Ellen R. Herbert  
Virginia Institute of Marine Science  
P.O. Box 1346  
Rt. 1208 Greate Rd.  
Gloucester Pt., VA 23062  

Re: Letter of Acknowledgement for Sediment Research, Altamaha River, Little Broughton Island, Glynn County, Georgia  

Dear Ms. Herbert,  

This Letter of Acknowledgment (LOA) is in response to your request received March 9, 2016 for authorization to perform sediment research within jurisdiction of the Costal Marshlands Protection Act on the Altamaha River in Glynn County, Georgia. According to your request the site, depicted in the attached map, will be accessed by boat twice a month after initial installation for data collection. Four (4) turbidity sensors will be deployed: three (3) RBR sensors approximately 2 sq. ft. in size will be on the vegetated marsh surface and one (1) YSI sensor will be mounted on a 3m fencepost driven approximately 1m into the soil at the edge of the creek. During initial installation, three (3) sediment cores 1m in length with a 15cm diameter will be collected. Thirty (30) sediment tiles will be installed to collect sediment throughout the study and will be collected each time the site is accessed. Up to twenty (20) PVC stakes will be placed to outline the study area. All materials will be removed at the end of the study. The project will begin June 1, 2016 and end June 1, 2017.  

The Department acknowledges the sediment research project as described in the submitted request and has no objection to the action provided Best Management Practices (BMP’s) are used. Any deviations from the submitted project scope and description may require further review. Upon completion of the proposed project, or by June 15, 2017, whichever comes first, all man-made material must be removed from jurisdiction and disposed of at an appropriate upland disposal area.  

This LOA does not relieve you from obtaining any other required federal, state, or local permits. Tidal water bottoms and marshlands of coastal Georgia are public trust lands controlled by the State, except for such lands where a validated Crown Grant or State Grant exists. If you have any questions you may contact Skye Stockel at (912) 262-3127.  

Sincerely,  

[Signature]  
Karl Burgess  
Program Manager  
Marsh and Shore Management Program  

Enclosures: Description and Location Map  
File: LOP20160061
Dear Ms. Stockel,

I am emailing today to submit a Revocable License Request for a project monitoring sediment concentrations on the marsh in the South Altamaha we spoke about several weeks ago. We are working with the GCE LTER as part of an NSF funded SEES (Science, Engineering and Education for Sustainability) with additional support from the NSF funded Geomorphology and Land-use Dynamics program to test the model derived hypothesis that the maximum rate of sea level rise that a marsh can survive is linearly related to the suspended sediment concentration of water that floods the marsh surface.

We would like to deploy an array of 3 water level-suspended sediment data loggers in a low marsh area near Buttermilk Sound or the Altamaha Sound (see attached PPT) for ~1 year. Three of these sensors will be mounted on the vegetated marsh surface (1 near the channel, 1 30m or so inland of the channel). The 3rd sensor will be mounted at the channel edge. I have attached a PDF packet containing (1) cover letter describing the project, (2) Revocable License Request signed by myself and Dr. Merryl Alber (research sponsor from UGA/UGAMI/GCE LTER), and (3) approved GCE LTER research request with site map.

Thank you so much for your time. Please feel free to contact me by phone (804)-684-7592 or email (erher bert@vims.edu) if you have any questions.

Ellen

Ellen R. Herbert
Postdoctoral Researcher | Department of Physical Sciences | Virginia Institute of Marine Science
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VIMS
Virginia Institute of Marine Science
Subject: Request for Letter of Permission and 3-year Revocable License for research associated with Georgia Coastal Ecosystems LTER

Dear Ms. Stockel,

I am writing to submit for your review an application for a letter of permission and a 3-year revocable license for the installation of 4 new turbidity sensors installed at a Georgia Coastal Ecosystems LTER (GCE LTER) monitoring site, GCE 8 (South Altamaha River, please see attached map for location). Additionally, we will collect 3 sediment cores and deploy 30 sediment tiles.

The installation, maintenance, and removal of all equipment is supported by a National Science Foundation award to Virginia Institute of Marine Science. Additionally, we are partnering with the GCE LTER to deploy and maintain the equipment over the year-long project. The turbidity sensors will consist of 3 RBR optical sensors deployed on the marsh surface and 1 YSI optical sensor deployed at the edge of the creek. The 3 RBR sensors have about a 2 square-foot footprint. The YSI sensor will be mounted on a 3m fence post driven 1m into the ground. The sensors require maintenance twice a month during warm months and once a month during colder months. Instrument maintenance will be very low impact (1-2 technicians with the LTER per trip causing minor vegetation trampling). All equipment will be retrieved the instruments after 1 year of deployment.

During installation of the turbidity sensors, we will collect 3 sediment cores of dimensions 1m long by 15cm diameter. These cores will be taken from areas adjacent to the RBR sensors. At each of the 3 RBR sensors locations, we will install 5 ceramic tiles and 5 cloth squares (6" by 6") which will collect sediment. These sediment tiles will be removed during sensor maintenance and replaced through the 1 year study.

The purpose of this study is to observe how turbidity relates to marsh accretion. We are interested in the natural condition of this marsh, and therefore plan to have as small of an impact as possible. The information generated from this study will be used to better inform models and predictions of marsh stability and growth. Please do not hesitate to contact me for further information.

Sincerely,

Ellen R. Herbert

Dr. Ellen Herbert

Attachments:
1. State of Georgia 3-Year Revocable License Request
2. Approved GCE LTER Research Application (including map)
Sapelo Research Application Form

Research Application ID: GCE-71-2016 (submitted: 02/10/2016, status: approved)

Provide a brief title for web display

The Link between Suspended Sediment Concentration and Salt Marsh Accretion

Investigator Information

On Island Sponsor: GCE  SINERR  UGAMI  GADNR

Principal Investigator: Ellen Herbert

Home Institution: Virginia Institute of Marine Science

Award Information: NSF GLD: Watershed, estuarine, and local drivers of coastal marsh establishment and resilience. Award #1529245 to Dr. Matt Kirwan, Virginia Institute of Marine Science. $199,865. 2015-2018

Mailing Address: Department of Physical Sciences
Virginia Institute of Marine Science
Gloucester Point, Virginia 23062

Phone Number: (804) 684-7592
E-mail Address: erherbert@vims.edu

Co-investigators: Daniel J. Coleman (Virginia Institute of Marine Sciences)

Briefly describe the project goals and methodology

We are testing the model derived hypothesis that the maximum rate of sea level rise that a marsh can survive is linearly related to the suspended sediment concentration of water that floods the marsh surface. The work will be conducted in 5 Atlantic coast salt marshes including GCE, PIE, and VCR. At GCE, we propose to install 4 turbidity sensors with wipers, ~30 sediment tiles, and 2 sediment cores from a salt marsh infilling the channel near Little Broughton Island. A VIMS graduate student (Dan Coleman) and technician (David Walters) would install all equipment, take cores, and collect water samples to calibrate turbidity sensors in June 2016. Installation will take 3 days (1 day to deploy instruments, 2 days Ian & one other person will need to be left on site for an entire flood tide, 6.5 hrs. and a second day for ebb tide). After installation, we anticipate visiting the site approximately quarterly for a duration of 2-3 hours. Each of these trips would require boat support (drop off and pick up [could be scheduled with other field work, sonde cleaning etc.]), but not technical support. Additionally, we have requested technician support to collect bottle samples and wipe turbidity sensors of any fouling during regular GCE water sonde maintenance/quality monitoring efforts (every 2 weeks during summer months, and 4 weeks during non-summer months). These efforts would involve taking bottle samples from the water surface adjacent to the 4 turbidity sensors (3 on the marsh, 1 in the river) during stages of the tide that flood the marsh surface (which is approximately 50% of the time at this site). We will supply bottles and a fed-ex account number to cover shipping costs (do not need to be cold shipped). The sensor located in the river will need to be retrieved (and re-deployed) to wipe the sensor. Battery replacement, sensor maintenance (downloading, battery changes, calibration), and troubleshooting will be done on our quarterly visits so will not require technician time. The data collected & results for this project will be shared with GCE LTER personnel and will inform the marsh modeling planned for the collaborative Coastal SEES project. It can also provide field-based estimates of marsh vulnerability to sea level rise that may be useful for the broader GCE LTER project. We will be responsible for removing all equipment from the field at the end of the monitoring period.

Where will the project be located?

Little Broughton Island approx. 31.302, -81.405

How will you provide GPS coordinates for study sites?

GPS coordinates are listed in the project location field

What are the expected start and end dates of the project?

Start Date: 06/01/2016   End Date: 06/01/2017
How many people will access the site and at what frequency?

3 people (E. Herbert, D. Coleman, D. Walters [VIMS]) at installation and take down (two trips in 1 year time).
1 person every 2 weeks in warm months and every 4 weeks in cold months: have coordinated with Jacob Shalack to have technicians pick up a bottle sample near the site every time techs go to do maintenance on GCE 8 sonde.

Please list keywords (as many as are appropriate) that describe your project:

**Habitat type:** mud flat, marsh, creek
**Measurements:** depth, sedimentology, turbidity
**Study theme:** geology, geophysics, movement of organic matter
**Likely long-term impacts of the study:** no long-term impacts

What equipment will be deployed in the field?

3 RBR turbidity sensors will be deployed on the marsh for one year and marked with ~1m high pvc stakes and then removed. 1 YSI Sonde will be installed 30 cm from the bed in a small, non-navigable tidal creek, mounted on a ~2.5m fence post for 1 year and then removed. 15 ceramic tiles and 15 cloth squares (6" by 6") will be staked to the marsh and collected and replaced monthly. They will be marked by ~1ft pvc stakes and permanently removed after 1 year.

Will plants or animals be collected as part of this study?

No

What are the likely impacts of the project on the site?

Three sediment cores will be taken with ~1m depth and ~15 cm diameter. 3 small (~30cm²) area of vegetation will be clipped around the RBR sensors so that their detection ability is not obstructed. About 18-20 pvc stakes will be placed in the marsh for 1 year. Grass will be walked on during site installation, take-down, and maintenance.

Will the project design include boardwalks? If not, explain why not.

We will use temporary (movable) boardwalks for instillation & site visits. Routine water collection should not require walking on marsh.

How long will impacts persist after the research is concluded?

The core holes will likely fill in very quickly, with no noticeable impact within a few weeks-months. The equipment will have a minimal impact which will likely not persist following removal. We are attempting to observe the natural state of the system and it is therefore in our best interests to cause as little impact as possible.

What GCE-LTER research objective will this study address?

Not specified

Study Area Map:
Files attached to this application

GCE-71-2016_GPS_ColemanHerbert_(VIMS)_Sediment_Study_Site.kml (KML file, 1.52 kb, submitted 03/09/2016)
[web link: https://gce-iter.marsci.uga.edu/private/registration/files/gps_data/GCE-71-2016_GPS_ColemanHerbert_(VIMS)_Sediment_Study_Site.kml]
Hi Skye,

Attached are some photos of the instruments installed in a VA marsh. There is no scale on the photos, but the instruments (blue) are about 2 ft long. The tiles are just 6x6 hardware store tiles (bathroom tiles). We just use 1’x10’ aluminum planks with milk crates at each end as temporary boardwalks to minimize sediment disturbance when we take cores/install equipment. These boardwalks do not stay in the marsh.

Thanks so much!

Ellen

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From: Stockel, Skye [mailto:Skye.Stockel@dnr.ga.gov]
Sent: Thursday, March 10, 2016 1:50 PM
To: Ellen R. Herbert <erherbert@vims.edu>
Subject: RE: Request for Revocable License for Marsh Sediment Study

Ellen,

Do you have any images of what the tiles look like and the equipment? Also, you refer to using “boardwalks” during installation, please provide a brief description including dimensions. Let me know if you have any questions!

Sincerely,

Skye Stockel
Permit Coordinator
Marsh and Shore Management Program
Coastal Resources Division GA DNR
912.262.3127

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From: Ellen R. Herbert <erherbert@vims.edu>
Sent: Wednesday, March 09, 2016 12:23 PM
To: Stockel, Skye
Subject: Request for Revocable License for Marsh Sediment Study