

May 25, 2004

MEMO

TO: Frank Yelverton
U.S. Army Corps of Engineers, Wilmington District
Wilmington District
P.O. Box 1890
Wilmington, NC 28402-1890

FROM: William Burton (Program Manager)
Versar, Inc.
9200 Rumsey Road
Columbia, MD 21045

SUBJECT: May 2004 Progress report for CSA Contract No. GS-00F-0007L (Delivery order No. W912PM-04-F-7010) Monitoring to Assess Potential Environmental Impacts Associated with the Dare County Beaches (Bodie Island) Shoreline Protection Project, Dare County, North Carolina

Overview of progress for the reporting period

After completing the study plan and scope of work for the Dare County Beach Monitoring this spring 2004 Versar began the process of implementing the first year of pre-construction monitoring. Within one week of receiving the task order to proceed with the field sampling we began setting up the field program and resolving logistical issues. This included arranging subcontract agreements with local commercial fishermen to do the seining and offshore trawling, finding a local hire to conduct the weekly bird and recreational fishing survey, and contacting local municipalities and fishing pier owners about the program. Prior to the initiation of the field collections Versar and Dial Cordy, Inc. conducted an underwater video sled survey of the bottom conditions at the N1 and N2 borrow sites and the surrounding areas of similar depth to select an appropriate reference area. After reviewing the video images, a reference area about 1-mile south of the N1 and N2 borrow site was selected. The week following the underwater video survey Versar field crews conducted the first seasonal (spring 2004) benthic and fish collections on the beaches and offshore survey areas. During this effort Versar's project manager trained the creel clerk and shorebird survey technician hired through a subcontracting arrangement with the North Carolina Coastal Federation. All benthic, and fish collections were successfully completed for the first seasonal collection

period between April 30 and May 15, 2004. However, there were some unanticipated logistical problems encountered that required some changes to the original study plan. Below we summarize those problems and explain how they were resolved through modification of our study design.

Logistical Problems Encountered

During the development of the study plan we anticipated that we would have a fleet of commercial trawlers using the homeport of Wanchese North Carolina that would be rigged with an 80-foot otter trawls and would be available for hire during all four seasonal sample periods. This is the case for the current studies we are conducting for the Philadelphia District of the USACE and Mineral Management Service off shore of Ocean City Maryland and is why we proposed a similar gear for the Dare County project. However, it turned out that the stern trawler fleet that works out of Oregon Inlet moves up and down the east coast seasonally such that there are no vessels in the area during the spring and summer seasons. Given that we wanted to keep the gear and vessel consistent for each sampling season, we entered into negotiations with a local commercial fisherman who could supply us with a smaller trawling vessel that would be available year round. Another factor that came to light was the 25-mile distance from protected waters in the sound to the offshore borrow site. Based on the advice and warning from several local watermen about how sea conditions can rapidly change along the outer banks, we determined we needed a fast vessel to get the crew safely back to Oregon inlet (the only inlet in the area) ahead of any impending storms. At the time the commercial fisherman was outfitting a 35-foot trawling vessel, a stable catamaran with two 350 hp diesel engines capable of cruising at 30 knots (depending on sea state). The commercial fisherman indicated that they could tow a 42' head rope otter trawl from this vessel and that this gear would capture large numbers of all demersal fish including overwintering striped bass we expected to encounter at the borrow site. This trawl extends six feet above the bottom. Weighing the safety concerns and the boat availability issues, we determined we had no choice but to use the smaller trawler. Because we needed to get our spring sampling done there was insufficient time to coordinate this scope change with the agencies and still comply with the project schedule. In addition, when it came time to sample the borrow sites, the outfitting of the 35-foot trawler was delayed a month which forced us to use another trawler equipped with a 32-foot head rope trawl. While this was unfortunate, this gear effectively sampled spot, spotted hake, rays, and other demersal fish. At this point we could stay with a 32-foot head rope trawl for all subsequent sampling events but we recommend that the 42-foot head rope trawl would be better. This trawl will be more effective at capturing larger pelagic fish as well as the demersal target species. Our staff fisheries statistician is confident we can use trawl width and wing-spread to scale up the catches of bottom fish to make the area-swept data comparable to a 42-foot head rope trawl we recommend using for all subsequent surveys. Again there was insufficient time to seek agency approval and still get our first season survey completed. One final issue with the trawl gear relates to the removable small mesh liner we proposed placing in the cod end in the original study plan. Upon

consultation with the commercial fishermen we were strongly advised against using a quarter inch liner to avoid loading the net up with bait fish (e.g., anchovies), jellyfish, and other net clogging debris which in their experience would stop the vessel and greatly decrease the fishing ability of the gear for target demersal species. Since we are targeting both adults (e.g., overwintering striped bass) and the larger juveniles we concurred with their assessment and dropped the use of the liner.

During our first series of sample collections our field crew misinterpreted the sampling plan for stomach content analysis. The scope called for taking a maximum of five fish from each station sampled so that stomachs would be collected in many different areas as opposed to taking them all from one area. While this was generally done, less than 5 fish per station were taken resulting in fewer than the required 100 fish from the subject and reference beach being retained for gut content analysis. A total of only 50 spot from the subject and reference beach were retained. This oversight has been corrected and all subsequent collections will retain more stomachs. The reduced number of fish sampled per station will increase the variance in area-wide estimates of mean stomach content, but because stomach content differences normally are greatest among stations (not within stations) the effect should be minimal. Fish at a station tend to eat the same prey, and since prey often are clustered in space the variance of the mean stomach content is driven by the between station variability.

Video surveys of the N1 and N2 borrow sites indicated that the surface sediments were primarily silty sands (mostly sand with some silt) but there were significant patches of shell mixed with coarse pebbles. We surveyed a reference area approximately seven miles to the south of the borrow site in similar depths but only found the silty sand habitats. We then surveyed an area about a mile south of the borrow site and found bottom habitat that was similar but not identical to the borrow area. We did not survey north of the borrow site because of safety concerns about the distance away from Oregon Inlet. Earlier reviews of the MMS subbottom surveys in the region suggested that the borrow site is located over an ancient river mouth. We selected the reference area one mile south of the borrow site for the benthic and fish survey work. A more detailed analysis of the video images will be forwarded to you as soon as Dial Cordy completes their report to us but I have requested that they supply copies of the video tapes and preliminary habitat maps for USACE review. The patchy nature of the surface sediments was evident in the benthic invertebrate grabs as 3 out of the 10 samples collected in the borrow site contained coarser, gravely material. All of the samples from the reference site was silty sand. While we can handle effects of the different sediment types on benthic community composition by statistically comparing only similar grain sized samples, we decided in consultation with the USACE that only the silty sand samples from the borrow site will be retained for benthic invertebrate analysis in the future. This will keep the number of replicate samples equal between the reference and borrow site for all future comparisons

During creel survey work you questioned why both the subject beach and the reference beach were not sampled on the same day. Because of the distance between the subject beach and the reference beach and the length of beach and piers we need to cover it is not feasible to conduct representative sampling in both areas in one day. The time it would take to count and interview anglers on one beach would cause the counts and interviews at the other beach to happen much later in the day. Also, we are using one creel clerk to keep the data gathered consistent as possible and because the task is not large enough to warrant hiring two part time creel clerks (the same person is doing the weekly bird surveys as well). We are randomizing the start days and times for both beaches so that over a seasonal period we will have adequately characterized all potential fishing days and fishing hours throughout the day. We have purchased a beach bike for our creel clerk to help speed up our instantaneous angler count. We have also contacted both the Avalon and Nags Head pier owners and they have indicated their willingness to provide us access to their fishing piers for angler counting and interviews.

Ten commercial haul seines were successfully deployed and retrieved on the subject beach and reference beach north of Kitty Hawk pier during the spring 2004 sampling. However, our original sampling scheme could not be followed to the letter because of the eroded condition of the subject beach and the presence of soft sands in other areas. Our supervising fisheries biologist directed the haul seine crew to conduct one haul seine in each of the ten strata we established along the subject and reference beach if possible. However, in many sections of the eroded beach there was not enough room to maneuver the trucks and boats much less haul the seine into the beach. While at some marginally wide beaches the haul seine could be retrieved by hand, the faster the net is retrieved the less likely fish will escape or the net will roll in the surf. Another problem was that other areas had soft sands such that the haul seiner was understandably unwilling to risk losing his vehicle in the surf. As a result, an uneven distribution of sampling sites was sampled in the spring 2004 collections. Given the changing nature of the beach face that occurs in the area from one month to the next, it may also be impossible to keep the sampling points consistent between seasonal surveys. We will make every effort to spread the sampling points out along the survey area in subsequent surveys if conditions allow, but some flexibility will have to be built into the program to adapt to conditions on the ground. One comforting observation on this first series of haul seining was that the catches were very consistent between samples despite the fact that some samples were conducted closer together than what we had planned. We are only allowing the commercial fishermen to determine the suitability of the physical conditions of the beach to determine if it can be seined. They are not permitted to target holes or other clues to increase the catch. Our on-site fisheries biologist will continue to stress this in all subsequent sampling events.