GIWW PA62 and PA63 SEAGRASS SURVEY
01 OCT 2012

PART 1 GENERAL

1.1 SUMMARY

The work in this Section consists of furnishing labor, equipment, supplies, and materials to perform seagrass surveys within the Seagrass Survey Areas boundary as indicated below, at PAs62 and 63, GIWW, West Galveston Bay, Texas, prepare a report of this survey, and prepare a presentation on survey results. The survey at PA62 will be the second survey conducted this year, to determine recovery after dredge disposal during the winter of 2011-2012. The PA 62 Seagrass Survey Area covers approximately 300 acres. The 300-acre area included in this survey covers the bayward limits of PA62 (PA62 is defined as extending 1350 feet bayward from the centerline of the GIWW), and an additional 500-foot area beyond the bayward limits of PA62. Only the submerged, bayward portions of PA62 will be surveyed, as described below, and shall replicate, as nearly as possible, the seagrass survey conducted in January 2012, in order to determine changes and recovery following dredge disposal. The PA 63 Seagrass Survey Areas cover approximately 200 acres and include the specific areas impacted by dredge disposal in December 2011-January 2012. At PA63, three separate impact areas will be surveyed as indicated on the attached maps: PA63 West Discharge Area (103 acres); PA63 Middle Discharge Area (37 acres); and PA63 East Discharge Area (58 acres).

Only the submerged, bayward portions of PA63 impacted by dredge disposal during the winter of 2011-2012 will be surveyed, as described and mapped below, in order to determine recovery of seagrass following disposal. The survey results from PA 63 will be compared to the aerial imagery already analyzed for the area of dredge disposal impact to estimate acreages of impact and recovery this growing season. From the aerial information, an estimate of total seagrass coverage of PA63 shall be produced. Aerial information shall also be used to estimate the acreage of seagrass present pre-disposal in the impacted areas of PA63. The field survey addressed in this statement of work shall map the full extent of seagrasses in PA 62 and impacted areas of PA 63, document seagrass composition, identify species and coverage/density, and clearly document and describe pre- and post- seagrass coverage, impact, and recovery.

1.2 MEASUREMENT AND PAYMENT

Measurement and payment for seagrass surveys will be paid for in accordance with provisions of SECTION 01 22 00.10 MEASUREMENT AND PAYMENT.

1.3 NOTIFICATION AND COORDINATION OF WORK

1.3.1 Pipeline Companies

The Contractor shall notify and coordinate work with pipeline and utility companies at least 10 days before performing work near the pipelines in the vicinity of the site as shown. At Contractor's expense, necessary protective measures shall be provided as required by the pipeline or utility company when within the area of the utility pipelines.

It is the Contractor's responsibility to investigate the location of every utility within the area. The Contractor shall take precautions against damages which can result from its' work in the vicinity of the utilities. If damage occurs as a result of its' work the Contractor shall be required to suspend work until the damage is repaired and approved. Costs of the repairs and downtime of the work shall be at the Contractor's expense.

EVERY EFFORT HAS BEEN MADE TO GIVE ALL PERTINENT DETAILS ON THE LOCATION OF THE PIPELINES. THE DATA SHOWN ARE SUBSTANTIALLY CORRECT. HOWEVER, THE EXACT LOCATIONS MAY VARY FROM THAT SHOWN; THEREFORE, THE CONTRACTOR SHALL COOPERATE WITH THE RESPECTIVE OWNERS TO ESTABLISH THE ACTUAL POSITION OF THE PIPELINES.

The following is furnished for information on verifying pipeline ownership and identifying buried utilities and pipelines:

Lone Star Notification Center 1-800-669-8344

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with SECTION 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Carolyn Murphy (409-766-3044) is the technical point of contact for issues pertaining to the surveys both before the work begins and while the work is in progress.

Seagrass Survey Plan; G AO-NG

The Contractor shall prepare a Seagrass Survey Plan and submit for approval prior to the start of construction.

Sampling Plan; G AO-NG

The Contractor shall submit for approval a Sampling Plan describing its methodology for taking samples prior to start of construction.

SD-06 Test Reports

Seagrass Survey; G AO-NG
First Draft Report; G AO-NG
Final Report; G AO-NG

The Contractor shall submit the results of the Surveys taken. Submittals shall include two (2) hard copy plots and one (1) electronic file. All subcontractor submittals shall be routed through the prime Contractor.

The Contractor shall prepare a powerpoint presentation on the results of both survey efforts (the previous survey of PA62 conducted in January 2012,

and the survey that is the subject of this statement of work) and present it either in person or by webinar within 1 month of the acceptance of the final report.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 GENERAL

As with the previous survey conducted in January 2012, the areal extent of the seagrass shall be mapped using GPS coordinates for both PA 62 and 63. A GIS data layer shall be developed that spans the extent of the seagrass beds at PA62 and 63, and documents the density, abundance, and frequency of seagrasses by species. GIS data layers of and seagrass density and distribution by species shall be produced, and maps of this information will be produced for the report.

3.2 SEAGRASS SURVEY

The contractor shall re-establish the previous survey transects perpendicular to the GIWW at PA62, and establish a new survey transect layout for PA63, with transects every 1000 feet beginning at the tidal low water mark of the foreshore where emergent land is present, or from the southern-most cut of the GIWW where emergent land is not present. GPS coordinates shall be established every 10 meters along each transect, again, replicating the previous survey, which will be marked with PVC pipe. On this grid, two sampling strategies will be accomplished. Sampling quadrats, each measuring 0.25 square meters, shall be established every 20 meters along each transect. The quadrats shall be sampled to document the recovery of the existing seagrass bed prior to placement of dredged material from the GIWW using the Braun-Blanquet rapid visual assessment technique (Braun-Blanquet, J. 1972. Plant Sociology: The Study of Plant Communities. Hafner Publishing Company). Also refer to Pulich, et al (Pulich, Warren Jr., Hardegree, Beau, Kopecky, Andrea, Schwelling, Steve, Onuf, Christopher, Dunton, Kenneth. 2000. Texas Seagrass Monitoring Program: 2000 Strategic Plan. TPWD). It is assumed that the predominant seagrass present will be Halodule. Each seagrass species shall be visually identified, and a score based on the cover of the species in that quadrat shall be assigned according to the analytical techniques developed by Fourqurean et al. In addition, seagrass root presence/absence will be reported every 10 meters based on 3 post hole grab samples at each sampling location. The resulting analysis from these two sampling strategies shall identify density, abundance, and frequency by species for the seagrass bed (Fourqueane,J.W., A. Willsie, C.D. Rose, and L.M. Rutten. 2001. Spatial and Temporal Patterns in Seagrass Community Composition and Productivity in South Florida. Marine Biology Journal 138:341-354.).

Best Professional Judgment. During the seagrass survey, if 3 consecutive grid sampling locations do not produce seagrass samples and if the water is 4 feet deep and getting deeper, no further seagrass sampling will be required. Full documentation of the circumstances resulting in this decision must be included in the survey report. If unusual or unexpected field circumstances or preliminary results occur, Carolyn Murphy, CESWG-PE-PR, 409-766-3044 or 281-415-8660, should be contacted immediately.

3.2.1 Seagrass Survey

The surveys shall be taken along the seagrass survey baseline grids as specified. The results shall be presented in both graphical and digital formats. The digital shall be in the project datum. The graphical format shall consist of cross sections at scales not smaller than 1-inch equals 50 feet horizontal and 1-inch equals 10 feet vertical so that each section can be represented on 8-½ by 11-inch paper. Draft technical reports shall include the following information:

I. Technical Reports. A full technical report of findings shall be furnished as described below.

A. Report Content. The Contractor shall prepare a comprehensive, technical draft report detailing the work accomplished, survey methodology and results. The report will analyze and report differences/recovery from the original, January survey of PA62, and present the new survey data for PA63. Pre- and post- dredge disposal maps of seagrass distribution shall be produced for each PA. The draft report shall be a polished product and an accurate representation of the content of the final report. All photographs and graphics such as maps, charts, tables and drawings shall be complete and included in the draft report. All draft reports shall be reviewed by the Authorized Representative of the Contracting Officer for technical adequacy, scientific accuracy, clear and concise presentation, and discussion of the data and results. Draft reports not meeting these standards or missing sections (see below) shall be revised at the Contractors expense until the standards and sections are met. The contractor shall incorporate all comments on the draft report, as directed by the Authorized Representative of the Contracting Officer, into the final report. The final report shall be revised to the satisfaction of the Authorized Representative of the Contracting Officer.

The draft and final technical reports shall include the following sections:

1. Title Page - title of the report, company name who conducted the work, contract number, the identity of the Principal Investigator, author(s) of the report, and date the report is submitted.

2. Abstract - the abstract shall be a brief synopsis of the project including the following information: the location of the survey area; a general description of the work performed; a general description of the results of the work; and a summary of the conclusions and recommendations – information in the Abstract must accurately summarize information in the technical report.

3. Introduction - shall include the following information: the location and boundary of the seagrass bed, including a vicinity

map and map(s) delineating all areas surveyed; a summary of the proposed project; the purpose of the survey; a brief description of the field methods, and sampling and analytical protocols; the identities of the personnel directly responsible for the data collection, analysis, and report preparation; the dates for each phase of the survey; and a summary of the organization and content of the succeeding sections of the report.

4. Environmental Setting - provide a description of the natural environment of the survey area and the existing conditions of the survey area; and relevant geological and geomorphological information.

5. Methodology - a thorough discussion of the Braun-Blanquet rapid visual assessment technique and Fourqurean analytical technique and their application will be presented.

6. Project Results - a thorough discussion and documentation of the results of the surveys will be presented, including identification of construction impacts, if any, to the seagrass bed.

7. Conclusions - provide a summary of the following: the location of the survey areas; the surveys performed and results, discussion of data recovered; and conclusions of the survey.

8. References Cited

9. Appendices – all survey and analytical data shall be included as appendices to the main report, as well as photograph logs, tables, charts, and graphs.

B. Technical Reports shall be prepared in accordance with the following general guidelines unless otherwise directed in the task order.

1. Draft reports shall be double spaced. The report shall have an overall size of 8½″ by 11″. No oversized materials will be accepted without prior approval from the Contracting Officer or the Authorized Representative of the Contracting Officer. Photographs, figures, maps, and other graphics shall appear in the same size, format, and general location in the draft report as they appear in the final report.

2. If a report is authored by someone other than the contract Principle Investigator, the Principle Investigator must at least prepare a foreword describing the overall research context of the report, the significance of the work, and any other background circumstances relating to the manner in which the work was undertaken.

3. Information shall be presented in text, tabular, and/or graphic formats, as appropriate.

Ten copies of the draft and final reports shall be submitted to the Contracting Officer or the Authorized Representative of the Contracting Officer. If the contractor expects to publish all or part of any final report, he must provide the Contracting Officer or the Authorized Representative of the Contracting Officer with a letter specifying the expected date, place, and name of the publication. This letter must be submitted with each final report as appropriate. The Contractor shall submit a first draft report of survey within 30 days after completion of the survey and shall include all the material identified above, including maps of seagrass distribution, seafloor topographic map, and sediment characterization. The report shall document techniques used,and data collected.

3.2.2 Seagrass Survey Plan

The Contractor shall prepare a Seagrass Survey Plan for both PAs and submit for approval prior to the start of construction and initiation of the initial seagrass surveys. The plan shall include, but not be limited to, a description of the work to be conducted, phasing, methods, techniques, equipment, scheduling and staff associated with the seagrass surveys prior to the start of construction. The Seagrass Surveys shall be conducted within the limits of the seagrass survey boundary areas as shown.

3.3 FINAL REPORT

Upon review and approval, a final report and documentation of the survey will be prepared and submitted as described above, along with the GIS data layers documenting the data collected.

-- End of Section –