ATKINS

TASK ORDER 14

CONSTRUCTION MONITORING SERVICES AND PERMIT COMPLIANCE SMATHERS BEACH, KEY WEST, FLORIDA

CONTRACT NO. 11-051

General

Atkins is assisting the City of Key West (City) with obtaining a Consolidated Joint Coastal Permit (JCP) and a Sovereign Submerged Lands Authorization for the continued maintenance of Smathers Beach located within the City limits. This permit (No: 0129031-005-JC) will authorize the periodic placement of beach compatible sand along the 3,000 foot Smathers Beach over a 10-year period. The initial beach restoration project involved the placement of 36,000 cubic yards of sand and mitigated for 5.2 acres of seagrass habitat at a site known as the blimp pad in 2000. The USACE Department of the Army (DA) permit is pending approval so Atkins is working with that agency to modify an existing permit to allow for sand placement in the near-term.

Using the authorizations anticipated in the pending JCP and the modified DA permit, the City intends to complete the renourishment project of Smathers Beach that started in 2011. The three main task assignments for this task order to assist the City are: 1) construction monitoring, 2) biological monitoring and 3) physical monitoring. No mitigation planning or design is anticipated with this scope of work. The physical and biological monitoring proposed for this task order will be conducted in place of, where appropriate, the ongoing monitoring associated with the 2011 sand placement event.

1.0 Construction Monitoring

1.1 Project Initiation, Contracting Assistance, Meetings

Atkins will review permits for the project and inform the City of all special conditions that have to be adhered to. A concise timeline will be developed and the permits organized into a single composite document with all of the necessary requirements outlined. Atkins will assist the City communicating all relevant permit requirements to the contractor selected to conduct the sand placement.

Atkins will coordinate and participate in the project Kickoff Meeting with the permitting agencies and other designated City staff. The meeting will be held at the City offices.

Points of discussion will include, but are not limited to:

- Exchange of information
- Review permit conditions
- Establishing project, monitoring and construction scheduling goals
- Establish communications plan

Deliverables – Permit summary, Meeting minutes and any required additional submittals as a result of the meeting

1.2 Preconstruction Construction Engineering Inspection

- Facilitate submittal of the City's signed and sealed construction plans to the FDEP.
- Ensure detailed geotechnical reports for the upland borrow site is submitted to FDEP for approval. Information on the material to be placed on the beach shall include grain size analysis from representative points throughout the borrow area. Reports shall provide assurance that the

material is similar to that already existing at the beach site in both coloration and grain size. Reports shall document that all material is free of construction debris, rocks or other foreign matter and does not contain, on average, greater than 10 percent fines passing a No. 200 sieve and shall not contain coarse gravel or cobbles, exclusive of shell material retained by a No. 4 sieve.

- Conduct a pre-construction conference with all contractors, engineer of record, marine turtle permit holder and FDEP staff representative. Other appropriate agency staff and stakeholders may also be invited. The purpose of the meeting is to establish an understanding among all parties as to the requirements of the permit. A minimum 10 days advance written notification to the appropriate agencies and attendees will be provided.
- Provide written notice of commencement to appropriate agencies FDEP, Corps, FWC, FKNMS, etc.) within the time frames addressed to all parties as required by regulatory authorizations.

Marine Sea Turtle Lighting Survey

Stray light being cast upon documented marine sea turtle nesting beaches is a significant factor in the degradation of nesting habitat on the beaches of Florida. In order to monitor for the potential of impact, the following monitoring protocol will be established:

- Identify potential problem sources during the day light hours
- Conduct night time surveys
- Identify problem sources
- Address problem sources and remove stray source from impacting beach prior to construction.

A sea turtle lighting survey will be conducted both pre- and post construction.

Deliverables:

- Meetings - all meeting agendas, notifications and minutes of the meetings.
- Reports and notices – copies of all reports and notices filed with agencies.

1.3 Construction Engineering Inspection Monitoring

Atkins will provide construction engineering and inspection (CEI) services for a period of 14 days. Atkins is well qualified and has a long history working on beach and coastal construction projects throughout the state of Florida. The inspector will be qualified and familiar with coastal projects and environmental resources, beach construction techniques, and turbidity monitoring. The inspector will serve as site supervisor and have the authority to alter construction techniques or shut down operations based on turbidity monitoring results or other observations the inspector deems appropriate. Daily construction monitoring activities will include:

- Conduct daily briefings and weekly meetings with contractor
- Do not allow construction to begin until daily marine turtle monitoring of the area has been conducted
- Ensure the sea turtle nesting monitoring is being conducted and recorded
- Review contractor invoices and provide recommendations to the City
- Daily monitoring and recording of construction activities
- Random visit to stockpile site to observe delivery of sand, random visual assessment of truck volumes with comparison to delivery ticket volumes stated.
- Oversight of placement of sand on the beach and assessment of sand quality to ensure meets standards in plans, specifications and permit documents
- Collection and logging of periodic sand samples for quality assurance Record
- Daily construction monitoring observations documented with photographs.

- Perform turbidity monitoring as required by regulatory authorizations and provide required reports
- Oversee beach tilling and any compaction monitoring, if required
- Provide daily project progress reports to the City
- Maintain copies of project records
- Monitor and advise on placement of erosion control devices
- Prepare final engineers report at conclusion of project and submit along with notice of completion to agencies as required by permits
- Within 30 days following project completion submit appropriate written statement of completion and certification providing confirmation that activities were performed in compliance with the plans, specifications and all conditions of the permit. Any deviations shall be duly noted and described. If completed project is substantially different than permitted plans, substantial deviations shall be noted and provided on a set of as-built drawings.
- Submit required reports to specified regulatory agencies.

2.0 Biological Monitoring

The biological monitoring services described below will be repeated for the post construction monitoring events. The monitoring protocols will follow the agency-approved monitoring plan currently being conducted by Atkins for the 2011 renourishing event at Smathers Beach and will be repeatable for comparison purposes through the end of the monitoring period.

Atkins will compile and review available data, existing permits, reports, maps and aerial photographs pertaining to benthic habitats and associated communities, fisheries, manatees, listed/proposed endangered coral species, and other protected species/critical habitat applicable to the study area. Atkins will gather information through database literature searches, telephone interviews, and meetings with identified sources of information.

Atkins will conduct field investigations to locate, delineate and characterize existing benthic resources, e.g. seagrasses, sandbottom, hardbottom, corals, etc., within the marine survey areas. It is anticipated permit conditions will require biological surveys within 30 days prior to construction (**Task 2.1**), within 14 days post-construction (**Task 2.2**), at six months post-construction (**Task 2.3**), one year post-construction (**Task 2.4**), and two years post-construction (**Task 2.5**). The entire project area will begin with a visual reconnaissance, during which time 2 to 4 Atkins biologists will haphazardly cover the sampling area via snorkel All individual coral colonies with diameters >4.0 in (>10.2 cm) within the survey area will be identified and mapped using a Trimble Geo-XT handheld DGPS unit, running ArcPad 7.0. Each coral will have a representative photograph taken for future reference for constructability purposes, if mitigation is required. Polygonal contour vertices will be identified by snorkelers in the water and recorded by the operator of the Trimble floating adjacent to the biologist. Successive polygons will then be added to the shapefile until the entire project area has been sufficiently mapped. All hardbottom outcroppings or edges will be mapped using the same technology. A map of the individual coral colony locations will be produced and incorporated into the bathymetry and seagrass data using Geographical Information System (GIS) software. All submerged lands within the 550 foot buffer will be intensively sampled for seagrass occurrence using an agency approved approach. The objectives of the survey will be (1) to produce a detailed, species-specific map capable of estimating impact acreage, and (2) to quantify the distribution of seagrass within the project area using NMFS/NOAA methods (National Marine Fisheries Service 2002).

Deliverable – Biological Monitoring Reports within 30 days of each monitoring event.

3.0 Topographic/Bathymetric Surveys

The physical monitoring services described below will be repeated for the post construction monitoring events. The monitoring protocols will be repeatable for comparison purposes through the end of the monitoring period and will follow the established plan currently being implemented by Atkins as part of the permit compliance for the 2011 Smathers Beach Renourishment project.

In order to conduct surveying activities a network of control stations shall be established or recovered in the proposed survey area with both vertical and horizontal values. The network shall consist of Local 2nd Order, Class 2 vertical (both NAVD88 and NGVD29), Tidal Bench Marks and Horizontal (NAD83) control points. Vertical points shall be tied into the Tidal Bench Mark in the area and the horizontal control points shall be tied into the Florida GPS Network. Permanent Reference Control Monuments (brass disc in concrete) shall be established at 500 ft intervals along the length of project. The network of control stations shall include temporary benchmarks (3rd order vertical/horizontal) and physical ground topography points (3rd order vertical/horizontal). The ground topography points shall be either digital, differential, or trigonometric measurements.

All work performed will meet or exceed USACE requirements, FDEP requirements and Florida Minimal Technical Standards of Chapter 472.027 F.S. Rule 5J-17 Florida Administrative Code.

3.1.1 Data Collection

The topographic data will be collected at 100 intervals not to exceed 25 ft. along the profile and all grade breaks and attributed items along the profile sufficient to describe the profile. All survey data shall be provided in digital form and used to produce a Digital Terrain Model (DTM) map at 0.5 ft contour intervals and tied to the Mean High Water line as approved by FDEP.

The data will be collected seaward out to approximate 600 feet in order to establish continuity with offshore data and landward to no less than 150 landward of the established Mean High Water line as approved by the FDEP or to the edge of pavement of the abutting roadway.

3.1.2 Procedural Control

The surveyor shall outline and maintain a schedule for planned data collection and itemize all procedures including quality control and instrumentation to be followed during the pre and immediate post construction survey, DTM map with cut and fill calculations will required to be performed and again at the 6 and 12 month monitoring period.

It is anticipated permit conditions will require surveys be conducted before construction commences (pre-construction **Task 3.1**) to establish the existing conditions, immediately post construction (**Task 3.2**) for the time-zero baseline, six-months post construction (**Task 3.3**), at one-year post construction (**Task 3.4**), 24 month post-construction (**Task 3.5**), 36 month post-construction (**Task 3.6**), and 48 month post-construction (**Task 3.7**).

Deliverables - All survey data shall be provided in digital form and used to produce the DTM map. Signed and sealed surveys by a Professional Land Surveyor will be submitted for the Pre construction survey.

Engineering Report

It is anticipated permit compliance will require an engineering study be conducted with the completion of each survey event. Atkins coastal engineers will prepare and submit an engineering report to FDEP with the immediately post construction (**Task 3.2.1**), six-month post construction (**Task 3.3.1**), one-year post

construction (**Task 3.4.1**), 24 month post-construction (**Task 3.5.1**), 36 month post-construction (**Task 3.6.1**), and 48 month post-construction (**Task 3.7.1**) surveys. The report will summarize the performance of the nourishment project, analyze shoreline and volumetric changes, identify erosion and accretion patterns, and identify any adverse impacts as a result of the project, specifically related to direct burial of seagrass. Comparisons of the survey data between monitoring events and will be analyzed using MATLAB computer software.

Deliverables – Engineering Reports prepared within 90 days of completion of the immediately post construction, six-month post construction, and one-year post construction surveys.

Fee

Atkins will perform the scope of services described herein for the estimated total fee of $193,609.00. Fees will be billed on a time charge basis. Please see the attached schedule for a breakdown of fees.

Atkins will perform the scope of services in accordance with the terms and conditions of our professional services agreement with the City (Contract NO. 11-051).

Smathers Beach CEI and Permit Compliance
Resolution 11-051 Task Order #14

Category	FY	Rodperson II	Instrument Operator I	Tech I	Tech II	Sr Tech I	Sr Tech II	Sr Tech III	Sr. Tech IV	Sr Tech V	PTP/Sr. Div Manager	Hours	Cost
Task		$31.00	$49.00	$58.00	$79.00	$94.00	$115.00	$130.00	$156.00	$182.00	$208.00		
1.0 - Construction Monitoring													
1.1 Project Intiation, Contracting Assistance, Meetings	13							24	2		1	27	$3,640.00
1.2 Pre-Construction Construction Engineering Inspection	13						8		6			14	$1,856.00
1.3 Construction Engineering Inspection - 14 days	13						140	18				158	$18,440.00
											Subtotal	***199***	***$23,936.00***
2.0 - Biological Monitoring and Reporting													
2.1- Pre-Construction	13				52	26	32	38	1	0.5		149.5	$15,419.00
2.2 - Immediate Post Construction	13				50	24	30	38	1	0.5		143.5	$14,843.00
2.3 - Six-Month Post Construction	14				48	24	27	38	1	0.5		138.5	$14,340.00
2.4 - Year-One Post Construction	14				48	24	27	38	1	0.5		138.5	$14,340.00
2.5 - Year-Two Post Construction	15				48	24	27	38	1	0.5		138.5	$14,340.00
											Subtotal	***708.5***	***$73,282.00***
3.0 - Hydrographic Data: Topographic/Bathymetric Survey													
3.1 Survey - Pre-Construction	13	20	20		20	20	10		3		2	95	$7,094.00
3.2 Survey - Immediate Post Construction	13	20	20		20	20	10	4	3		2	99	$7,614.00
3.2.1 Engineering report	13					24	10	4	1			39	$4,082.00
3.3 Survey - Six-Month Post Construction	14	20	20		20	20	10		3		2	95	$7,094.00
3.3.1 Engineering report	14					24	10	4	1			39	$4,082.00
3.4 Survey - One-Year Post Construction	14	20	20		20	20	10		3		2	95	$7,094.00
3.4.1 Engineering report	14					24	10	4	1			39	$4,082.00
3.5 - 24 Month Post Construction	15	20	20		20	20	10		3		2	95	$7,094.00
3.5.1 Engineering report	15					24	10	4	1			39	$4,082.00
3.6 - 36 Month Post Constructiuon	16	20	20		20	20	10		3		2	95	$7,094.00
3.6.1 Engineering report	16					24	10	4	1			39	$4,082.00
3.7 - 48 Month Post Construction	17	20	20		20	20	10		3		2	95	$7,094.00
3.7.1 Engineering report	17					24	10	4	1			39	$4,082.00
											Subtotal	***903***	***$74,670.00***
											Total Labor	***1811***	***$171,888.00***
											Total Expenses		***$21,721.00***
											Total		***$193,609.00***

Notes:
1) The categories and rates are derived from Resolution 11-051
2) Fees will be billed on a time charge basis.

ATKINS

Smathers Beach CEI and Permit Compliance
Resolution 11-051 Task Order #14

Item	Unit	Unit Price	Task 1	Task 2	Task 3
Per Diem	day	$42.00	$651.00	$2,520.00	$2,352.00
Mileage	mile	$0.565	$339.00	$847.50	$1,186.50
Plane	R/T	At cost			
Tolls	Each	at cost			
Accommodations	per/nite	$175.00	$2,625.00	$7,000.00	$2,450.00
Jon Boat w/ outboard	day	$50.00			
Boat to 20'	1/2 day	$200.00			
Boat to 20'	day	$350.00			
Boat greater than 20'	day	at cost			
Snorkel Gear	day	$15.00		$450.00	
SCUBA Equipment	day	$40.00			
Geotech Sub	Samples	$250.00			
Misc Field Supplies	each	$100.00	$700.00	$300.00	$300.00
Subtotal			***$4,315.00***	***$11,117.50***	***$6,288.50***
				Total	$21,721.00

Notes:
1) Task 1
  a) Per Diem - One field person for 15 days (CEI task)
  b) Accommodations - One field person one room for 15 nights (CEI Task)
2) Task 2
  a) Per Diem - Four field persons for three days for five (5) monitoring events
  b) Accommodations - Four field persons for two nights for five (5) monitoring events
3) Task 3
  a) Per Diem - Four crew for two days for seven (7) monitoring events
  b) Accommodations - Four crew two rooms for one night for seven (7) monitoring events

FY	Expenses				Labor				**FY Totals**
	Task1	Task 2	Task 3	**Totals**	Task1	Task 2	Task 3	**Totals**	
FY 13	$4,315.00	$4,447.00	$1,796.71	**$10,558.71**	$23,936.00	$30,262.00	$18,790.00	**$72,988.00**	**$83,546.71**
FY 14	$0.00	$4,447.00	$1,796.71	**$6,243.71**	$0.00	$28,680.00	$22,352.00	**$51,032.00**	**$57,275.71**
FY 15	$0.00	$2,223.50	$898.36	**$3,121.86**	$0.00	$14,340.00	$11,176.00	**$25,516.00**	**$28,637.86**
FY 16	$0.00	$0.00	$898.36	**$898.36**	$0.00	$0.00	$11,176.00	**$11,176.00**	**$12,074.36**
FY 17	$0.00	$0.00	$898.36	**$898.36**	$0.00	$0.00	$11,176.00	**$11,176.00**	**$12,074.36**
	$4,315.00	$11,117.50	$6,288.50	**$21,721.00**	$23,936.00	$73,282.00	$74,670.00	**$171,888.00**	**$193,609.00**

ATKINS