure CO-OPS has the full set of photos with photo files named according to NOS standards.

8771450 Galveston Pier 21, TX (PORTS) **L27082** **Part 2**
Primary Bench Mark: 7.151 (AW0433) PBM above SD: 2.856 m
Station GPS Bench Mark: 877 1450 TIDAL 40 RESET (AW0569) MSL above SD: 1.588 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions.** Calculate the barometer coefficient.
2. Arrange for transfer of all station and bench mark photos in the DNR database to CO-OPS to ensure CO-OPS has the full set of photos with photo files named according to NOS standards.

8771510 Galveston Pleasure Pier, TX (PORTS) **L27082** **Part 3**
Primary Bench Mark: 877 1510 TIDAL 43 (AW0592) PBM above SD: 8.605 m
Station GPS Bench Mark: 877 1510 TIDAL 46 (AW1703) MSL above SD: 1.404 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions**. A dive inspection **MUST** be performed – missed this in 2006 and 2007.
2. **Unresolved from 2007 Project Instructions**. Calculate the barometer coefficient.
3. Arrange for transfer of all station and bench mark photos in the DNR database to CO-OPS to ensure CO-OPS has the full set of photos with photo files named according to NOS standards.

TEXAS A&M DNR - SABINE-NECHES PORTS®

Mark Bailey, Task Manager/Technical Representative (TR)

8770570 Sabine Pass North, TX (PORTS) **L27082** **Part 1**
Primary Bench Mark: 877 0570 A TIDAL (AV1014) PBM above SD: 3.264 m
Station GPS Bench Mark: 877 0570 A TIDAL (AV1014) MSL above SD: 1.343 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Calculate the barometer coefficient.
2. Arrange for transfer of all station and bench mark photos in the DNR database to CO-OPS to ensure CO-OPS has the full set of photos with photo files named according to NOS standards.

8770539 Mesquite Point, TX (PORTS) **L27082** **Part 10**
Primary Bench Mark: 877 0539 A (NO PID ASSIGNED) PBM above SD: 3.723 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 2.011 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Arrange for transfer of all station and bench mark photos in the DNR database to CO-OPS to ensure CO-OPS has the full set of photos with photo files named according to NOS standards.

8770520 Rainbow Bridge, TX (PORTS) **L27082** **Part 10**
Primary Bench Mark: 877 0520 B (NO PID ASSIGNED) PBM above SD: 2.526 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 1.393 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Arrange for transfer of all station and bench mark photos in the DNR database to CO-OPS to ensure CO-OPS has the full set of photos with photo files named according to NOS standards.

8770822 Texas Point, TX (PORTS) **L27082** **Part 10**
Primary Bench Mark: TEXAS POINT 01 2004 PBM above SD: 5.000 m
Station GPS Bench Mark: Select most stable mark observable MSL above SD: 4.332 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Arrange for transfer of all station and bench mark photos in the DNR database to CO-OPS to ensure CO-OPS has the full set of photos with photo files named according to NOS standards.

TEXAS A&M DNR - TASK XXVII - TEXAS STAIONS

Mark Bailey, Task Manager/Technical Representative (TR)

8772447 USCG Freeport, TX **L27082** **Part 47**
Primary Bench Mark: 877 2447 A (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: 877 2447 A (NO PID ASSIGNED) MSL above SD: 1.525 m
GPS Observation Frequency: Annually
Dive Inspection Frequency: Annually

1. Install bird spikes on solar panels.
2. Install an IP modem provided by FOD.
3. Arrange for transfer of all station and bench mark photos in the DNR database to CO-OPS to ensure CO-OPS has the full set of photos with photo files named according to NOS standards.
4. Upgrade tsunami software.

8774770 Rockport, TX **L27082** **Part 5**
Primary Bench Mark: 877 4770 TIDAL 10 (AN1876) PBM above SD: 2.841 m
Station GPS Bench Mark: 877 4770 TIDAL 4 (AN1880) MSL above SD: 1.914 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. Arrange for transfer of all station and bench mark photos in the DNR database to CO-OPS to ensure CO-OPS has the full set of photos with photo files named according to NOS standards.
2. The station is being considered for relocation to an elevated platform outside the harbor breakwater, pending identification of funding.

8775870 Corpus Christi, TX **L27082** **Part 6**
Primary Bench Mark: 877 5870 A TIDAL (AC8459) PBM above SD: 9.098 m
Station GPS Bench Mark: 877 5870 H TIDAL (AH1762) MSL above SD: 6.635 m
GPS Observation Frequency: Every five years (performed in 2007 waived this year)
Dive Inspection Frequency: Annually

1. Arrange for transfer of all station and bench mark photos in the DNR database to CO-OPS to ensure CO-OPS has the full set of photos with photo files named according to NOS standards.

8779770 Port Isabel, TX **L27082** **Part 7**

Primary Bench Mark: 877 9770 TIDAL 10 (AB1227) PBM above SD: 4.276 m
Station GPS Bench Mark: X 1406 (AB1225) MSL above SD: 1.423 m
GPS Observation Frequency: Every five years (performed in 2007 waived this year)
Dive Inspection Frequency: Annually

1. Arrange for transfer of all station and bench mark photos in the DNR database to CO-OPS to ensure CO-OPS has the full set of photos with photo files named according to NOS standards.

FOD/ARO - GREAT LAKES

ST. LAWRENCE RIVER

8311030 Ogdensburg, NY **L27089** **Part 1**
Primary Bench Mark: 831 1030 A (PH0768) PBM elevation (Dynamic):84.6140 m
Station GPS Bench Mark: 831 1030 H (DE7800) Hydraulic Corrector: +0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. This station has been added to the CELRE Infrastructure Upgrade contract. A temporary gauge will need to be installed during demolition and restoration. Reconnaissance and a meeting with the city engineer are still needed in order for the engineering design to be approved and completed.
2. Replace the ETG tape and weight.

8311062 Alexandria Bay, NY **L27089** **Part 2**
Primary Bench Mark: 831 1062 LAND (LX4057) PBM elevation (Dynamic):86.1710 m
Station GPS Bench Mark: 831 1062 LMN (DE7816) Hydraulic Corrector: +0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Remove the intake inserts for both primary and backup well, flush and clear of any obstructions. Check structural integrity of brackets for possible ice damage.
2. Make up an additional page, both benchmark sketch and chart section to include bench marks JAMISON, DEE, TIB, and. LEDGE (Note – Chart section may not cover the area for plotting BM Ledge as it is inland). These marks were used in the level line to obtain ties to the net and are not to be included as part of the normal station benchmark network.

LAKE ONTARIO

9052000 Cape Vincent, NY **L27090** **Part 1**
Primary Bench Mark: 905 2000 CAPE (PJ0033) PBM elevation (Dynamic):77.0712m
Station GPS Bench Mark: 905 2000 F (AH9230) Hydraulic Corrector: +0.008 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. This station is scheduled for relocation and was submitted to the CELRE contract. CELRE is contracting the required soil boring analysis needed to see if we can even build a station in the present location due to the entire area being nothing but rock. This will determine whether or not we can even afford to build a new standard lakes station in this area.
2. Perform a reconnaissance of the site offshore on the break wall to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
3. The plan is to install the met station after new station is built, in the meanwhile determine which permits will need to be obtained. If the Coast Guard is operating lights, then can we use power from them? Solar power may not work well in this area. If met station is done prior to the new station being built, then the met will need to be standalone requiring a transmitter. If we wait for the new station to be installed, then we can use line of site radios.

9052030 Oswego, NY (MASTER) **L27090** **Part 2**
Primary Bench Mark: 905 2030 LAKE (OF0658) PBM elevation (Dynamic): 77.4870 m
Station GPS Bench Mark: 905 2030 J (AH9231) Hydraulic Corrector: +0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Inspect and repair as necessary leaks around the valve and sump walls. Replace the bottom 9 feet of the sump ladder as necessary.
2. Obtain permission to recover BM WAREHOUSE which has been asphalted over. Once recovered, sleeve and cap.
3. Inspect all CORS station components for proper operation and notify NGS of any problems found.

9052058 Rochester, NY **L27090** **Part 3**
Primary Bench Mark: 905 2058 SUB (OF1082) PBM elevation (Dynamic): 76.8041
Station GPS Bench Mark: 905 2058 K (AH9232) Hydraulic Corrector: +0.006 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Perform dive to inspect and clean the intake and verify the elevation of both inside and outside inverts. Update intake GPS coordinates.
2. Sump should be pumped down enough times (minimum 4 to 6) to ensure entire length of intake line has been cleared of any debris.

9052076 Olcott, NY **L27090** **Part 4**
Primary Bench Mark: 905 2076 WEST (OG0098) PBM elevation (Dynamic): 77.4920 m
Station GPS Bench Mark: 905 2076 H (AH9233) Hydraulic Corrector: +0.008 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. If tree limbs are still overhanging the building, blocking the GOES and GPS antennas, check with both of the land owners to obtain permission and contract to have trimmed or removed.

NIAGARA RIVER

9063007 Ashland Avenue, NY **L27091** **Part 1**
Primary Bench Mark: 906 3007 POOL (OG0229) PBM elevation (Dynamic): 111.4279
Station GPS Bench Mark: NA Hydraulic Corrector: +0.000 m
Dive Inspection Frequency: Annually (Contracted)

1. This is our year to contract out the necessary dive services to be performed at this station. All contracting, dates and times need to be coordinated with NYPA engineers and the Niagara City waste water treatment facility managers. See station report for contacts. Note – Dive contractor must meet and provide all of NYPA's insurance requirements for working on site.
2. Update the bench mark sketch, to be consistent with the format for the other GL stations.

9063009 American Falls, NY **L27091** **Part 2**
Primary Bench Mark: 906 3009 FRONTIER (OG0223) PBM elevation (Dynamic): 171.8554
Station GPS Bench Mark: W 411 (OG0350) Hydraulic Corrector: +0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: N/A (Above Falls)

1. Establish, describe, and connect via levels one surface mark in the newly built bridge abutment, designation/stamping: 906 3009 G/3009 G 2008. See station report for Parks engineer to contact and obtain permission prior to setting.
2. Add bench mark U 411 Reset and 906 3009 G to the bench mark sketch and chart section.
3. This station bypass pipe is equipped with a Chicago air fitting connection for blowing out the intake. Rent a compressor large enough to blow the entire length of the intake out.

9063012 Niagara Intake, NY **L27091** **Part 3**
Primary Bench Mark: 906 3012 INTAKE (OG0215) PBM elevation (Dynamic): 173.3803 m
Station GPS Bench Mark: 906 3012 INTAKE (OG0215) Hydraulic Corrector: +0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: N/A (Power Intakes)

1. Perform a reconnaissance of the site to find an appropriate location for installing a partial meteorological sensor package (air temp sensor, and barometer only) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection. This building and land is not owned by NOAA; it is owned by NYPA. Obtain necessary permits for this activity.
2. Check and see if NYPA has performed the needed roof repairs to keep the rain water from leaking down on the gauge equipment.

LAKE ERIE

9063020 Buffalo, NY **L27092** **Part 1**
Primary Bench Mark: 906 3020 MACHINE (NC0403) PBM elevation (Dynamic): 176.5548 m
Station GPS Bench Mark: 906 3020 H (AH9234) Hydraulic Corrector: -0.026 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Inspect all CORS station components for proper operation and notify NGS of any problems found.

9063028 Sturgeon Point, NY **L27092** **Part 2**
Primary Bench Mark: 906 3028 WATER (NC0430) PBM elevation (Dynamic): 197.5510 m
Station GPS Bench Mark: 906 3028 L (DE7802) Hydraulic Corrector: -0.023 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Perform dive to inspect and clean the intake and verify the elevation of both inside and outside inverts.
2. Inspect sump ladder rungs for corrosion; if necessary, contract for replacement.

9063038 Erie, PA **L27092** **Part 3**
Primary Bench Mark: D 362 (ND0163) PBM elevation (Dynamic): 175.4628 m
Station GPS Bench Mark: D 362 (ND0163) Hydraulic Corrector: -0.025 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Perform a reconnaissance of the site on the break wall at the lighthouse to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temp sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection. Obtain the necessary permits (from SHPO, or CG as this is still an active light; also maybe from COE as the pier may be owned by them).

9063053 Fairport, OH (MASTER) **L27092** **Part 4**
Primary Bench Mark: K 321 (MB1625) PBM elevation (Dynamic): 175.9180 m
Station GPS Bench Mark: Under Evaluation Hydraulic Corrector: +0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. The entire area is subsiding due to the underground mining of salt. All benchmarks at the station have indicated subsidence of 5 centimeters or more. NGS performed a level tie to the net in September for verification. All benchmark heights are being evaluated.
2. The Cleveland NWS office was supposed to install Met equipment on the lighthouse and radio it back to our DCP. If this equipment has not been installed, then contract with the GL maintenance contractor to have the met equipment installed.
3. CO-OPS will write letters to appropriate authorities for permissions, as necessary.

9063063 Cleveland, OH **L27092** **Part 5**
Primary Bench Mark: G 321 (MB1563) PBM elevation (Dynamic): 177.7308 m
Station GPS Bench Mark: G 321 (MB1563) Hydraulic Corrector: +0.010 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. The Cleveland NWS office was suppose to install met wind equipment on the offshore break wall and radio it back to our DCP. If this equipment has not been installed, then contract with the GL maintenance contractor to have the met equipment installed.
2. Inspect all CORS station components for proper operation and notify NGS if any problems are found.
3. CO-OPS will write letters to appropriate authorities for permissions, as necessary.

9063079 Marblehead, OH **L27092** **Part 6**
Primary Bench Mark: Z 317 (MC0984) PBM elevation (Dynamic): 177.2379 m
Station GPS Bench Mark: 906 3079 L (AH9236) Hydraulic Corrector: -0.006 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. During the dive inspection remove and clean both the intake cap opening and the pass through pipe on the redundant 12" well and ream out the intake pass through on the primary 18" well.
2. Inspect all CORS station components for proper operation and notify NGS if any problems are found.

9063085 Toledo, OH **L27092** **Part 7**
Primary Bench Mark: 906 3085 NAVAL (MC0269) PBM elevation (Dynamic): 175.4592 m
Station GPS Bench Mark: 906 3085 G (AH9237) Hydraulic Corrector: -0.005 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required (contracted)

1. Report on the status for the valve, valve stem, and sump ladder. Pump and pressure wash the sump.
2. Contact Cooley Communications, GL maintenance contractor and have his crew replace the RM Young wind bird nose cones on the Coast Guard tower.
3. Verify all plotting of the benchmarks on the chart section and add 906 3085 G. Inspect and verify that the direct readout displays at both the Corps of Engineers and Coast Guard offices are reading properly. Displays should readout the water level in inches above or below Low Water Datum (LWD) as well as Local Standard Time (LST).
4. Check and report on the status for the offshore buoy marking the intake. Contact FOD if found to be missing.

9063090 Fermi Power Plant, MI **L27092** **Part 8**
Primary Bench Mark: 906 3090 POWER (MC0873) PBM elevation (Dynamic): 177.5893 m
Station GPS Bench Mark: 906 3090 G (AH9238) Hydraulic Corrector: +0.023 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temp sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. A dive inspection is required to obtain and verify the elevation of both inside and outside inverts. Update GPS coordinates on offshore intake goose neck.
3. Obtain permission, establish, describe, and connect via levels one rod mark, designation/stamping: 906 3090 H/3090 H 2008. Recommend this mark be set between 906 3090 G and F 234.
4. Update the bench mark sketch.
5. Report on the status for the valve and pressure wash the sump as necessary.
6. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

DETROIT RIVER

9044020 Gibraltar **L27093** **Part 13**
Primary Bench Mark: M 234 (NE0857) PBM elevation (Dynamic): 176.6298 m
Station GPS Bench Mark: H 115 X (NO PID ASSIGNED) Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Ensure that readout display at the Gibraltar Police station is working properly. Displays should readout the water level in inches above or below Low Water Datum (LWD) as well as Local Standard Time (LST).
2. Contact Gibraltar City officials, start with the police chief, to obtain written permission to install winds on the cities tower at the police station. If permission is granted then the installation will be performed by the GL maintenance contractor and if feasible will be radioed back to the gauge station. If radios can't be used then a stand alone 9210 DCP with GOES will be needed. Install dual winds, barometer and air temperature sensors – all equipment GFE). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

9044030 Wyandotte, MI **L27093** **Part 2**

Primary Bench Mark: 904 4030 CHIEF (NE0577) PBM elevation (Dynamic):176.1190 m
Station GPS Bench Mark: Select most stable mark observable Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temp sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection. The tower needs to be installed somewhere in the area at the mouth of the Rouge River between Wyandotte and Ft. Wayne stations. It will most likely need to be a stand alone 9210 DCP with GOES.
2. Obtain permission, establish, describe, and connect via levels one rod mark, designation/stamping: 904 4030 K/4030 K 2008. Recommend this mark be set between 904 4030 J and 904 4030 G along the river front and open to the sky for GPS observations.
3. A two meter level rod is required for proper placement on the PBM.

9044036 Fort Wayne, MI **L27093** **Part 3**

Primary Bench Mark: 904 4036 RAMP (NE0622) PBM elevation (Dynamic):175.2317 m
Station GPS Bench Mark: FORT WAYNE A (AA8055) Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Contact the COE office at the boatyard, prior to arrival to gain permission to access the property. See station report for contacts.

9044049 Windmill Point, MI **L27093** **Part 4**

Primary Bench Mark: 904 4049 USPHS (NE0136) PBM elevation (Dynamic):176.5770 m
Station GPS Bench Mark: Select most stable mark observable Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Obtain permission, establish, describe, and connect via levels one rod mark, designation/stamping: 904 4049 M/4049 M 2008. This mark should be open to the sky for GPS observations.
2. Update the bench mark sketch.

LAKE ST CLAIR

9034052 St. Clair Shores, MI (MASTER) **L27094** **Part 1**
Primary Bench Mark: 903 4052 FOOD (NE0165) PBM elevation (Dynamic): 176.9698m
Station GPS Bench Mark: N 235 (NE0898) Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Coast Guard is planning to install a new radio tower in the general location of the gauge house. Enquire the status of a new CG tower. Like at Toledo, they would like for us to install and operate the full met equipment (dual wind, air temperature, and barometer) on their tower. Obtain the necessary Coast Guard permit. Investigate also the data availability and which sensors are installed at the NWS installed a stand alone met station next door at the Yacht club. A decision will be made and if necessary the full meteorological sensors may be installed in FY09.

ST CLAIR RIVER

9014070 Algonac, MI **L27095** **Part 1**
Primary Bench Mark: 901 4070 TREAT (NE0255) PBM elevation (Dynamic):176.8682m
Station GPS Bench Mark: Select most stable mark observable Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. This site is scheduled to be upgraded by contract. The engineering drawings have been finalized but prior to advertising and awarding the construction contract the City of Algonac, property owner, needs to finalize the litigation for the required repairs to the seawall from previous construction in the area.

9014080 St. Clair State Police, MI **L27095** **Part 2**
Primary Bench Mark: A 237 (NE0943) PBM elevation (Dynamic): 176.5906m
Station GPS Bench Mark: 901 4080 F (AC9129) Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Contact the property owner at least 2 weeks in advance to schedule an access time to survey to the PBM, A 237. The backyard where the mark is located has two German Shepherds who have access to the yard 24/7. Do not enter without the landowners' permission.

9014087 Dry Dock, MI **L27095** **Part 3**
Primary Bench Mark: Z 236 (NE0953) PBM elevation (Dynamic):180.7617 m
Station GPS Bench Mark: Select most stable mark observable Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1 Obtain permission, establish, describe, and connect via levels one surface or rod mark, designation/stamping: 901 4087 G/4087 G 2008. Recommend, if at all possible, installing this mark in the vicinity of 16th Street and Military Avenue.

9014090 Mouth of the Black River, MI **L27095** **Part 4**
Primary Bench Mark: Z 43 (NE0088) PBM elevation (Dynamic): 178.9323m
Station GPS Bench Mark: 901 4090 D (NE0955) Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Construction started for the new station in late Fall 07 with the intake and sump being installed. The house will be constructed in the spring of 2008. When that happens, a crew must be available to assist with the station DCP installation and leveling.
2. Diving will be required to inspect and obtain the new intake invert elevation upon completion of the new station. NOTE - The new station will require operating for a minimum of one year, including at least one complete summer month period, June through September, for computing the LWD.
3. Perform dive to inspect and clean the old station intakes. Remove intakes for both primary and backup well, flush and clear of any obstructions. NOTE – The old station will need to stay in operation for a minimum of one year while comparisons are being made with the new station.
4. Test the heat rods. If replacement is required, contract with Tim Cooley to do so.

9014096 Dunn Paper, MI **L27095** **Part 5**
Primary Bench Mark: 3060 (NE0081) PBM elevation (Dynamic): 179.1206m
Station GPS Bench Mark: Select most stable mark observable Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Perform dive to inspect and clean the intakes.
2. Test the heat rods. If replacement is required, contract with Tim Cooley to do so.

9014098 Fort Gratiot, MI **L27095** **Part 6**
Primary Bench Mark: 901 4098 RETAINING WALL (OJ0009) PBM elevation (Dynamic):179.5533 m
Station GPS Bench Mark: 901 4098 RETAINING WALL (OJ0009) Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Inspect the display in the basement entrance way for the lighthouse to see that it is displaying the winds and LST correctly. This display provides wind speed in MPH and direction in North, South, East or West along with Local Standard Time (LST).
2. If the crew is unable to change out the RM Young wind bird nose cone atop the lighthouse then contact Tim Cooley, the GL maintenance contractor to do so.
3. A new spike (SPSN 606) is required to be set every year at this station in order to perform the Water Transfer (inside/outside) check.

LAKE HURON

9075002 Lakeport, MI **L27096** **Part 1**
Primary Bench Mark: 907 5002 BURTCH (OJ0036) PBM elevation (Dynamic): 178.7965m
Station GPS Bench Mark: LAKEPORT RM 2 (OJ0599) Hydraulic Corrector: +0.013 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required.

1. A dive inspection was performed in 2007 and the intake could not be found. Contract with a dive company to blow out the intake pipe and verify that the PVC gooseneck is still intact. This intake is in shallow water and subject to ice damage as well as being covered up by a moving sand bar in the area. If replacement is required, contact FOD for shipment of intake parts.

9075014 Harbor Beach, MI (MASTER) **L27096** **Part 2**
Primary Bench Mark: GRIST (OJ0219) PBM elevation (Dynamic): 180.2752 m
Station GPS Bench Mark: LSC 5C93 (OJ0517) Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Use and level to the new PBM GRIST plus four other marks. The old PBM E 237 has been covered up with siding. Property owner was contacted and asked to have the siding cut out around the mark. Check to see if he has done so and include in the leveling if siding has been removed.
2. Inspect all CORS station components for proper operation and notify NGS if any problems are found.
3. Inspect the sump ladder for structural integrity. If replacement is necessary, obtain estimate for replacement and contact FOD.

9075035 Essexville, MI **L27096** **Part 3**

Primary Bench Mark: 907 5035 CON (OJ0526) PBM elevation (Dynamic): 179.1734 m
Station GPS Bench Mark: ESSEX A (AA8053) Hydraulic Corrector: -0.002 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Perform a reconnaissance of the site eastward towards the point to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temp sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection. If line of sight transmissions are not possible, i.e. radios can not be used, then installation of a meteorological package may require additional DCP with transmitter. CO-OPS will write letters to appropriate authorities for permissions, as necessary.
2. Prior to arrival on site, call and notify plant security, at minimum, one week in advance of the field parties' arrival. Pre-arrange access through the rear entrance gate so that a Water Transfer (inside/outside) check can be obtained. Not done in 07, required in 08. See station report for contacts.
3. NOTE: PBM elevation subject to change. NGS re-leveled the network of station marks to the net in 2006. Contact FOD for elevation update prior to running of the abstract.

9075059 Harrisville, MI **L27096** **Part 4**

Primary Bench Mark: K 306 (PK0230) PBM elevation (Dynamic): 184.7660 m
Station GPS Bench Mark: LAUNCH SITE (AH9229) Hydraulic Corrector: -0.003 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Station is scheduled for closing. Contact RDD/FOD for final decision on station closure.
2. If station is closed then closeout levels are to be performed to all station benchmarks. If not, then level to PBM plus four other marks.
3. If the station closes then remove all components. Contract to have the well removed from the underside of the wharf. Replace the wood flooring as required. Remove the ice eaters and all support cabling. Contact the power and phone company for termination of the accounts.
4. Diving will be required to remove the ice eaters and cabling. The area around the lower section of the well will also need to be jetted out prior to its removal.

9075065 Alpena, MI **L27096** **Part 7**

Primary Bench Mark: 907 5065 POST OFFICE (GJ0009) PBM elevation (Dynamic):180.1536 m
Station GPS Bench Mark: 907 5065 G (NO PID ASSIGNED) Hydraulic Corrector: +0.031 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Inspect all CORS station components for proper operation and notify NGS if any problems are found.
2. Update chart section and benchmark sketch.

9075080 Mackinaw City, MI **L27096** **Part 5**

Primary Bench Mark: J 299 (QK0428) PBM elevation (Dynamic): 179.6082 m
Station GPS Bench Mark: J 299 (QK0428) Hydraulic Corrector: +0.043 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. A 10 meter Rohn tower with a complete suite of met sensors (includes dual wind birds, barometer and air temperature/RH sensors) is scheduled to be installed with the new station in the spring 2008. The GL maintenance contractor will install the tower and sensors. When that happens, a crew must be available to assist with the station DCP installation and leveling. Provide sensor heights and digital photos as specified in the standing project instructions. Upon completion of the construction, install a complete lakes setup to include an Xpert and Xpert Dark DCP with BEI and Water Log encoder. This station will also have GPS installed for inclusion into the CORS network. A digital display mounted either on the gauge house or close by is required by the DNR Park Service. The digitized display will provide the water level in inches, wind speed and direction, air and water temperature, Local Standard Time (LST) and any other sensor or advertisement about NOAA/NOS/CO-OPS that we would like to have displayed.
2. Update chart section and bench mark sketch.
3. Diving will be required to inspect and obtain the new intake invert elevation upon completion of the new station.
4. Take one general location photo showing the new water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all new bench marks. Take face, setting, and location photos for any newly established marks.

9075099 Detour Village, MI (PORTS) **L27096** **Part 6**

Primary Bench Mark: L 293 (QJ0086) PBM elevation (Dynamic): 179.7044m
Station GPS Bench Mark: DETOUR MARINA (AH9228) Hydraulic Corrector: +0.005 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Update chart section and benchmark sketch.

LAKE MICHIGAN

9087023 Ludington, MI **L27097** **Part 1**
Primary Bench Mark: J 318 (OL0303) PBM elevation (Dynamic): 177.9833 m
Station GPS Bench Mark: J 318 (OL0303) Hydraulic Corrector: +0.087 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Inspect all CORS station components for proper operation and notify NGS if any problems are noticed.
2. The roof is leaking and needs repair. Contract to have the roofing replaced with the new style rubber membrane like Milwaukee and Toledo.
3. Level to the original ETG (SPSN 001) and then remove and replace the ETG and shelving with a new SS bracket with minimum ¾ inch stained and sealed hardwood shelf. Level to and include in the level run as SPSN 002.
4. NWS would like us to move our wind sensors out to the entrance channel, providing true marine winds. Have GL maintenance contractor perform recon and once permits are in place, install a new tower with dual winds. Once recon is completed we will know whether or not the data can be radioed back to the station or a 9210 DCP with GOES will be required.

9087031 Holland, MI **L27097** **Part 2**
Primary Bench Mark: W 319 (NG0413) PBM elevation (Dynamic):177.5769 m
Station GPS Bench Mark: 908 7031 J (AH5303) Hydraulic Corrector: +0.090 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. The station relocation has been added to the CELRE contract pipeline and the engineering designs are being prepared for new station. This includes installation of a meteorological sensor package (tower with dual wind birds, air temp sensor, and barometer) to be installed in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007). Provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. During the dive inspection remove and clean both the intake cap opening and the pass through pipe for the 12” encoder well and ream out the intake pass through on the ETG well.
3. Test the heat rods. If replacement is required, contact Tim Cooley to do so.

9087044 Calumet Harbor, IL **L27097** **Part 3**
Primary Bench Mark: 908 7044 COM (ME2189) PBM Dynamic Height: 178.0648 m
Station GPS Bench Mark: 908 7044 H (AE9231) Hydraulic Corrector: +0.104 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Inspect all CORS station components for proper operation and notify NGS if any problems are found.

9087057 Milwaukee, WI **L27097** **Part 4**
Primary Bench Mark: NAVY (OL0278) PBM Dynamic Height: 182.9494 m
Station GPS Bench Mark: MILWAUKEE A (AA8061) Hydraulic Corrector: +0.106 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Site reconnaissance for the installation of meteorological sensor package was performed by RDD/FOD in July 2007. Two sites were chosen. The preferred location is owned by Lake Express, LLC. The owner has been contacted and supports this installation. The existing tower needs to have further reconnaissance performed. This will be done by our GL contractor. At the preferred location dual wind birds, air temp sensor, and barometer need to be installed by the GL contractor in FY08. Provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.

9087068 Kewaunee, WI **L27097** **Part 5**
Primary Bench Mark: 908 7068 ROD (PM0373) PBM Dynamic Height: 177.9684 m
Station GPS Bench Mark: 908 7068 H (AH5304) Hydraulic Corrector: +0.114 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. This site is scheduled to be upgraded by contract in 2008. When that happens, a crew must be available to assist with the station DCP installation and leveling.

9087069 Kewaunee Met, WI

1. Standard DCP maintenance is required.
2. Take one general location photo showing the met station in relationship to its supporting structure and the local body of water.

9087072 Sturgeon Bay Canal, WI **L27097** **Part 6**

Primary Bench Mark: 908 7072 GARAGE (PM0361) PBM Dynamic Height: 181.8608 m
Station GPS Bench Mark: STURGEON A (AA8057) Hydraulic Corrector: +0.106 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temp sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.

9087079 Green Bay, WI **L27097** **Part 7**

Primary Bench Mark: 908 7078 WIS (PN0090) PBM Dynamic Height: 179.6563 m
Station GPS Bench Mark: 908 7079 H (AH5305) Hydraulic Corrector: +0.114 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required (contracted)

1. The station relocation has been added to the CELRE contract pipeline and the engineering designs are being prepared for new station. This includes installation of a meteorological sensor package (tower with dual wind birds, air temp sensor, and barometer) to be installed in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007). Provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. This site is scheduled to be upgraded or relocated by contract in 2008. If upgraded a crew must be available to install and level to a temporary gauge that will be required to operate for approximately three months while construction is proceeding.
3. A buoy marking the intake location is required to be installed in the spring and removed in late Fall each year. The contact for the dive contractor to place the buoy in this area is:

Seaview Diving Contractors, Inc
N8867 County Rd Y
Seymour, WI 54165
Contact Name: Mike Holdridge
Phone: 902-833-7601
Fax: 920-833-7701

9087088 Menominee, WI **L27097** **Part 9**
Primary Bench Mark: MARATHON (QL0345) PBM Dynamic Height: 179.5330 m
Station GPS Bench Mark: 35 A (PID ??) Hydraulic Corrector: +0.106 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. This site is scheduled to be upgraded by contract in 2008 or 2009. When that happens, a crew must be available to assist with the station DCP installation and leveling.
2. NOTE: PBM elevation subject to change. NGS re-leveled the network of station marks to the net in 2006. Contact FOD for elevation update prior to running of the abstract.
3. Perform dive to inspect and clean the orifices and replace the temperature sensor.
4. The temperature sensor is connected to the primary Xpert. The analog board is bad causing a -10 degree error in the water level temperatures. Replace this board and perform the required test procedures to ensure the WL temperatures are correct.

9087096 Port Inland, MI **L27097** **Part 8**
Primary Bench Mark: 908 7096 G (AC8317) PBM Dynamic Height: 181.3705m
Station GPS Bench Mark: 908 7096 J (NO PID ASSIGNED) Hydraulic Corrector: +0.046m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Perform dive to inspect and clean the intakes and obtain the intake elevations.
2. If the GL maintenance contractor has not already done so, install a redundant Teledesign 5 watt radio in the redundant DCP.
3. Inspect the stand alone met station.

ST. MARYS RIVER

9076024 Rock Cut, MI (PORTS) **L27098** **Part 3**
Primary Bench Mark: 907 6024 B (NO PID ASSIGNED) PBM elevation (Dynamic): 178.0183m
Station GPS Bench Mark: 907 6024 B (NO PID ASSIGNED) Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Seal the air gap around the wells where they come through the fiberglass flooring

9076027 West Neebish Island, MI (PORTS) **L27098** **Part 6**
Primary Bench Mark: E 297 (RJ0670) PBM elevation (Dynamic): 178.7844 m
Station GPS Bench Mark: 907 6027 DOCK (RJ0186) Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Inspect the door mortar joint for cracks. Report to FOD if any are found.
2. Inspect all CORS station components for proper operation and notify NGS if any problems are found.

9076028 Lookout Station #4, MI (PORTS) **L27098** **Part 4**
Primary Bench Mark: F 297 (RJ0669) PBM elevation (Dynamic):177.6140 m
Station GPS Bench Mark: C6W-017 (RJ1381) Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. The new West Neebish station is replacing this station. Closeout levels are to be performed to all station benchmarks.
2. All DCP's and component sensors are to be removed after the closeout levels.

9076032 Little Rapids, MI (PORTS) **L27098** **Part 5**
Primary Bench Mark: D 293 (RJ0616) PBM Dynamic Height: 178.3058 m
Station GPS Bench Mark: FERRY DOCK (RJ0617) Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. This site is scheduled to be upgraded by contract in the spring of 2008. When that happens, a crew must be available to assist with the station DCP installation and leveling.
2. Perform dive to inspect and clean the intake and obtain the invert elevation at both locations.
3. Take one general location photo showing the new water level station in relationship to its supporting structure and the local body of water.

9076060 U.S. Slip, MI (PORTS) **L27098** **Part 1**
Primary Bench Mark: C 293 (RJ0613) PBM elevation (Dynamic):184.3007 m
Station GPS Bench Mark: UNIT 10 106 (AE8008) Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Contact Ken Smith, with the COE Soo Area Office @ (906) 635-3455 or (906) 440-7592 cell while in the area. Ken is our local observer taking care of both of the COE, SOO PORTS gauges, U.S. Slip and S.W. Pier. Ensure that all gauges have been operating correctly.
2. If diving becomes necessary the dive operations can only occur after a written plan has been submitted to the head of dive operations in the Detroit District office and the SOO operations engineer. This has to be done at least a week in advance of the dive.
3. To access the PBM inside Brady Park and on the Indian grounds contact Mr. Cecil Pavlat with the Tribal Council, office @ 906-632-7480 or 906-440-7849 cell.

9076070 S.W. Pier, MI (PORTS) **L27098** **Part 2**
Primary Bench Mark: V 295 (RJ0608) PBM elevation (Dynamic):186.0904 m
Station GPS Bench Mark: UNIT 10 106 (AE8008) Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. If diving becomes necessary the dive operations can only occur after a written plan has been submitted to the head of dive operations in the Detroit District office and the SOO operations engineer. This has to be done at least a week in advance of the dive.
2. Contact Ken Smith, with the COE SOO Area Office @ (906) 635-3455 or (906) 440-7592 cell while in the area. Ken is our local observer taking care of both of the COE, SOO PORTS gauges, S.W. Pier and U.S. Slip. Ensure that all gauges have been operating correctly.
3. Level to the PBM, bench marks KRISTIN, and three other marks.

LAKE SUPERIOR

9099004 Point Iroquois, MI (PORTS) **L27099** **Part 1**
Primary Bench Mark: A 293 (RJ0586) PBM elevation (Dynamic):187.7989 m
Station GPS Bench Mark: A 293 (RJ0586) Hydraulic Corrector: -0.100 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Dive required to inspect and to obtain the elevation of the offshore intake invert. Obtain the GPS coordinates for the offshore end of the intake.
2. Inspect all CORS station components for proper operation and notify NGS if any problems are found.

9099018 Marquette, MI (MASTER) **L27099** **Part 2**
Primary Bench Mark: U 329 (RK0448) PBM elevation (Dynamic): 189.9332 m
Station GPS Bench Mark: 909 9018 K (AH7272) Hydraulic Corrector: 0.000 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required.

1. Inspect all CORS station components for proper operation and notify NGS if any problems are found.
2. NWS and the local mariners would like us to move our wind sensors over atop the Marquette Harbor Lighthouse, providing true marine winds for the area. The GL maintenance contractor has performed reconnaissance of the lighthouse and contacted the leaser, President, Board of Directors, Marquette Maritime Museum, Frederick Stonehouse and obtained permission (letter in hand) for the installation. Because this lighthouse is historic, permits will also have to be obtained from both MI SHPO and the CG. 9th District office. Once these permits are in place dual winds will be installed and radioed over to the gauge station. GL contractor will perform the installation.

9099044 Ontonagon, MI **L27099** **Part 3**
Primary Bench Mark: 909 9044 VFW (AE8284) PBM elevation (Dynamic): 186.0416 m
Station GPS Bench Mark: 909 9044 L (NO PID ASSIGNED) Hydraulic Corrector: +0.049 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required.

1. New PBM established. Use PBM 909 9044 VFW at elevation 186.0416 m for your starting elevation for leveling operations and for leveling abstract.
2. Contact the GL maintenance contractor for upgrading the electrical system and installing a new heater assemble.

9099064 Duluth, MN **L27099** **Part 4**
Primary Bench Mark: 909 9064 BAR (RN1077) PBM elevation (Dynamic): 184.4324 m
Station GPS Bench Mark: 602 (AE8289) Hydraulic Corrector: +0.079 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Check to see if the water temperature sensor can be placed through one of the intake pipes and attached to the off shore end of the pipe? If a longer WT sensor is needed, contact RDD lab to obtain.

9099090 Grand Marais, MN **L27099** **Part 5**
Primary Bench Mark: 909 9090 SCOTT (SH0674) PBM elevation (Dynamic): 184.9850 m
Station GPS Bench Mark: MARAIS RESET (AA2869) Hydraulic Corrector: +0.046 m
GPS Observation Frequency: Every five years
Dive Inspection Frequency: As found necessary or required

1. Inspect all CORS station components for proper operation and notify NGS if any problems are found.
2. Repair or replace the flapper valve and stem as required.
3. IF PBM SCOTT is ever found to be inaccessible then use BM Z 176 as the new PBM with elevation above IGLD as 188.5940 m.

FOD/PRO - HAWAII, PACIFIC ISLANDS, AND WEST COAST STATIONS

1611400 Nawiliwili, HI

Primary Bench Mark: 161 1400 TIDAL 14 (NO PID ASSIGNED) PBM above SD: 3.155 m
Station GPS Bench Mark: 161 1400 WALL (MSL above SD: 0.949 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Every two years (required this year for item 3)

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (stand alone system and tower with dual wind birds, air temperature sensor, and barometer and if possible using IP modem and GOES communications) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
3. Add one brass bolt to the parallel plate flange.
4. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for all marks.

1612340 Honolulu, HI

Primary Bench Mark: 161 2340 BM 8 (TU0286) PBM above SD: 3.734 m
Station GPS Bench Mark: GSL 2340 1987 (NO PID ASSIGNED) MSL above SD: 1.412 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Every two years, (not required this year)

1. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
3. Install a mast for the solar panels and satellite antenna.
4. Record the serial numbers for the Satlink and pump.
5. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for all marks.

1612480 Mokuoloe, HI

Primary Bench Mark: 161 2480 NO 1 (NO PID ASSIGNED) PBM above SD: 1.969 m
Station GPS Bench Mark: NO 2 1987 (NO PID ASSIGNED) MSL above SD: 1.210 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Every two years, (not required this year)

1. Install a met tower and met sensors during FY08 (stand alone system including dual winds, barometer and air temperature sensors and using if possible IP modem and GOES communications). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
3. Replace bottom bail.
4. Replace machete.
5. Repair roof.
6. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks.

1615680 Kahului, HI

Primary Bench Mark: 161 5680 A (NO PID ASSIGNED) PBM above SD: 3.007 m
Station GPS Bench Mark: 161 5680 C (NO PID ASSIGNED) MSL above SD: 1.075 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
3. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks.

1617433 Kawaihae, HI

Primary Bench Mark: 161 7433 B (NO PID ASSIGNED) PBM above SD: 3.094 m
Station GPS Bench Mark: 161 7433 B (NO PID ASSIGNED) MSL above SD: 1.049 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
2. Install new bales.
3. Replace the orifice tubing and the rigid conduit from the edge of the pier to the Dixon board and add flex conduit to cover the tube going into the Dixon board.
4. Repair the current configuration for sensor run near the well (all those LB angles).
5. Replace the 6" well bracket and 90 degree angle bracket for Dixon board and make this connection rigid.
6. Re-measure the wind bird and air temperature sensor.
7. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

1617760 Hilo, HI

Primary Bench Mark: 161 7760 TIDAL 4 (TU0020) PBM above SD: 4.663 m
Station GPS Bench Mark: 161 7760 A (NO PID ASSIGNED) MSL above SD: 1.545 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Every two years (required this year for item 3)

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package ((stand alone system including dual winds, barometer and air temperature sensors and using if possible IP modem and GOES communications) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements.
3. Install new bales for the sounding tube and the copper insert for the protective well.
4. Install new taller top hat assembly that will accommodate the new Aquatrak connector.
5. Repair setting of bench mark 161 7760 A with thorite, as necessary.
6. Install a junction box under the eave of the roof to splice the cable and then run flex conduit for the solar panels.
7. Run rigid conduit from the tide house to the roof.
8. Replace all solar cable and GOES cable.
9. Confirm/get serial numbers for the Xpert Dark DCP, RTU, and Xpert power supply.
10. Verify the movement of bench mark 161 7760 Pier 3.
11. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

1619910 Sand Island, Midway Islands

Primary Bench Mark: 161 9910 TIDAL 21 (NO PID ASSIGNED) PBM above SD: 3.243 m
Station GPS Bench Mark: 161 9910 A (NO PID ASSIGNED) MSL above SD: 1.020 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. Plan to purchase 6’ x 4’ fiberglass equipment shelter for redundant DCP for OGP project and plan to ship and install in FY09.
2. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis for OGP funded redundant DCP 3.
3. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements. Ed Carlson of NGS will be requested to perform this task with the OGP funding for FY08.

1630000 Guam

Primary Bench Mark: 163 0000 TIDAL 4 (TW0041) PBM above SD: 2.996 m
Station GPS Bench Mark: 163 0000 TIDAL 11 (AA4394) MSL above SD: 0.826 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis for NWLON DCP 1 and OGP funded redundant DCP 3.
2. Install a line of site transmitting radio at the DCP and a receiving radio at the tower so that 6 minute GOES transmissions can be transmitted in real time.
3. Ground galvanized pole at the top of the Shakespeare mast to the nearby ground rod.
4. If OSTEP is successful for implementation of the Iridium phone hardware and software by the time of maintenance visit, then install the iridium phone.
5 Maintain access to the cement junction boxes during each inspection to prevent over growth on the lids.
6 Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

1631428 Pago Bay, Guam

Primary Bench Mark: 163 1428 B (NO PID ASSIGNED) PBM above SD: 10.000 m
Station GPS Bench Mark: Undetermined MSL above SD: 7.731 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements. Ed Carlson of NGS will be requested to perform this task with the OGP funding for FY08.
2. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis.
3. Paint PVC baffle around orifice with anti-fouling paint, if possible.
4. Remove or relocate any and all RJ-11 jacks into the 9000 DCP.
5. Station may be removed at the end of FY 2008 as the agreement with USACE expires, so before doing the radio tower upgrade and iridium modem installation, check with OET.
6. Investigate and if possible install either IP modem or direct network (via University of Guam network) connectivity.
7. If OSTEP is successful for implementation of the Iridium phone hardware and software by the time of maintenance visit, then install the iridium phone
8. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

1770000 Pago Pago

Primary Bench Mark: 177 0000 S (DE8786) PBM above SD: 2.557 m
Station GPS Bench Mark: 177 0000 S (DE8786) MSL above SD: 1.194 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis for NWLON DCP 1 and OGP funded redundant DCP 3.
2. Install a met tower and met sensors during FY08 (including dual winds, barometer and air temperature sensors). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the Standing Project Instructions.
3. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements. Ed Carlson of NGS will be requested to perform this task with the OGP funding for FY08.
4. Take one general location photo showing the water level station in relationship to its supporting or chest high view) and general location of all existing bench marks. Take face, setting, structure and the local body of water. Take digital photos of the setting (waist and location photos for any newly established marks.

1820000 Kwajalein

Primary Bench Mark: 182 0000 TIDAL 8 (NO PID ASSIGNED) PBM above SD: 2.853 m
Station GPS Bench Mark: 182 0000 TIDAL 12 (NO PID ASSIGNED) MSL above SD: 1.457 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis for OGP funded redundant DCP 3.
2. GPS observations are required this year. Refer to the Standing Project Instructions, Section 4.0 Geodetic Datums, and Section 4.2 GPS Connections for guidelines and requirements. Ed Carlson of NGS will be requested to perform this task with the OGP funding for FY08.
3. Replace sounding tube, sensors and cabling.
4. Two 12" stainless steel bellybands and two stainless steel “L” brackets need to be replaced on topside of the well.
5. Replace stainless steel “U” bolts on the 30w solar panel and remount.
6. Bring one extra battery and phone switch for the DCP.
7. Replace 6 inch bellyband beneath the pier.

1890000 Wake Island

Primary Bench Mark: 189 0000 TIDAL 12 (TW0169) PBM above SD: 4.353 m
Station GPS Bench Mark: 161 0000 L (NO PID ASSIGNED) MSL above SD: 1.608 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis for OGP funded redundant DCP 3.
2. Replace the SDI-12 cable on DCP 2 with new standard configuration with a longer brown cable from pump to Dark and then address pump to "D".
3. Move the air temperature to the tower (30 m cable).
4. Patch hole in the deck and repair wood timber fender.
5. Install equipment barriers around ROHN tower.

9410689 Long Beach Gerald Desmond Bridge (PORTS) Air Gap , CA

1. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

9411406 Topex, CA

Primary Bench Mark: 941 1406 NO STAMPING (+20 LEG 1992) (NO PID ASSIGNED)
Station GPS Bench Mark: Undetermined PBM above SD: 20.150 m
GPS Observation Frequency: Every five years (not required this year) MSL above SD: 14.467 m
Dive Inspection Frequency: Annually

1. Request the oil company to perform the dive inspection and measure the orifices elevations.
2. Replace the stainless steel LP bolt on the riser to a longer size to allow leveling without removing the flange. The new bolt length should be 2 ¾”-3” full thread.
3. Replace the antenna and antenna bracket.

9413651 Kirby Park, Elkhorn Slough, CA

Primary Bench Mark: 941 3651 B (GU3199) PBM above SD: 4.652 m
Station GPS Bench Mark: Undetermined MSL above SD: 3.49 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Perform closing levels and remove the tide station after the project is completed. This action needs to be coordinated between FOD, COASTAL program manager, and Elkhorn Slough project lead..

9413663 Elkhorn Slough Railroad Bridge, CA

Primary Bench Mark: 941 3663 A (GU3198) PBM above SD: 7.977 m
Station GPS Bench Mark: Undetermined MSL above SD: 6.383 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Relocation of Elkhorn Slough Railroad Bridge needs to be coordinated between FOD, COASTAL program manager, and Elkhorn Slough project lead. Perform closing levels and remove the tide station after the project is completed.

9414523 Redwood City, CA (PORTS) **L27085** **Part 8**

Primary Bench Mark: 941 4523 TIDAL 13 (HT2319) PBM above SD: 5.993 m
Station GPS Bench Mark: 941 4523 TIDAL 13 (HT2319) MSL above SD: 3.378 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. No additional requirements.

9414863 Richmond, CA (PORTS) **L27085** **Part 10**

Primary Bench Mark: TIDAL 1 STA III 23 (HT0934) PBM above SD: 7.330 m
Station GPS Bench Mark: Undetermined MSL above SD: 4.520 m
GPS Observation Frequency: Every five years (required this year)
Dive Inspection Frequency: Annually

1. Add ground equipment to the station.
2. Install another bracket using plastic timber. Brackets for piling at site with one 6 foot allthread.
3. Establish and level to two 3D rod marks, designation/stamping as follows: 941 4863 M/4863 M 2008 and 941 4863 N/4863 N 2008.
4. Update the bench mark sketch with the new marks.

9414769 Oakland Middle Harbor, CA (PORTS)

1. Provide sensor heights and digital photos of all installed sensors as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.

9439099 Wauna, OR **L27086** **Part 6**

Primary Bench Mark: 943 9909 F (SC1084) PBM above SD: 5.290 m
Station GPS Bench Mark: Undetermined MSL above SD: 1.332 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis for DCP 1 and DCP 2.
2. Replace the bubbler orifice for the east orifice.

9439201 St. Helens, OR **L27086** **Part 7**
Primary Bench Mark: TIDAL 3 (RD0587) PBM above SD: 12.571 m
Station GPS Bench Mark: Undetermined MSL above SD: 1.047 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis for DCP 1 and DCP 2.
2. Record and verify the serial numbers for the Xpert RTU, Xpert Display, and pumps.

94400083 Vancouver, WA **L27087** **Part 11**
Primary Bench Mark: 944 0083 D PBM above SD: 9.488 m
Station GPS Bench Mark: Undetermined MSL above SD: 0.940 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis for DCP 1 and DCP 2.
2. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

9440422 Longview, WA **L27087** **Part 12**
Primary Bench Mark: 944 0422 TIDAL 5 (SC1112) PBM above SD: 8.360 m
Station GPS Bench Mark: Undetermined MSL above SD: 1.382 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis for DCP 1 and DCP 2.
2. Replace the barometer.

9440569 Skamokawa, WA **L27087** **Part 13**
Primary Bench Mark: 944 0569 TIDAL 5 (SC0340) PBM above SD: 5.504 m
Station GPS Bench Mark: Undetermined MSL above SD: 1.270 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis for DCP 1 and DCP 2.
2. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

9440910 Toke Point, WA **L27087** **Part 1**

Primary Bench Mark: 944 0910 H (NO PID ASSIGNED) PBM above SD: 6.669 m
Station GPS Bench Mark: FLAG (SC0916) MSL above SD: 2.836 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Recon for a site for dual orifice Paros sensors, if funding is available, to be installed in FY08.
2. Replace water temperature cable.
3. If dual orifice Paros sensors could not be installed in FY08, then remove silt accumulation from under the acoustic well. Water jet and suction mud from below the well to create a larger/deeper hole.
4. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

9441102 Westport, WA **L27087** **Part 2**

Primary Bench Mark: 944 1102 A (NO PID ASSIGNED) PBM above SD: 5.592 m
Station GPS Bench Mark: 944 1102 H (NO PID ASSIGNED) MSL above SD: 2.244 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Install a remote met tower in FY08 (stand alone system including dual winds, barometer and air temperature sensors and if feasible, IP modem and GOES, preferably at the USCG watch tower). Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. Install an extra piling clamp for the Aquatrak well near the coupling.
3. Take one general location photo showing the water level station in relationship to its supporting structure and local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting and location photos for any newly established marks.

9442396 La Push, WA **L27087** **Part 3**

Primary Bench Mark: 944 2396 TIDAL 7 (NO PID ASSIGNED) PBM above SD: 10.4 m
Station GPS Bench Mark: 944 2396 G (NO PID ASSIGNED) MSL above SD: 2.943 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Relocate wind sensor and add second to provide more accurate data. Notes shall be provided on the site report if the wind sensors are not feasible due to obstructions. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis.
3 Install a telephone conditioner.

9443090 Neah Bay, WA **L27087** **Part 4**

Primary Bench Mark: 9444 3090 TIDAL 19 (TS0161) PBM above SD: 6.507 m
Station GPS Bench Mark: 944 3090 TIDAL 19 (TS0161) MSL above SD: 1.925 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Replace lower 6" bracket on the acoustic well.
2. Fix windbird conduit near well area as time permits. See photos on server.
3. Provide logistical and station information support to NGS and the Spatial Reference Center of Washington (SRCW) for the installation of a CORS site.

9444090 Port Angeles, WA **L27087** **Part 5**

Primary Bench Mark: L 467 (TR0790) PBM above SD: 14.475 m
Station GPS Bench Mark: L 467 (TR0790) MSL above SD: 10.534 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Every two years (not required this year)

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (standalone met tower with IP modem and dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.

9444900 Port Townsend, WA **L27087** **Part 6**

Primary Bench Mark: 944 4900 BM 18 (NO PID ASSIGNED) PBM above SD: 6.559 m
Station GPS Bench Mark: 944 4900 D TIDAL (AI2202) MSL above SD: 2.547 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Every two years (not required this year)

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Keep an eye on the stove pipe; be prepared to replace.
3. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

9446484 Tacoma, WA (PORTS) **L27087** **Part 7**

Primary Bench Mark: 944 6484 A (NO PID ASSIGNED) PBM above SD: 5.326 m
Station GPS Bench Mark: Undetermined MSL above SD: 2.268 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. **Unresolved from 2007 Project Instructions.** Establish one to two new bench marks, designation/stamping as follows: 944 6484 F/6484 F 2008, and 944 6484 G/6484 G 2008.
2. Update the bench mark sketch.
3. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.

9447130 Seattle, WA **L27087** **Part 8**

Primary Bench Mark: 944 7130 TIDAL 23 (NO PID ASSIGNED) PBM above SD: 8.851 m
Station GPS Bench Mark: DAVE (NO PID ASSIGNED) MSL above SD: 4.443 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Every two years (Required this year if item 1 requires a dive)

1. Replace steel clamps as needed; showing significant corrosion.
2. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water.

9449419 Cherry Point (PORTS) Met at South Dock, WA

1. A met tower and met sensors (including dual winds, barometer and air temperature sensors, GOES transmissions, and IP modem) were installed at BP Refinery at South Dock for Cherry Point PORTS® in December 2007. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007

9449424 Cherry Point (PORTS), WA **L27087** **Part 9**

Primary Bench Mark: 944 9424 TIDAL 1 (NO PID ASSIGNED) PBM above SD: 11.226 m
Station GPS Bench Mark: 941 9424 J TIDAL (AI2204) MSL above SD: 3.543 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. A barometer at the NWLON WL station for DCP 1 and a met tower and met sensors (including dual winds, air temperature sensors, radio link and IP modem) were installed at BP Refinery North Dock for Cherry point PORTS® in December 2007. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take digital photos of the setting (waist or chest high view) and general location of all existing bench marks. Take face, setting, and location photos for any newly established marks.
3. Replace the stainless steel hose clamps.

9449880 Friday Harbor, WA **L27087** **Part 10**

Primary Bench Mark: 944 9880 TIDAL 10 (NO PID ASSIGNED) PBM above SD: 4.892 m
Station GPS Bench Mark: 944 9880 C TIDAL (AI2205) MSL above SD: 2.561 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Replace stainless steel nuts on the 1" all-thread on the bottom 6" clamp.
3. Replace 12v 40ahr battery for the pump power box.

EHI - TASK XXI - CALIFORNIA AND OREGON STATIONS

Steve Hudziak, Task Manager/Technical Representative (TR)

9410170 San Diego, CA **L27085** **Part 1**
Primary Bench Mark: 941 0170 TIDAL 12 (DC0891) PBM above SD: 6.325 m
Station GPS Bench Mark: 941 0170 R TIDAL (DC1428) MSL above SD: 2.052 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Every two years, (not required this year)

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Select another bench mark for future GPS surveying with a better sky view.
3. Establish and level two new bench marks, designation/stamping as follows: 941 0170 W/0170 W 2008 and 941 0170 X/0170 X 2008.
4. Update the bench mark sketch with the new marks.
5. Take digital photos of the setting (waist or chest high view) and general location of the new bench mark.
6. Update the bench mark sketch with the new mark.

9410230 La Jolla, CA **L27085** **Part 2**
Primary Bench Mark: 941 0230 TIDAL 7 (DC0986) PBM above SD: 12.299 m
Station GPS Bench Mark: 941 0320 M TIDAL (DC1313) MSL above SD: 2.163 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1 Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2 Install new bracket (belly bands) at H.O.T. level.
3 Replace the copper tube and the top hat fan.
4 Replace the pump battery.
5 Verify that bench mark 941 0230 TIDAL 9 is destroyed.
6 Establish and level one 3D rod mark, designation/stamping as follows: 941 0230 T/0230 T 2008.
7 Take digital photos of the setting (waist or chest high view) and general location of the new bench mark.
8 Update the bench mark sketch with the new mark.

9410660 Los Ángeles (PORTS), CA **L27085** **Part 3**
Primary Benchmark: 8 - 14 FT ABOVE MLW (DY1083) PBM above SD: 5.361 m
Station GPS Bench Mark: 8 – 14 FT ABOVE MLW (DY1083) MSL above SD: 2.028 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Replace lower well and piling clamps with stainless steel units.

9410840 Santa Monica, CA **L27085** **Part 4**
Primary Bench Mark: 941 0840 TIDAL 12 (EW6840) PBM above SD: 15.060 m
Station GPS Bench Mark: 941 0840 N TIDAL (AH7469) MSL above SD: 1.594 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Install a logo cover (lid) on bench mark 941 0840 K.

9411340 Santa Barbara, CA **L27085** **Part 16**
Primary Bench Mark: 941 1340 L PBM above SD: 4.746 m
Station GPS Bench Mark: 941 1340 L MSL above SD: 1.824 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis.
2. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (standalone met tower with IP modem and dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
3. Install, describe and connect via levels a new bench marks designation/stamping 941 1340 U/1340 U 2008, if a suitable mark is not found in the NGS database.
4. Change telephone switch, due to the fact it will not toggle to the Dark.
5. Install a logo cover (lid) for bench mark 941 1340 K.
6. Update the NOAA chart to correct the station's location.
7. Replace spare solar regulator (GFE) in Sutron Xpert DCP, if funding is available.
8. Take digital photos of the setting (waist or chest high view) and general location of the new bench mark.
9. Update the bench mark sketch with the new mark.

9412110 Port San Luis, CA **L27085** **Part 5**
Primary Bench Mark: 941 2110 TIDAL 16 (FV1078) PBM above SD: 5.691 m
Station GPS Bench Mark: 941 2110 TIDAL 6 (FV0898) MSL above SD: 2.149 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Replace the fiberglass board for the bubbler orifice mount.

9413450 Monterey, CA **L27085** **Part 6**
Primary Bench Mark: 941 3450 TIDAL 2 (GU2090) PBM above SD: 5.669 m
Station GPS Bench Mark: 941 3450 M TIDAL (GU4116) MSL above SD: 1.893 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (standalone met tower with IP modem and dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Re-attach the existing wood beam to the piling with allthread and metal beam backing.
3. Replace the bottom well clamp with a stainless steel unit.
4. Update the sensor elevation drawing to show the two old well clamps remaining below the stainless steel clam at H.O.T. level.

9414290 San Francisco, CA (PORTS) **L27085** **Part 7**
Primary Bench Mark: 941 4290 TIDAL 180 (HT0702) PBM above SD: 5.794 m
Station GPS Bench Mark: 941 4290 TIDAL 180 (HT0702) MSL above SD: 2.773 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis.
2. Check water temp conduit attachment on piling every year.

9414750 Alameda, CA (PORTS) **L27085** **Part 9**
Primary Bench Mark: 941 4750 TIDAL 8 (HT0890) PBM above SD: 4.795 m
Station GPS Bench Mark: 941 4750 TIDAL 7 (HT0882) MSL above SD: 2.067 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Replace the bottom well clamp with a stainless steel unit.
2. Provide handheld GPS position for bench marks 941 4750 P, 941 4750 S, and 941 4750 T.

9415020 Point Reyes, CA **L27085** **Part 11**
Primary Bench Mark: B 243 (HT1839) PBM above SD: 4.977 m
Station GPS Bench Mark: 941 5020 Q TIDAL (HT3505) MSL above SD: 2.152 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (standalone met tower with unique GOES ID and dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Provide hand-held GPS positions for all bench marks.

9415144 Port Chicago, CA (PORTS) **L27085** **Part 12**
Primary Bench Mark: 941 5144 H (AH7472) PBM above SD: 4.209 m
Station GPS Bench Mark: 941 5144 H TIDAL (AH7472) MSL above SD: 1.996 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Remove the silting under the acoustic well using mechanical pumps or suitable means.
2. Investigate the possibility of moving the tide house and well farther out pier to deeper water to eliminate the need to dredge below well annually, PRO talk to Naval Weapons Station Authorities. PRO and EHI, collectively develop the engineering plans, if relocation is approved.
3. For FY09 as a part of the engineering plan, relocate the wind sensor by installing a 25ft. tilt base wind tower (GFE) and remove the existing wind and air temperature sensor from the existing power/light pole.

9416841 Arena Cove, CA **L27085** **Part 13**
Primary Bench Mark: 941 6841 TIDAL 6 (JT9392) PBM above SD: 11.604 m
Station GPS Bench Mark: 941 6841 J TIDAL (JT9387) MSL above SD: 9.786 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Replace 3rd bellyband from top (18" and 6") galvanizing is falling and steel clamps are delaminating.

9418767 North Spit, CA **L27085** **Part 14**
Primary Bench Mark: 941 8767 TIDAL 9 (LV0361) PBM above SD: 9.205 m
Station GPS Bench Mark: 941 8767 TIDAL 11 (LV0359) MSL above SD: 5.562 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Install 9210 DCP in NEMA enclosure in APEX box enclosure, with GOES antenna and transmitter, IP modem, and dual wind sensors (all equipment GFE) at existing navigational-aid marker located at the west end of North Jetty. This DCP will be designated as DCP 3. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. Perform leveling to water surface, if possible.

9419750 Crescent City, CA **L27085** **Part 15**
Primary Bench Mark: 941 9750 TIDAL 20 RESET (LV0110) PBM above SD: 5.227 m
Station GPS Bench Mark: 941 9750 TIDAL 20 RESET (LV0110) MSL above SD: 2.254 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Every two years, (not required this year)

1. Install a met tower and met sensors at tide station location during FY08 (including dual winds, barometer and air temperature sensors – all equipment GFE). Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. Inspect middle well clamp closely for future replacement.
3. Inspect bubbler board closely for future replacement.

9431647 Port Orford, OR **L27086** **Part 1**
Primary Bench Mark: 941 1647 TIDAL 6 (OA0075) PBM above SD: 12.256 m
Station GPS Bench Mark: 943 1647 TIDAL LEAD (OA0790) MSL above SD: 8.224 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis.

9432780 Charleston, OR **L27086** **Part 2**
Primary Bench Mark: 943 2780 A TIDAL (OA0650) PBM above SD: 5.895 m
Station GPS Bench Mark: 943 2780 A TIDAL (OA0650) MSL above SD: 2.390 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Install 9210 DCP in NEMA enclosure, with GOES antenna and transmitter, IP modem,, and dual wind sensors (all equipment GFE) at existing Charleston USCG look-out tower location. This DCP will be designated as DCP 3. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007.
2. Remove the silting under the acoustic well using mechanical pumps or suitable means.
3. Replace bubbler board, orifice, tubing and conduit (all equipment GFE except conduit).

9435380 South Beach, OR **L27086** **Part 3**
Primary Bench Mark: C 590 (QE1114) PBM above SD: 6.194 m
Station GPS Bench Mark: C 590 (QE1114) MSL above SD: 2.806 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Replace bubbler orifice, tubing and conduit (all equipment GFE except conduit).

9437540 Garibaldi, OR **L27086** **Part 5**
Primary Bench Mark: 943 7540 A PBM above SD: 5.827 m
Station GPS Bench Mark: 943 7540 H MSL above SD: 2.511 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Replace the Aquatrak controller.
2. Install 9210 DCP with two radios, IP modem, and dual wind sensors (all equipment GFE) at existing Garibaldi look-out tower location. Provide sensor heights and digital photos as specified in the section 2.9 of the Standing Project Instructions, Updated March 2007. This task will be performed by PRO.

9439040 Astoria, OR **L27086** **Part 4**
Primary Bench Mark: 943 9040 TIDAL 11 (SC1053) PBM above SD: 5.934 m
Station GPS Bench Mark: 943 9040 TIDAL 12 (SC1055) MSL above SD: 2.054 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Every two years (not required this year)

1. Replace the tide house roof with a metal roof (contingent on available funding). This task will be performed by PRO.

DEA - GSA CONTRACT – ALASKA STATIONS

Andrew Moss, Task Manager/Technical Representative (TR)

9450460 Ketchikan, AK

Primary Bench Mark: 945 0460 TIDAL 24 (NO PID ASSIGN.) PBM above SD: 8.946 m
Station GPS Bench Mark: 945 0460 TIDAL 37 (NO PID ASSIGN.) MSL above SD: 4.345 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Replace the steel muffler clamps holding the Xpert and Xpert Dark solar panels to the mast with a stainless steel equivalent.
2. Perform a reconnaissance of the site (at new location) to find an appropriate location for installing a meteorological sensor package (winds not feasible, air temp sensor, and barometer only) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.

9451054 Port Alexander, AK

Primary Bench Mark: 945 1054 TIDAL 1 (NO PID ASSIGN.) PBM above SD: 6.148 m
Station GPS Bench Mark: Undetermined MSL above SD: N/A
GPS Observation Frequency: Every five years
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temp sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. If the hardware (GFE) and programming are available, then only install iridium modem to gauges.
3. For the primary orifice Dixon board, add one 1" stainless steel bolt to the lower support.
4. Replace the solar panel and GOES antenna mounting bracket hose clamps with proper stainless steel U-bolts.
5. If a phone line is installed then the house will need a phone switch, heater (if AC power allows), surge protector, and AC power supply for the Dark DCP.

9451600 Sitka, AK

Primary Bench Mark: 945 1600 L (NO PID ASSIGN.) PBM above SD: 13.669 m
Station GPS Bench Mark: 945 1600 N (NO PID ASSIGN.) MSL above SD: 2.989 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Every two years (not required this year)

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (air temperature sensor and barometer only; winds not feasible) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.

9452210 Juneau, AK

Primary Bench Mark: 945 2210 TIDAL 8 (NO PID ASSIGN.) PBM above SD: 13.036 m
Station GPS Bench Mark: 945 2210 JNU TIDAL GPS 1999 (AI 4908) MSL above SD: 3.782 m
GPS Observation Frequency: Annually (required this year)
Dive Inspection Frequency: Annually

1. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis.
2. Install proper Paros sensor in-housing with vent valve plumbing.
3. Perform a reconnaissance of the site (at new location) to find an appropriate location for installing a meteorological sensor package (winds not feasible, air temp sensor, and barometer only) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.

9452400 Skagway, AK

Primary Bench Mark: 945 2400 TIDAL 11 (NO PID ASSIGN.) PBM above SD: 11.646 m
Station GPS Bench Mark: 945 2400 C (NO PID ASSIGN.) MSL above SD: 3.617 m
GPS Observation Frequency: Annually (required this year)
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (standalone met tower with unique GOES ID and dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Replace S/S Band-it on the back-up Orifice with 12” S/S Belly Bands as previously planned during the AI 2007.
3. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis.

9452634 Elfin Cove, AK

Primary Bench Mark: 945 2634 TIDAL 4 (NO PID ASSIGN.) PBM above SD: 9.365 m
Station GPS Bench Mark: 945 2634 F (NO PID ASSIGN.) MSL above SD: 4.683 m
GPS Observation Frequency: Annually (required this year)
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temp sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis.

9453220 Yakutat, AK

Primary Bench Mark: 945 3220 Z (NO PID ASSIGN.) PBM above SD: 8.745 m
Station GPS Bench Mark:945 3220 M (NO PID ASSIGN.) MSL above SD: 2.238 m
GPS Observation Frequency: Annually (required this year)
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (standalone met tower with unique GOES ID and dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. AC Power has been shut off the past tree years in the winter. Resolve this problem with Cannery and see if we can receive a separate feed from the city power that will never be turned-off so that continuous power is available to the tide station.

9454050 Cordova, AK

Primary Bench Mark: 945 4050 Q (NO PID ASSIGN.) PBM above SD: 16.456 m
Station GPS Bench Mark: 945 4050 TIDAL 13 (NO PID ASSIGN.) MSL above SD: 3.972 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temp sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Install caps on the serial ports of the Xpert and Xpert Dark DCPs.
3. Re-secure the bubbler tubing to the dock piling with banding or large zip ties.

9454240 Valdez, AK

Primary Bench Mark: 945 4240 TIDAL 21 (NO PID ASSIGN.) PBM above SD: 8.327 m
Station GPS Bench Mark: 945 4240 T (NO PID ASSIGN.) MSL above SD: 4.035 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Every two years (not required this year)

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temp sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.

9455090 Seward, AK

Primary Bench Mark: 945 5090 B (NO PID ASSIGN.) PBM above SD: 8.314 m
Station GPS Bench Mark: 945 5090 TIDAL 19 (NO PID ASSIGN.) MSL above SD: 3.566 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Every two years (not required this year)

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (standalone met tower with unique GOES ID and dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Replace the four bolts and nuts on the bottom flange at the bottom of the Aquatrak using brass hardware.

9455500 Seldovia, AK

Primary Bench Mark: 945 5500 TIDAL 19 (NO PID ASSIGN.) PBM above SD: 11.272 m
Station GPS Bench Mark: 945 5500 TIDAL 19 (NO PID ASSIGN.) MSL above SD: 5.114 m
GPS Observation Frequency: Annually (required this year)
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temp sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Replace the door knob and lock (GFE).
3. Take face, setting, and location photos for bench mark 945 5500 TIDAL 22.

9455760 Nikiski, AK (PORTS)

Primary Bench Mark: 945 5760 L (NO PID ASSIGN.) PBM above SD: 14.850 m
Station GPS Bench Mark: 945 5760 L (NO PID ASSIGN.) MSL above SD: 5.591 m
GPS Observation Frequency: Annually (required this year)
Dive Inspection Frequency: N/A

1. Replace pump B (upper orifice, Paros 2 - lowest pump in explosion proof box). Recommend installing quick connect wires to the pump.

9455920 Anchorage, AK (PORTS)

Primary Bench Mark: 945 5920 TIDAL 15 1966 (TT0711) PBM above SD: 13.231 m
Station GPS Bench Mark: 945 5920 C (NO PID ASSIGN.) MSL above SD: 6.931 m
GPS Observation Frequency: Annually (required this year)
Dive Inspection Frequency: N/A

1. Re-plumb the pumps so that the Paros sensors are connected to the H350 line, not the Outlet line so that purging will not over pressurize Paros sensors.

9457292 Kodiak, AK

Primary Bench Mark: 945 7292 B (NO PID ASSIGN.) PBM above SD: 14.124 m
Station GPS Bench Mark: KODIAK MON 7278 (TT4632) MSL above SD: 9.203 m
GPS Observation Frequency: Annually (required this year)
Dive Inspection Frequency: Every two years (not required this year)

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (tower with dual wind birds, air temp sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Install one new 1 1/4" conduit clamps on conduit from the well to the enclosure; concrete anchors will be needed to mount the clamps.
3. Replace door handle (GFE) of the tide house.
4. Repair the conduit at the glue joint below the sweep into the tide house.
5. Verify bench mark 945 7292 E was destroyed.

9457804 Alitak, AK

Primary Bench Mark: 945 7804 TIDAL 6 (NO PID ASSIGN.) PBM above SD: 7.521 m
Station GPS Bench Mark: 945 7804 B (NO PID ASSIGN.) MSL above SD: 3.613 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package (standalone met tower with unique GOES ID and dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis.
3. Install covers on serial ports of Xpert and Xpert Dark DCP.

9459450 Sand Point, AK

Primary Bench Mark: 945 9450 R (NO PID ASSIGN.) PBM above SD: 13.894 m
Station GPS Bench Mark: 945 9450 TIDAL 1293-1 (NO PID ASS.) MSL above SD: 10.482 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Every two years (not required this year)

1. Perform a reconnaissance of the site (at new location) to find an appropriate location for installing a meteorological sensor package (winds not feasible, air temp sensor, and barometer only) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. **Unresolved from 2007 Project Instructions.** Report the condition of the fiberglass beams which support the Aquatrak well.
3. **Unresolved from 2007 Project Instructions.** Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take face, setting, and location photos for any newly established marks.

9459881 King Cove, AK

Primary Bench Mark: 945 9881 D (NO PID ASSIGN.) PBM above SD: 6.672 m
Station GPS Bench Mark: KCH-1 1998 (NO PID ASSIGN.) MSL above SD: 2.362 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site (at new location) to find an appropriate location for installing a meteorological sensor package (winds not feasible, air temp sensor, and barometer only) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Replace the padlock on the door with suitable combo lock set to standard combo.

9461380 Adak, AK

Primary Bench Mark: 946 1380 TIDAL 18 (UW7919) PBM above SD: 6.700 m
Station GPS Bench Mark: 946 1380 TIDAL 18 (UW7919) MSL above SD: 1.553 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. A dive inspection **MUST** be performed during this site visit.
2. Install a goalpost and second wind sensor (GFE) to the existing met tower in FY08.

9461710 Atka, Nazan Bay, AK

Primary Bench Mark: 946 1710 B (NO PID ASSIGN.) PBM above SD: 15.000 m
Station GPS Bench Mark: 946 1710 G (NO PID ASSIGN.) MSL above SD: Undetermined
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site (at new location) to find an appropriate location for installing a meteorological sensor package (winds not feasible, air temp sensor, and barometer only) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis.
3. Install a new COM board and serial ribbon in the Xpert Dark DCP.
4. Replace water temperature sensor cable and add conduit to protect it from any damage to the pilling.
5. If the hardware (GFE) and programming are available, then only install iridium modem to gauges.

9462450 Nikolski, Mueller Cove, AK

Primary Bench Mark: 945 2450 F (NO PID ASSIGN.) PBM above SD: 7.782 m
Station GPS Bench Mark: 945 2450 F (NO PID ASSIGN.) MSL above SD: 1.910 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site (at new location) to find an appropriate location for installing a meteorological sensor package (winds not feasible, air temp sensor, and barometer only) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.
2. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis.
3. If the hardware (GFE) and programming are available, then only install iridium modem to gauges.
4. Replace the key lock with a standard tide station combo lock.
5. Replace the dead bolt on the door.
6. Install a powerbox and a battery for the Xpert DARK DCP pump.

9462620 Unalaska, AK

Primary Bench Mark: 946 2620 TIDAL 7 (NO PID ASSIGN.) PBM above SD: 3.597 m
Station GPS Bench Mark: 946 2620 TIDAL 19 (NO PID ASSIGN.) MSL above SD: 1.427 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Perform a reconnaissance of the site to find an appropriate location for installing a meteorological sensor package ((standalone met tower with unique GOES ID and dual wind birds, air temperature sensor, and barometer) in FY09, using CO-OPS Water Level and Meteorological Site Reconnaissance Procedures (updated March 2007) as a guideline, and provide a report with digital photos, measurements, and notes along with the required documentation from the Annual Inspection.

9463502 Port Moller, AK

Primary Bench Mark: 946 3502 B (NO PID ASSIGN.) PBM above SD: 15.42 m
Station GPS Bench Mark: Undetermined MSL above SD: 10.684 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Determine and document a suitable benchmark for GPS observations.
2. Investigate possibility of installing a phone line since station will be in operation for multi years.
3. Determine and document suitable benchmark for GPS observations.

9464212 Village Cove, AK

Primary Bench Mark: 946 4212 TIDAL 4 (NO PID ASSIGN.) PBM above SD: 10.28 m
Station GPS Bench Mark: Undetermined MSL above SD: 0.981 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Replace U-bolts that attach the 3/4" pipe to the ladder rungs.
2. Replace orifice with larger (standard) diameter orifice.
3. Install a water temperature sensor.
4. Determine and document a suitable benchmark for GPS observations.
5. Investigate possibility of installing a phone line since station will be in operation for multi years.

9468756 Nome, AK

Primary Bench Mark: 946 8756 SHEET PILE C (NO PID ASSIGN.) PBM above SD: 5.611 m
Station GPS Bench Mark: 946 8756 G (NO PID ASSIGN.) MSL above SD: 1.345 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis.
2. Replace (3-4) 12" x 6" x 1/2" zinc plates annually.
3. Replace 3/8" x 1.5" inspection plate bolts annually. Remember to bring extra 3/8" bolts, washer and nuts for zincs which now mount directly to access covers.
4. Re-drill lower right hole on upper access cover larger to make rethreading bolt into channel easier.
5. Replace the top (second) stainless steel nut with SS lock washers on the four 1/2" studs securing the wind bird base plate to the concrete pad.
6. Install a second power box for the pumps.
7. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take face, setting, and location photos for any newly established marks.

9491094 Red Dog, AK

Primary Bench Mark: 949 1094 A TIDAL (NO PID ASSIGN.) PBM above SD: 4.696 m
Station GPS Bench Mark: 949 1094 B (NO PID ASSIGN.) MSL above SD: 1.682 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually

1. Verify the elevation difference between the digibub staff stop and the digibub orifices zero on an annual basis.
2. Take one general location photo showing the water level station in relationship to its supporting structure and the local body of water. Take face, setting, and location photos for any newly established marks.
3. Investigate the availability and cost of phone service to the instrument enclosure. If feasible and if the hardware (GFE) and programming are available, then install Iridium modem and/or Ethernet public network connectivity to gauges.

9497645 Prudhoe Bay, AK

Primary Bench Mark: 949 7645 CELL 4B (NO PID ASSIGN.) PBM above SD: 16.389 m
Station GPS Bench Mark: 949 7645 WINDSOCK (NO PID ASSIGN.) MSL above SD: 11.018 m
GPS Observation Frequency: Every five years (not required this year)
Dive Inspection Frequency: Annually (Waived this year, see item 1 below)

1. Verify the elevation difference between the digibub staff stop and the digibub orifice zero on an annual basis. The diving requirement for Prudhoe Bay is waived for CY 2008 only.
2. Install a water temperature sensor as discussed in the CO-OPS and DEA/JOA meeting on March 7th regarding various AK issues related to the Alaska FY 07 season. CO-OPS (PRO) will provide you the details in writing.
3. Install dual orifice Paros sensors on the primary Xpert DCP and remove the Aquatrak sensor.
4. Install a new battery for the air pump.
5. Repair the cut phone line.