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I HEREBY CERTIFY that the attached document consisting of 459 pages is a true and correct copy from the files of the Department of Environmental Protection. The attached document is identified below:

1. Weekly Offshore Coral Stress Compliance Reports
Weeks 1-42 (November 20, 2013 – September 9, 2014)

Executed this 23rd day of September, 2014.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

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Weekly Offshore Coral Stress Compliance Report 001
FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening
Week 11/20-11/26 Terrapin Island Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. The Terrapin dredged Cut 2 between 0+00 and 64+00 in compliance Week 1 (11/20/13 - 11/26/13) (Figure 1). This report documents coral stress assessment results collected during the first week of compliance monitoring at HBNC1, HBN2, HBN3, HBSC1, HBS1, HBS2, HBS3, and HBS4 (Figure 1). Data were collected at all sites on 11/23/13 and 11/24/13. Environmental factors during Week 1 of compliance monitoring were safe for dive operations for 4 out of 7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event, was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction monitoring surveys on permanently marked corals.

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. week 1 HBSC1 v. week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test, results are presented in Table 2.

Table 1. Possible conditions for permanently marked hard corals receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed

Results

A two sample t-test was used to compare permanently marked coral populations between channel-side sites and reference sites (e.g. HBSC1 v. HBS1) (Table 2). Significant differences were found between HBSC1 (0.37 ± 0.49) and HBS2 (0.9 ± 0.3) (two-sample t-test; $p < 0.05$) as well as between HBNC1 (0.36 ± 0.5) and HBN2 (0.93 ± 0.24) (two-sample t-test) and between HBNC1 and HBN3 (0.78 ± 0.42) (two-sample t-test). HBN1 was not evaluated as the corals at the site were buried by natural events during the third week of baseline surveys before commencement of dredging activities.

Results from *in situ* surveys document coral stress as indicated by one or more of the conditions found in Table 1. In Week 1 of compliance the sampled coral populations (marked corals) at HBS2, HBN2, and HBN3 exhibited a higher level of stress than coral populations at reference sites sampled in the same time period. Week 4 baseline results showed no significant differences between coral populations at channel-side sites and reference sites. Results from *in situ* surveys cannot differentiate between sources of stress or define a cause of stress.

Multiple cold fronts with winds of 15-20 knots from the north and northeast began influencing the project site in November, coinciding with the start of dredging. Divers documented increased turbidity, qualitatively increased sedimentation and constrained time frames for diving. Winter weather conditions and dredging activities may have confounding effects which may be separated as more data are collected. Sediment trap data comparisons between baseline and

dredging periods (every 28 days) may be illustrative, unfortunately, these results were not yet available at the time of this report.

Table 2. Mean stress level as measured by a “0” or “1” for permanently marked corals at channel and reference sites in baseline Week 4 and compliance monitoring Week 1. N is the number of corals sampled to calculate the mean. SD is the standard deviation for the mean. “” denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test.**

Area	Site	Baseline Week 4	N	Baseline Week 4 SD	Compliance Week 1	N	SD
South Sites	HBSC1	0.42	30	0.16	0.37	30	0.49
	HBS1	0	21	0	0.33	21	0.49
	HBS2	0.05	21	0.22	0.9*	21	0.3
	HBS3	0.32	28	0.07	0.13	28	0.35
	HBS4	0	25	0	0.28	25	0.46
North Sites	HBNC1	0.14	14	0.36	0.36	14	0.5
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.					
	HBN2	0.21	14	0.43	0.93*	14	0.24
	HBN3	0.07	27	0.26	0.78*	27	0.42

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.
4. Initial results indicate an overall increase in stress response of corals during the initial compliance monitoring events. At present, it is unknown if the cause of increased stress is due to natural conditions (increased turbidity and sedimentation associated with the successive passage of the first winter cold fronts following > two months of calm weather) or the initial stages of hopper dredging activity. Precautionary recommendations to the dredging contractor have been made to reduce the potential impacts of dredging at the project sites.

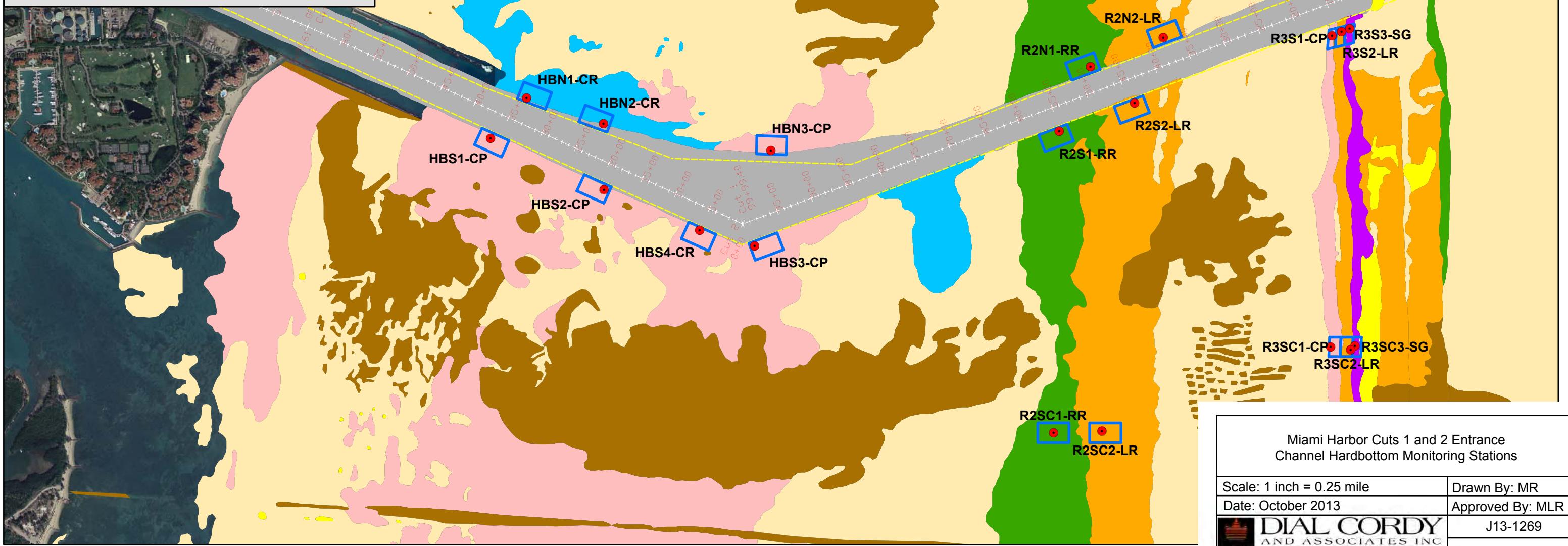
Legend

- Miami Harbor Monitoring Station Center (24-oct13)
- Miami Harbor Monitoring Station Location (Oct-2013)
- Existing Channel Limits

Dade County Habitats (Final SEPT09)**Type**

- Artificial
- Colonized Pavement
- Linear Reef
- Patch Reef
- Ridge
- Scattered Coral/Rock in Sand
- Spur and Groove
- Sand Borrow Area
- Sand
- Inlet Channel

0 0.125 0.25 0.5 0.75 Miles



Weekly Offshore Coral Stress and Sediment Block Compliance Report 002
FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening
Week 2 11/27/13-12/3/13 Terrapin Island Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. The Terrapin dredged Cut 1 between station 83+00 and 100+00 and Cut 2 between station 0+00 and 60+00 in compliance Week 2 (11/27/13 - 12/3/13) (Figure 1). This report documents coral stress assessment and sediment block survey results collected during the second week of compliance monitoring at HBNC1, HBN3, and HBSC1 (Figure 1). Data were collected at all sites on 12/3/13. Environmental factors during Week 2 of compliance monitoring were safe for dive operations for 2 out of 7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event, was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are collected during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Coral Stress

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction monitoring surveys on permanently marked corals.

A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:

1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;

2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of “0” or “1” for each parameter (A score of “0” would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a “1” would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 002
FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening
Week 2 11/27/13-12/3/13 Terrapin Island Dredge Activity

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. week 1 HBSC1 v. week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test, results are presented in Table 2.

Table 1. Possible conditions for permanently marked hard corals receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed

Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Results

Coral Stress Surveys

A two sample t-test was used to compare permanently marked coral populations between channel-side sites and reference sites in Week 2 (11/27/13-12/3/13) of compliance monitoring (e.g. HBSC1 v. HBS1) (Table 2). No significant differences were documented between HBNC1 (0.42 ± 0.27) and HBN3 (0.27 ± 0.20) (two- sample t-test; $p < 0.05$). HBN1 was not evaluated as the corals at the site were buried by natural events during the third week of baseline surveys before commencement of dredging activities.

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Week 2 11/27/13-12/3/13 Terrapin Island Dredge Activity

Results from *in situ* surveys document coral stress as indicated by one or more of the conditions found in Table 1. In Week 2 of compliance monitoring the sampled coral populations (marked corals) at HBN3 exhibited a lower level of stress than coral populations at HBNC1, however these differences were not statistically significant. No data were collected for the remaining 6/7 channel-side sites due to unsafe diving conditions, therefore no comparisons on the southern side of the channel were possible. Baseline results showed no significant differences between coral populations at channel-side sites and reference sites. Results from *in situ* surveys cannot differentiate between sources of stress or define a cause of stress.

Multiple cold fronts with winds of 15-20 knots from the north and northeast began influencing the project site in November, coinciding with the start of dredging. Divers documented increased turbidity, qualitatively increased sedimentation and constrained time frames for diving. Winter weather conditions and dredging activities may have confounding effects which may be separated as more data are collected. Sediment trap data comparisons between baseline and dredging periods (every 28 days) may be illustrative, unfortunately, these results were not yet available at the time of this report.

Table 2. Mean stress level as measured by a “0” or “1” for permanently marked corals at channel and reference sites in compliance monitoring Week 2. N is the number of corals sampled to calculate the mean. SD is the standard deviation for the mean. “” denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates that due to unsafe diving conditions, sites were not sampled during this week of compliance monitoring.**

Area	Site	Compliance Week 2	N	SD
South Sites	HBSC1	0.57	30	0.50
	HBS1	NA	NA	NA
	HBS2	NA	NA	NA
	HBS3	NA	NA	NA
	HBS4	NA	NA	NA
North Sites	HBNC1	0.42	12	0.27
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.		
	HBN2	NA	NA	NA
	HBN3	0.27	26	0.20

Sediment Block Survey

Sediment blocks in Week 1 and Week 2 of compliance monitoring accumulated no sediment (Table 3). These surfaces are smooth since they are painted with anti-fouling paint. No sediment accumulation was documented on the blocks during 4 weeks of baseline data collection. Although no benthic data were recorded at HBN1, the block was observed in Week 1 and no sediment accumulation was observed.

Table 3. Sediment block accumulation data for compliance Week 1 and Week 2. NA indicates that due to unsafe diving conditions, sites were not sampled during this week of compliance monitoring.

Area	Site	Compliance Week 1	N	Compliance Week 2	N
South Sites	HBSC1	0	1	0	1
	HBS1	0	1	NA	NA
	HBS2	0	1	NA	NA
	HBS3	0	1	NA	NA
	HBS4	0	1	NA	NA
North Sites	HBNC1	0	1	0	1
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.			
	HBN2	0	1	NA	NA
	HBN3	0	1	0	1

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.
4. Initial results (Week 1) indicated an overall increase in stress response of corals during compliance monitoring. Week 2 results indicated an increase in stress response at control sites when compared to Week 1. HBN3 corals, exhibited a lower stress response when compared to their reference, HBNC1. At present, it is unknown if the cause of increased stress in Week 1 was due to natural conditions (increased turbidity and sedimentation associated with the successive passage of the first winter cold fronts following > two months of calm weather) or the initial stages of hopper dredging activity. Precautionary recommendations to the dredging contractor have been made to reduce the potential impacts of dredging at the project sites.

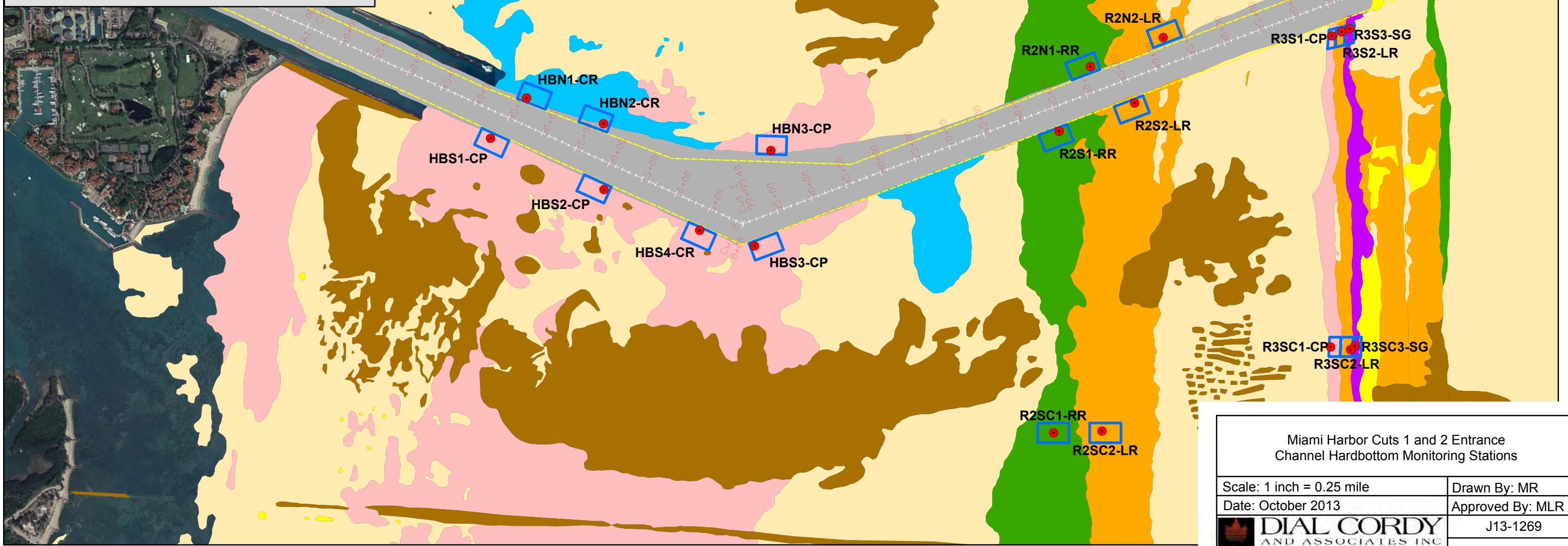
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- Miami Harbor Monitoring Station Center (24-oct13)
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Dade County Habitats (Final SEPT09)**Type**

- Artificial
- Colonized Pavement
- Linear Reef
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- Scattered Coral/Rock in Sand
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- Sand Borrow Area
- Sand
- Inlet Channel

0 0.125 0.25 0.5 0.75 Miles



Weekly Offshore Coral Stress and Sediment Block Compliance Report 003
FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening
Week 3 12/4/13-12/10/13 Terrapin Island Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. The Terrapin dredged Cut 1 between station 80+00 and 100+00 and Cut 2 between station 0+00 and 60+00 in compliance Week 3 (12/4/13 - 12/10/13) (Figure 1). This report documents coral stress assessment results collected during the third week of compliance monitoring at HBNC1, HBN3, and HBSC1 (Figure 1). Data were collected at all sites on 12/3/13. Environmental factors during Week 3 of compliance monitoring were safe for dive operations for 4 out of 7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event, was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Coral Stress

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction monitoring surveys on permanently marked corals.

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress. During underwater surveys (*in situ*), corals are assigned a "0" (normal or non-stressed) or "1" (stressed), and photographed. If a "1" is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions are provided in Table 1. Comparisons are made between reference and

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Week 3 12/4/13-12/10/13 Terrapin Island Dredge Activity

channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. week 1 HBSC1 v. week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1. Possible conditions for permanently marked hard corals receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
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Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed

Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Results

Coral Stress Surveys

A two sample t-test was used to compare permanently marked coral populations between channel-side sites and reference sites in Week 3 (12/4/13-12/10/13) of compliance monitoring (e.g. HBSC1 v. HBS1) (Table 2). No significant differences were documented between reference sites and any of the channel-side sites (two- sample t-test; $p < 0.05$). Monitored corals at northern sites show lower levels of stress on average for the monitoring period. HBN1 was not evaluated as the corals at the site were buried by natural events during the third week of baseline surveys before commencement of dredging activities. Baseline results showed no significant differences between coral populations at channel-side sites and reference sites. Results from *in situ* surveys cannot differentiate between sources of stress or define a cause of stress.

Multiple cold fronts with winds of 15-20 knots from the north and northeast began influencing the project site in November, coinciding with the start of dredging. Divers documented increased turbidity, qualitatively increased sedimentation, and constrained time frames for diving. Winter weather conditions and dredging activities may have confounding effects which may be

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Week 3 12/4/13-12/10/13 Terrapin Island Dredge Activity

separated as more data are collected. Sediment trap data comparisons between baseline and dredging periods (every 28 days) may be illustrative. Unfortunately, these results were not yet available at the time of this report.

Table 2. Mean stress level as measured by a “0” or “1” for permanently marked corals at channel and reference sites in compliance monitoring Week 3.

Area	Site	Compliance Week 3	N	Compliance Week 3 SD
South Sites	HBSC1	0.57	30	0.5
	HBS1	0.63	8	0.52
	HBS2	0.79	19	0.42
	HBS3	0.1	29	0.31
	HBS4	0.54	25	0.51
North Sites	HBNC1	0.36	12	0.5
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.		
	HBN2	0.21	14	0.43
	HBN3	0.27	26	0.45

N – Number of corals sampled to calculate the mean.

SD – Standard deviation for the mean.

* – denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

Sediment blocks in Week 3 of compliance monitoring accumulated no sediment (Table 3). These surfaces are smooth since they are painted with anti-fouling paint. No sediment accumulation was documented on the blocks during 4 weeks of baseline data collection.

Table 3. Sediment block accumulation data for compliance Week 3.

Area	Site	Compliance Week 3	N
South Sites	HBSC1	0	1
	HBS1	0	1
	HBS2	0	1
	HBS3	0	1
	HBS4	0	1
North Sites	HBNC1	0	1
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.	
	HBN2	0	1
	HBN3	0	1

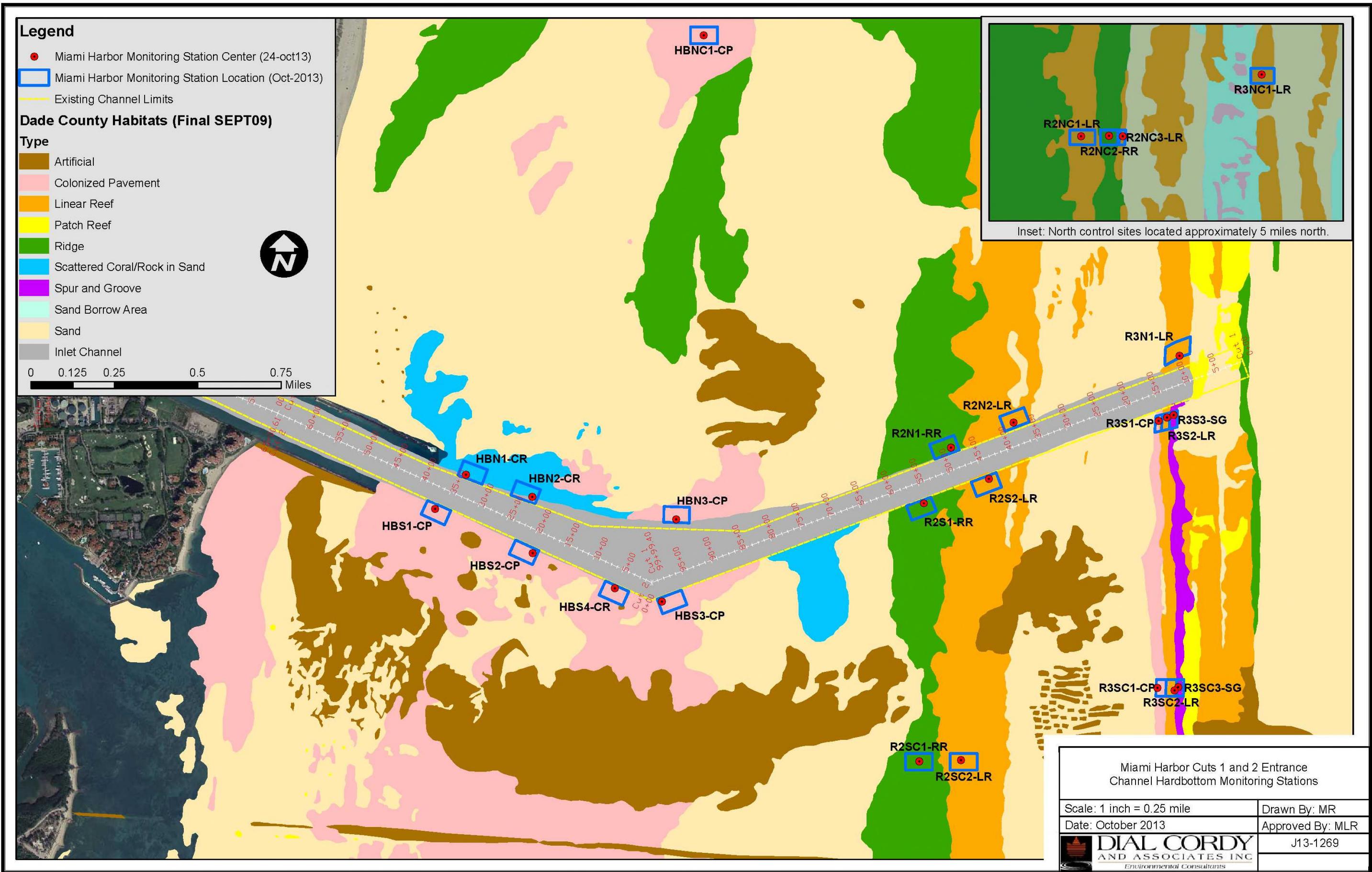
Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above

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are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging operations.

3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.
4. Initial results (Week 1) indicated an overall increase in stress response of corals during the initial compliance monitoring events. At present, it is unknown if the cause of increased stress is due to natural conditions (increased turbidity and sedimentation associated with the successive passage of the first winter cold fronts following > two months of calm weather) or the initial stages of hopper dredging activity. Precautionary recommendations to the dredging contractor have been made to reduce the potential impacts of dredging at the project sites.



Weekly Offshore Coral Stress and Sediment Block Compliance Report 004
FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening
Week 4 12/11/13-12/17/13 Terrapin Island Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. The cutterhead dredge Texas began dredging on 12/17/13, which was after the data collection period for Week 4. The Terrapin dredged Cut 1 between station 70+00 and 100+00 and Cut 2 between station 1+00 and 65+00 in compliance Week 4 (12/11/13 -12/17/13) (Figure 1). This report documents coral stress assessment results collected during the fourth week of compliance monitoring at HBNC1, HBN2, HBN3, HBSC1, HBS1, HBS2, HBS3, and HBS4 (Figure 1). Week 4 compliance data were collected at all sites on December 10, 11, and 12, 2013. Environmental factors during Week 4 of compliance monitoring were safe for dive operations for 4 out of 7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event, was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Coral Stress

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (Sp Cond 32.a.i).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

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Week 4 12/11/13-12/17/13 Terrapin Island Dredge Activity

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. week 1 HBSC1 v. week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1. Possible conditions for permanently marked hard corals receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Results

Coral Stress Surveys

A two sample t-test was used to compare permanently marked coral populations between channel-side sites and reference sites in Week 4 (12/11/13-12/17/13) of compliance monitoring (e.g. HBSC1 v. HBS1) (Table 2). Significant differences were documented between the southern reference site and each southern channel-side site (two- sample t-test; $p \leq 0.05$) (Table 2). Differences between northern reference and channel-side sites were not significant (two

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sample t-test; $p \leq 0.05$). Baseline results showed no significant differences between coral populations at channel-side sites and reference sites. Results from *in situ* surveys cannot differentiate between sources of stress or define a cause of stress.

Multiple cold fronts with winds of 15-20 knots from the north and northeast began influencing the project site in November, coinciding with the start of dredging. Divers documented increased turbidity, qualitatively increased sedimentation, and constrained time frames for diving. Winter weather conditions and dredging activities may have confounding effects which may be separated as more data are collected. Sediment trap data comparisons between baseline and dredging periods (every 28 days) may be illustrative. Unfortunately, these results were not yet available at the time of this report.

Table 2. Mean stress level as measured by a “0” or “1” for permanently marked corals at channel and reference sites in compliance monitoring Week 4.

Area	Site	Compliance Week 4	N	Compliance Week 4 SD
South Sites	HBSC1	0.5	30	0.5
	HBS1	0.78*	18	0.42
	HBS2	1*	21	0
	HBS3	1*	29	0
	HBS4	1*	25	0
North Sites	HBNC1	0.92	12	0.29
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.		
	HBN2	1	9	0
	HBN3	0.89	27	0.32

N – Number of corals sampled to calculate the mean.

SD – Standard deviation for the mean.

* – denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

Sediment blocks in Week 4 of compliance monitoring accumulated no sediment (Table 3). These surfaces are smooth since they are painted with anti-fouling paint. No sediment accumulation was documented on the blocks during 4 weeks of baseline data collection.

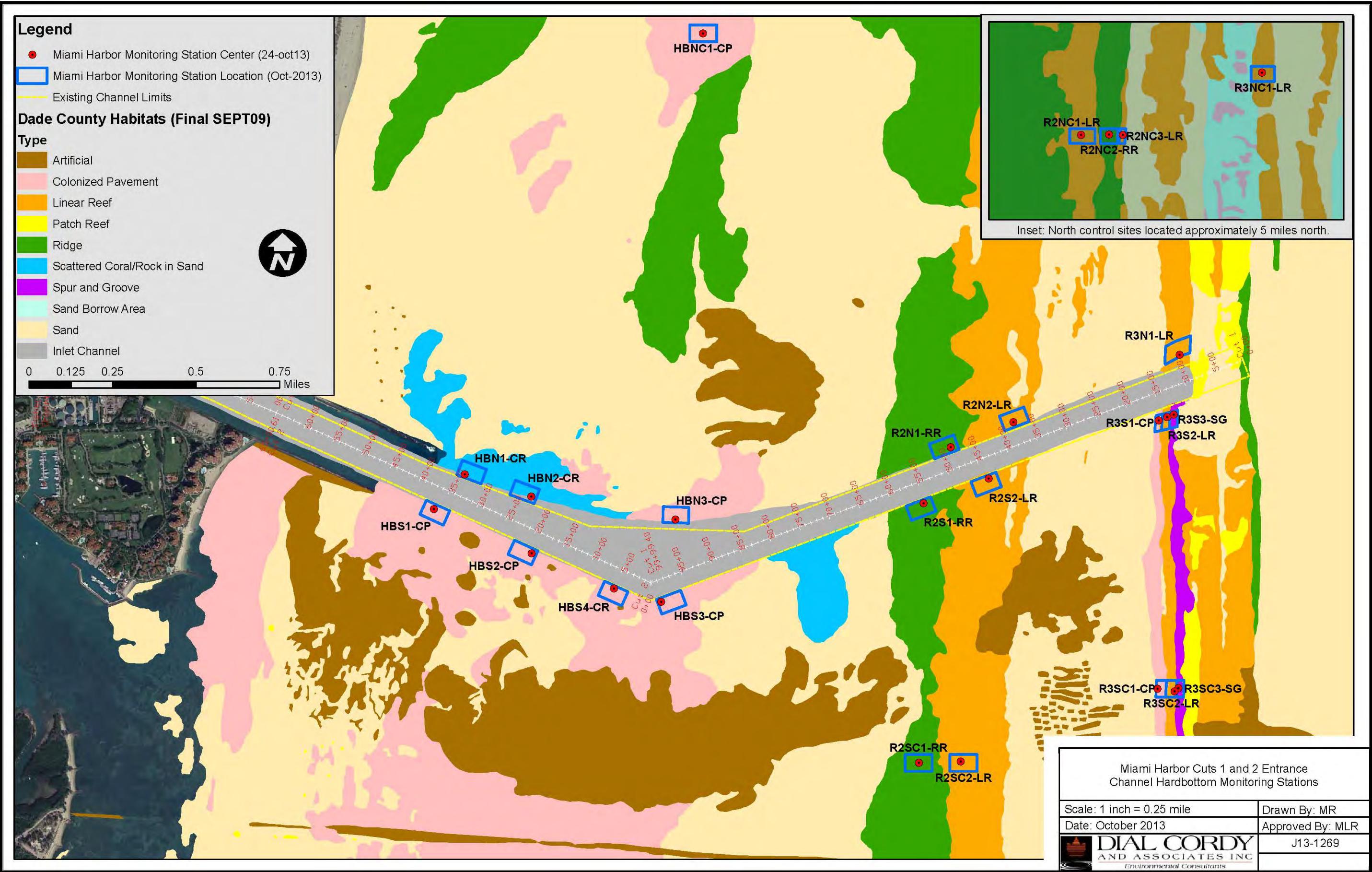
Table 3. Sediment block accumulation data for compliance Week 4. All measurements are in mm.

Area	Site	Compliance Week 4 (mm)	N
South Sites	HBSC1	0	1
	HBS1	0	1
	HBS2	0	1
	HBS3	0	1
	HBS4	0	1
North Sites	HBNC1	0	1
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.	
	HBN2	0	1
	HBN3	0	1

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Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.
4. Week 4 results indicate an increase in the stress response of corals or an increase in accumulation of sediment not removed by normal wave or current action. Precautionary recommendations to the dredging contractor have been made to reduce the potential impacts of dredging at the project sites.



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Week 5 12/18/13-12/24/13 Terrapin Island Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. The cutterhead dredge Texas began dredging on 12/17/13 and stopped dredging on 12/20/13. The Terrapin dredged from Cut 1 station 45+00 to Cut 2 station 60+00 in compliance Week 5 (12/18/13 -12/24/13) (Figure 1). During this compliance week monitoring was required by permit at HBNC1, HBN2, HBN3, HBSC1, HBS1, HBS2, HBS3, HBS4, R2NC1, R2NC2, R2N1, R2N2, R2SC1, R2SC2, R2S1, and R2S2 (Figure 1). Environmental factors during Week 5 of compliance monitoring made conditions unsafe for diving on 7/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Coral Stress

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a "0"

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(normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. week 1 HBSC1 v. week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1. Possible conditions for permanently marked hard corals receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Results

Coral Stress Surveys

No data were collected due to unsafe diving conditions created by inclement weather.

Multiple cold fronts with winds of 15-20 knots from the north and northeast began influencing the project site in November, coinciding with the start of dredging. Divers documented increased turbidity, qualitatively increased sedimentation, and constrained time frames for diving. Winter weather conditions and dredging activities may have confounding effects which may be separated as more data are collected. Sediment trap data comparisons between baseline and dredging periods (every 28 days) may be illustrative. Unfortunately, these results were not yet available at the time of this report.

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Table 2. Mean stress level as measured by a “0” or “1” for permanently marked corals at channel and reference sites in compliance monitoring Week 4.

Area	Site	Compliance Week 4	N	Compliance Week 4 SD
South Sites	HBSC1	NA	NA	NA
	HBS1	NA	NA	NA
	HBS2	NA	NA	NA
	HBS3	NA	NA	NA
	HBS4	NA	NA	NA
	R2SC1	NA	NA	NA
	R2SC2	NA	NA	NA
	R2S1	NA	NA	NA
	R2S2	NA	NA	NA
North Sites	HBNC1	NA	NA	NA
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.		
	HBN2	NA	NA	NA
	HBN3	NA	NA	NA
	R2NC1	NA	NA	NA
	R2NC2	NA	NA	NA
	R2N1	NA	NA	NA
	R2N2	NA	NA	NA

N – Number of corals sampled to calculate the mean.

SD – Standard deviation for the mean.

NA – no data were collected due to unsafe diving conditions created by inclement weather.

* – denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

No data were collected due to unsafe diving conditions, created by inclement weather.

Table 3. Sediment block accumulation data for compliance Week 4. All measurements are in mm.

Area	Site	Compliance Week 4 (mm)	N
South Sites	HBSC1	NA	NA
	HBS1	NA	NA
	HBS2	NA	NA
	HBS3	NA	NA
	HBS4	NA	NA
	R2SC1	NA	NA
	R2SC2	NA	NA
	R2S1	NA	NA
	R2S2	NA	NA
North	HBNC1	NA	NA

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Area	Site	Compliance Week 4 (mm)	N
Sites	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.	
	HBN2	NA	NA
	HBN3	NA	NA
	R2NC1	NA	NA
	R2NC2	NA	NA
	R2N1	NA	NA
	R2N2	NA	NA

NA – no data were collected due to unsafe diving conditions created by inclement weather.

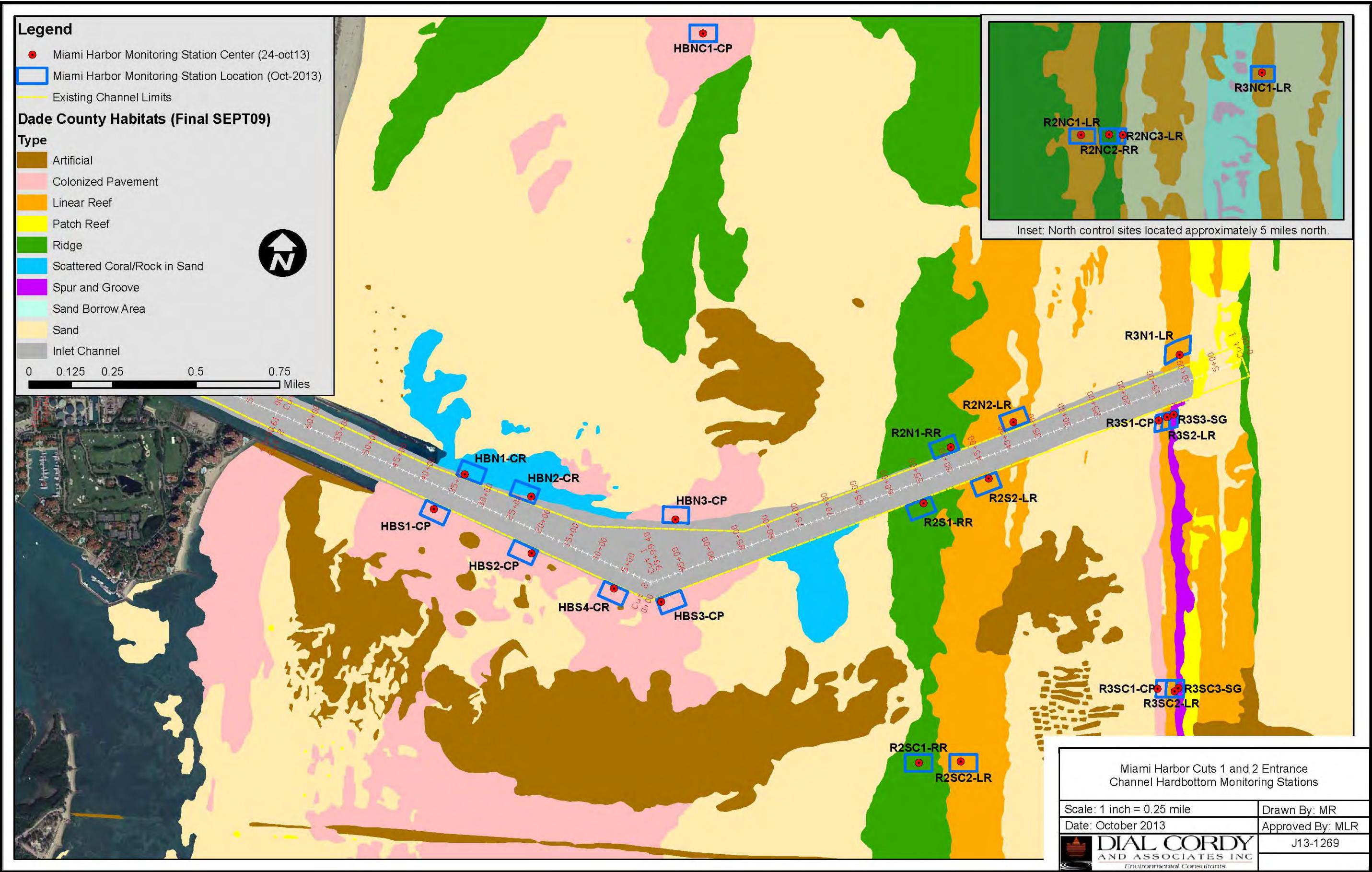
Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.
4. Week 4 results indicated an increase in the stress response of corals or an increase in accumulation of sediment not removed by normal wave or current action. Precautionary recommendations to the dredging contractor have been made, and movement of the dredge, to the extent feasible, were accomplished to reduce the potential impacts of dredging at the project sites.



Weekly Offshore Coral Stress and Sediment Block Compliance Report 004
FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening
Week 6 12/25/13-12/31/13 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. The cutterhead dredge Texas began dredging on 12/17/13 and stopped dredging on 12/20/13. The Terrapin dredged from Cut 1 station 45+00 to Cut 2 station 60+00 in compliance Week 6 (12/25/13 -12/31/13) (Figure 1). During this compliance week monitoring was required by permit at HBNC1, HBN2, HBN3, HBSC1, HBS1, HBS2, HBS3, HBS4, R2NC1, R2NC2, R2N1, R2N2, R2SC1, R2SC2, R2S1, and R2S2 (Figure 1). Environmental factors during Week 6 of compliance monitoring made conditions unsafe for diving on 7/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Coral Stress

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

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 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

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Week 6 12/25/13-12/31/13 Dredge Activity

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a "0" (normal or non-stressed) or "1" (stressed), and photographed. If a "1" is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. week 1 HBSC1 v. week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1. Possible conditions for permanently marked hard corals receiving a "1" during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
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Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Results

Coral Stress Surveys

No data were collected due to unsafe diving conditions created by inclement weather and/or adverse sea conditions.

Multiple cold fronts with winds of 15-20 knots from the north and northeast began influencing the project site in November, coinciding with the start of dredging. Divers documented increased turbidity, qualitatively increased sedimentation, and constrained time frames for diving. Winter

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weather conditions and dredging activities may have confounding effects which may be separated as more data are collected. Sediment trap data comparisons between baseline and dredging periods (every 28 days) may be illustrative. Unfortunately, these results were not yet available at the time of this report.

Table 2. Mean stress level as measured by a “0” or “1” for permanently marked corals at channel and reference sites in compliance monitoring Week 6.

Area	Site	Compliance Week 6	N	Compliance Week 6 SD
South Sites	HBSC1	NA	NA	NA
	HBS1	NA	NA	NA
	HBS2	NA	NA	NA
	HBS3	NA	NA	NA
	HBS4	NA	NA	NA
	R2SC1	NA	NA	NA
	R2SC2	NA	NA	NA
	R2S1	NA	NA	NA
	R2S2	NA	NA	NA
North Sites	HBNC1	NA	NA	NA
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.		
	HBN2	NA	NA	NA
	HBN3	NA	NA	NA
	R2NC1	NA	NA	NA
	R2NC2	NA	NA	NA
	R2N1	NA	NA	NA
	R2N2	NA	NA	NA

N – Number of corals sampled to calculate the mean.

SD – Standard deviation for the mean.

NA – no data were collected due to unsafe diving conditions created by inclement weather.

* – denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

No data were collected due to unsafe diving conditions, created by inclement weather.

Table 3. Sediment block accumulation data for compliance Week 6.
All measurements are in mm.

Area	Site	Compliance Week 6 (mm)	N
South Sites	HBSC1	NA	NA
	HBS1	NA	NA
	HBS2	NA	NA
	HBS3	NA	NA
	HBS4	NA	NA
	R2SC1	NA	NA

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Area	Site	Compliance Week 6 (mm)	N
North Sites	R2SC2	NA	NA
	R2S1	NA	NA
	R2S2	NA	NA
	HBNC1	NA	NA
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.	
	HBN2	NA	NA
	HBN3	NA	NA
	R2NC1	NA	NA
	R2NC2	NA	NA
	R2N1	NA	NA
	R2N2	NA	NA

NA – no data were collected due to unsafe diving conditions created by inclement weather.

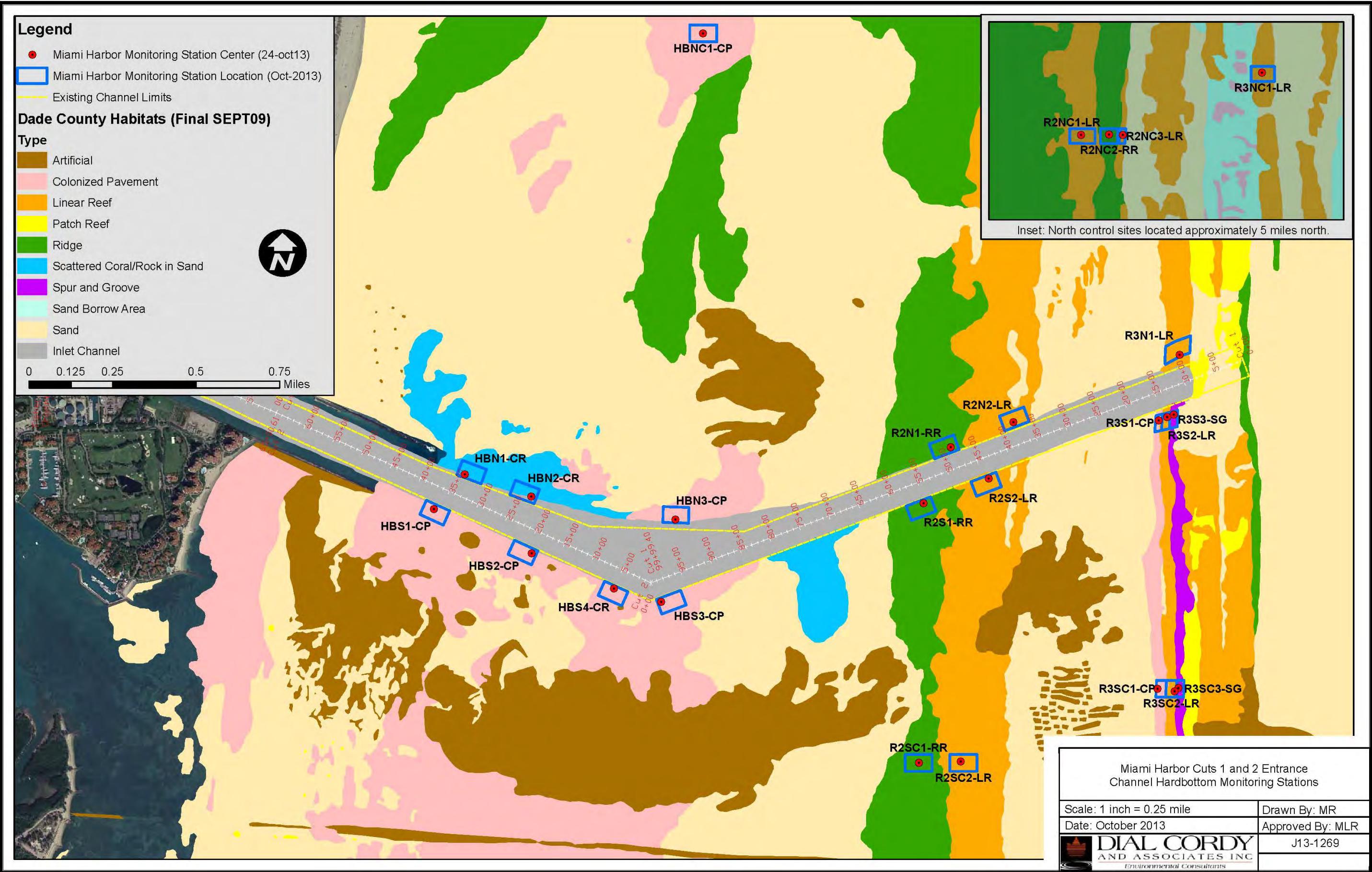
Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.
4. Week 4 results indicated an increase in the stress response of corals or an increase in accumulation of sediment not removed by normal wave or current action. Precautionary recommendations to the dredging contractor have been made, and movement of the dredge, to the extent feasible, were accomplished to reduce the potential impacts of dredging at the project sites.



Weekly Offshore Coral Stress and Sediment Block Compliance Report 004
FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening
Week 7 1/1/14-1/7/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. The cutterhead dredge Texas dredged in Cut 2 between station 40+00 and 60+00, in Compliance Week 7, between January 1 and January 7 2014 (Figure 1). During this compliance week monitoring was required by permit at HBNC1, HBN1, HBN2, HBSC1, HBS1, HBS2, (Figure 1). Environmental factors during Week 7 of compliance monitoring made conditions unsafe for diving on 6/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Coral Stress

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a "0"

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(normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. week 1 HBSC1 v. week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1. Possible conditions for permanently marked hard corals receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Results

Coral Stress Surveys

Channel side compliance data were collected at HBS1, HBS2, and HBN2 in Compliance Week 7. These data were compared using a two-sample t-test to Week 4 reference values since reference sites were not visited in Week 7 due to adverse weather conditions. Unfortunately, weather prevented a second day of monitoring in this week. Future monitoring will be done at reference sites first.

At HBN2 five out of six corals along Transect 3 are buried beneath coarse beach sand, which appears to be the same material that has buried HBN1. This burial is not thought to be related to the dredge. HBN2 stress level (0.63 ± 0.55) was significantly lower than the reported HBNC1

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(0.93 ± 0.29) (two- sample t-test; $p<0.05$). HBN2 is an area that may experience periodic burial by natural sand transport and hard corals may be acclimated to this type of environment, more so than hard corals at reference areas, which have not been observed to be under the same dynamic sediment transport regime. We are awaiting sedimentation data for the baseline as of the writing of this report.

Multiple cold fronts with winds of 15-20 knots from the north and northeast began influencing the project site in November, coinciding with the start of dredging. Divers documented increased turbidity, qualitatively increased sedimentation, and constrained time frames for diving. Winter weather conditions and dredging activities may have confounding effects which may be separated as more data are collected. Sediment trap data comparisons between baseline and dredging periods (every 28 days) may be illustrative. Unfortunately, these results were not yet available at the time of this report.

Table 2. Mean stress level as measured by a “0” or “1” for permanently marked corals at channel and reference sites in compliance monitoring Week 7. (Reference site data are from Week 4 compliance monitoring)

Area	Site	Compliance Week 7	N	Compliance Week 7 SD
South Sites	HBSC1	0.5	30	0.5
	HBS1	0.44	18	0.51
	HBS2	0.62	21	0.5
	HBS3	NA	NA	NA
	HBS4	NA	NA	NA
	R2SC1	NA	NA	NA
	R2SC2	NA	NA	NA
	R2S1	NA	NA	NA
	R2S2	NA	NA	NA
North Sites	HBNC1	0.93	12	0.29
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.		
	HBN2	0.63*	10	0.55
	HBN3	NA	NA	NA
	R2NC1	NA	NA	NA
	R2NC2	NA	NA	NA
	R2N1	NA	NA	NA
	R2N2	NA	NA	NA

N – Number of corals sampled to calculate the mean.

SD – Standard deviation for the mean.

NA – no data were collected due to unsafe diving conditions created by inclement weather.

* – denotes a statistically significant difference ($P\leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

No sediment was measured on sediment blocks at any sites visited in Week 7 of offshore compliance monitoring.

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Table 3. Sediment block accumulation data for compliance Week 7.
All measurements are in mm. (Reference site data are from Week 4 compliance monitoring)

Area	Site	Compliance Week 7 (mm)	N
South Sites	HBSC1	0	1
	HBS1	0	1
	HBS2	0	1
	HBS3	NA	NA
	HBS4	NA	NA
	R2SC1	NA	NA
	R2SC2	NA	NA
	R2S1	NA	NA
	R2S2	NA	NA
North Sites	HBNC1	0	1
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.	
	HBN2	0	1
	HBN3	NA	NA
	R2NC1	NA	NA
	R2NC2	NA	NA
	R2N1	NA	NA
	R2N2	NA	NA

NA – no data were collected due to unsafe diving conditions created by inclement weather.

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

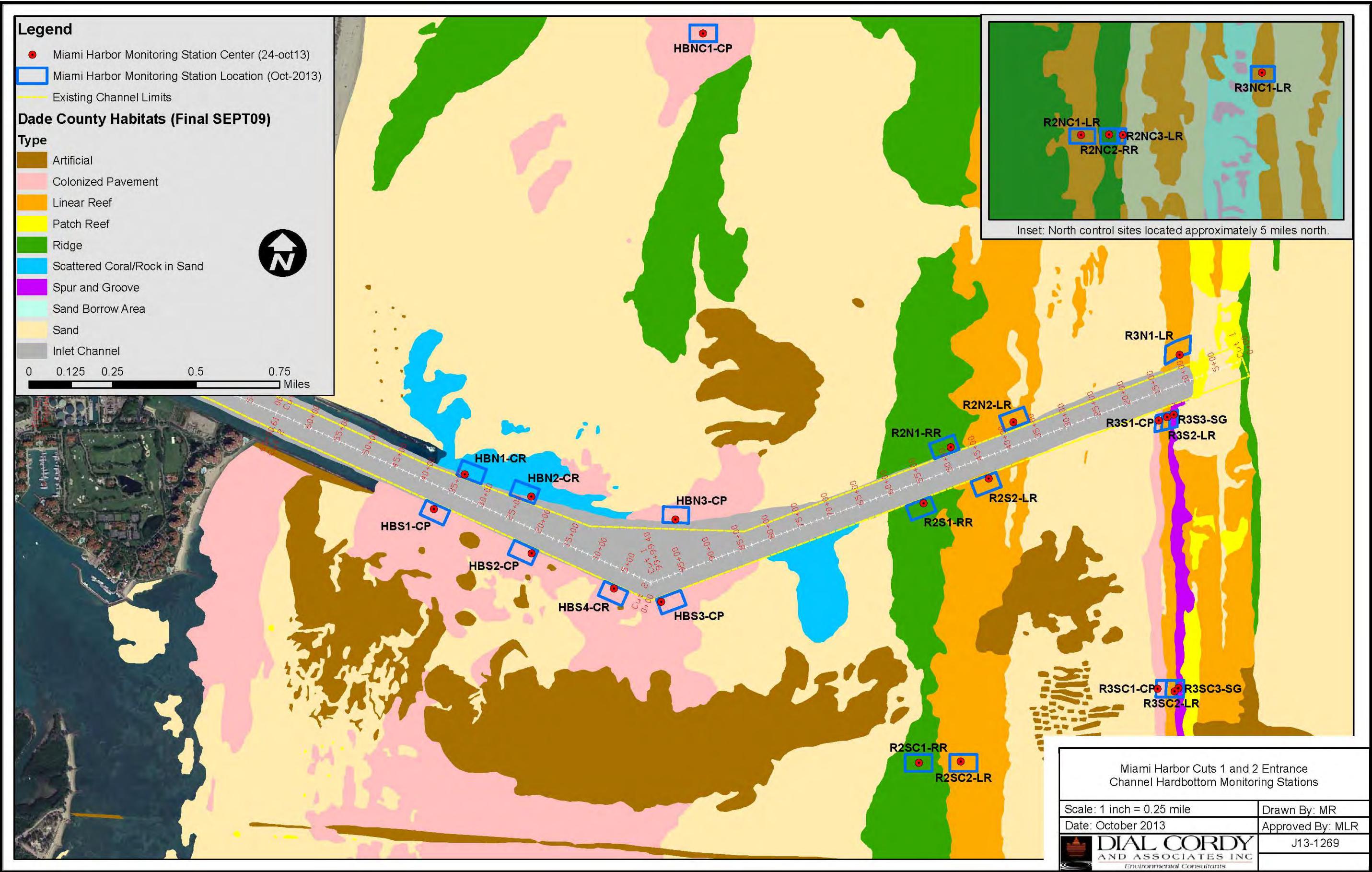
1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.
4. Week 4 results indicated an increase in the stress response of corals or an increase in

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accumulation of sediment not removed by normal wave or current action. Precautionary recommendations to the dredging contractor have been made, and movement of the dredge, to the extent feasible, were accomplished to reduce the potential impacts of dredging at the project sites.



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Week 8 1/8/14-1/14/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. The cutterhead dredge Texas dredged in Cut 2 between station 40+00 and 60+00, in Compliance Week 8, between January 8 and January 14 2014 (Figure 1). During this compliance week monitoring was required by permit at HBNC1, HBN2, HBN3, HBSC1, HBS1, HBS2, (Figure 1). Environmental factors during Week 8 of compliance monitoring made conditions unsafe for diving on 4/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Coral Stress

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a "0" (normal or non-stressed) or "1" (stressed), and photographed. If a "1" is assigned to a coral, a

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code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. week 1 HBSC1 v. week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1. Possible conditions for permanently marked hard corals receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Results

Coral Stress Surveys

Channel side compliance data were collected at HBS1, HBS2, HBN2, and HBN3 in Compliance Week 8. Data were also collected at HBNC1 and HBSC1 reference sites in Week 8. These data were compared using a two-sample t-test (i.e., HBNC1-CP and HBN3-CP). Data were not collected at HBS3-CP and HBS4-CR during compliance Week 8, because the active dredge was adjacent to these sites.

All sampled sites exhibited stress levels between 0.33 and 0.67, with reference sites at 0.43 (HBSC1) and 0.58 (HBNC1) in Compliance Week 8. No statistically significant differences were measured between channel side and reference sites (two sample t-test; $p \leq 0.05$). At HBN2 five out of six corals along Transect 3 are buried beneath coarse beach sand, which appears to be

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Week 8 1/8/14-1/14/14 Dredge Activity

the same material that has buried HBN1. This burial is not thought to be related to the dredge. HBN2 is an area that may experience periodic burial by natural sand transport and hard corals may be acclimated to this type of environment. In Week 8 of Compliance monitoring two corals at HBNC1 were buried. The nearshore hardbottom environment is known to be a dynamic one, in terms of sediment transport, which may explain the burial of corals at channel side and reference sites.

Multiple cold fronts with winds of 15-20 knots from the north and northeast began influencing the project site in November, coinciding with the start of dredging. Divers documented increased turbidity, qualitatively increased sedimentation, and constrained time frames for diving. Winter weather conditions and dredging activities may have confounding effects which may be separated as more data are collected. Sediment trap data comparisons between baseline and dredging periods (every 28 days) may be illustrative. These results are in the process of being analyzed and will be included in the baseline report for hardbottom sites.

Table 2. Compliance Week 8 scleractinian stress level data. Mean stress level as measured by a “0” or “1” for permanently marked corals at channel and reference sites in compliance monitoring Week 8.

Area	Site	Compliance Week 8	N	Compliance Week 8SD
South Sites	HBSC1	0.43	30	0.5
	HBS1	0.39	18	0.5
	HBS2	0.33	21	0.48
	HBS3	NA	NA	NA
	HBS4	NA	NA	NA
	R2SC1	NA	NA	NA
	R2SC2	NA	NA	NA
	R2S1	NA	NA	NA
	R2S2	NA	NA	NA
North Sites	HBNC1	0.58	12	0.51
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.		
	HBN2	0.67	12	0.49
	HBN3	0.44	27	0.5
	R2NC1	NA	NA	NA
	R2NC2	NA	NA	NA
	R2N1	NA	NA	NA
	R2N2	NA	NA	NA

N – Number of corals sampled to calculate the mean.

SD – Standard deviation for the mean.

NA – no data were collected due to unsafe diving conditions created by inclement weather.

* – denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

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Week 8 1/8/14-1/14/14 Dredge Activity

Sediment Block Survey

No sediment was measured on sediment blocks at any sites visited in Week 8 of offshore compliance monitoring.

Table 3. Sediment block accumulation data for compliance Week 8.
All measurements are in mm.

Area	Site	Compliance Week 7 (mm)	N
South Sites	HBSC1	0	1
	HBS1	0	1
	HBS2	0	1
	HBS3	NA	NA
	HBS4	NA	NA
	R2SC1	NA	NA
	R2SC2	NA	NA
	R2S1	NA	NA
	R2S2	NA	NA
North Sites	HBNC1	0	1
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.	
	HBN2	0	1
	HBN3	0	1
	R2NC1	NA	NA
	R2NC2	NA	NA
	R2N1	NA	NA
	R2N2	NA	NA

NA – no data were collected due to unsafe diving conditions created by inclement weather.

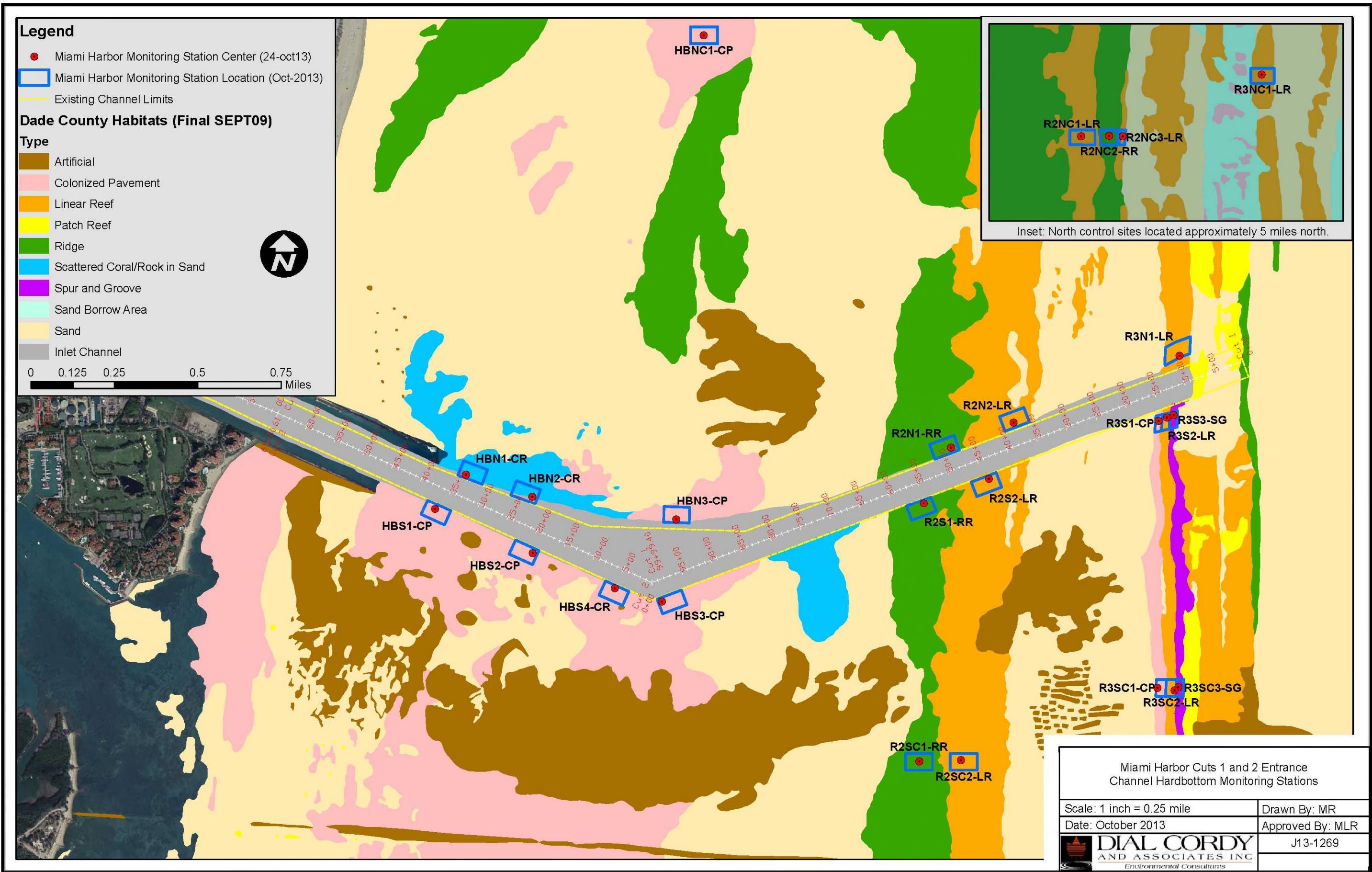
Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.



Weekly Offshore Coral Stress and Sediment Block Compliance Report 009
FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening
Week 9 1/15/14-1/21/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. The cutterhead dredge Texas and spider barge dredged in Cut 2 between station 0+00 and 10+00, with the spider barge as far east as Cut 1 82+00, during Compliance Week 9, between January 15 and January 21 2014 (Figure 1). During Compliance Week 9 monitoring was required by permit at HBNC1, HBN2, HBN3, HBSC1, HBS2, HBS3, HBS4, R2SC1, R2NC1, R2S1, R2N1 (Figure 1). Environmental factors during Week 9 of compliance monitoring made conditions unsafe for diving on 2/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Coral Stress

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

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 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by

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normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. week 1 HBSC1 v. week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

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Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Results

Coral Stress Surveys

Channel side compliance data were collected at HBS2, HBS3, HBN2, R2S1, R2N1 in Compliance Week 9. Data were also collected at HBNC1, HBSC1, R2NC1, and R2SC1 reference sites in Week 9. These data were compared using a two-sample t-test (i.e., HBNC1 and HBN2). Data were not collected at HBS4 during compliance Week 9, because the active dredge was adjacent to this site, making dive conditions unsafe. Surveys were not conducted at HBN3 due to adverse visibility and current conditions.

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All sampled sites exhibited stress levels between 0.44 and 1.00, with reference sites at 0.50 (HBSC1), 0.61 (HBNC1), 0.41 (R2NC1), and 0.50 (R2SC1) in Compliance Week 9. Statistical differences were measured between HBN2 and HBNC1 (two sample t-test; $p \leq 0.05$). At HBN2 six out of twelve corals are buried beneath coarse beach sand, which appears to be the same material that has buried HBN1, this explains the significant result at this site. This burial is not thought to be related to the dredge. HBN2 is an area that may experience periodic burial by natural sand transport and hard corals may be acclimated to this type of environment. Corals that are found underneath buried sand are pale or bleached. Follow up surveys may reveal a recovery of buried corals at these sites, if and when the sand moves off the site. During Compliance Week 8, two corals at HBNC1 were buried. In Week 9 of Compliance monitoring the two corals at HBNC1 were still buried. The nearshore hardbottom environment is known to be a dynamic one, in terms of sediment transport, which may explain the burial of corals at channel side compliance and reference sites.

R2N1 and R2S1 coral stress values were significantly different than comparable reference sites (Table 2). R2S1 and R2N1 included significantly higher mucus production, polyp extension and sediment accumulation than coral colonies at respective reference sites. The sediment observed at R2S1 and R2N1 is a fine, soft sediment and may be attributable to the dredging operation.

Multiple cold fronts with winds of 15-20 knots from the north and northeast began influencing the project site in November, coinciding with the start of dredging. A continuation of the winter season pattern of strong frontal system influences is expected for the next several months. Divers documented increased turbidity, qualitatively increased sedimentation, and constrained time frames for diving. Winter weather conditions and dredging activities may have confounding effects which may be separated as more data are collected. Sediment trap data comparisons between baseline and dredging periods (every 28 days) may be illustrative. These results are in the process of being analyzed and will be included in the baseline report for hardbottom sites.

Table 2. Compliance Week 9 scleractinian stress level data are presented below. Mean stress level as measured by a “0” or “1” for permanently marked corals at channel and reference sites in compliance monitoring Week 9.

Area	Site	Compliance Week 9	N	Compliance Week 9SD
South Sites	HBSC1	0.50	30	0.51
	HBS1	0.44	18	0.51
	HBS2	0.55	20	0.51
	HBS3	0.75	28	0.44
	HBS4	NA	NA	NA
	R2SC1	0.50	30	0.51
	R2SC2	NA	NA	NA
	R2S1	0.89*	28	0.31
	R2S2	NA	NA	NA
North Sites	HBNC1	0.58	12	0.51
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.		
	HBN2	1.0*	6	0
	HBN3	0.44	27	0.5
	R2NC1	0.41	0.5	29

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Week 9 1/15/14-1/21/14 Dredge Activity

Area	Site	Compliance Week 9	N	Compliance Week 9SD
	R2NC2	NA	NA	NA
	R2N1	0.77*	0.43	30
	R2N2	NA	NA	NA

N – Number of corals sampled to calculate the mean.

SD – Standard deviation for the mean.

NA – no data were collected due to unsafe diving conditions created by inclement weather.

* – denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

A sediment scum layer has formed on some channel side site blocks (Table 3). The depth is less than 0.25mm.

Table 3. Sediment block accumulation data for compliance Week 9.
All measurements are in mm.

Area	Site	Compliance Week 9 (mm)	N
South Sites	HBSC1	0	1
	HBS1	NA	NA
	HBS2	<1	1
	HBS3	<1	1
	HBS4	NA	NA
	R2SC1	0	1
	R2SC2	NA	NA
	R2S1	0	1
	R2S2	0	1
North Sites	HBNC1	0	1
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.	
	HBN2	0	1
	HBN3	NA	NA
	R2NC1	0	1
	R2NC2	NA	NA
	R2N1	0	1
	R2N2	NA	NA

NA – no data were collected due to unsafe diving conditions created by inclement weather.

Adaptive Management

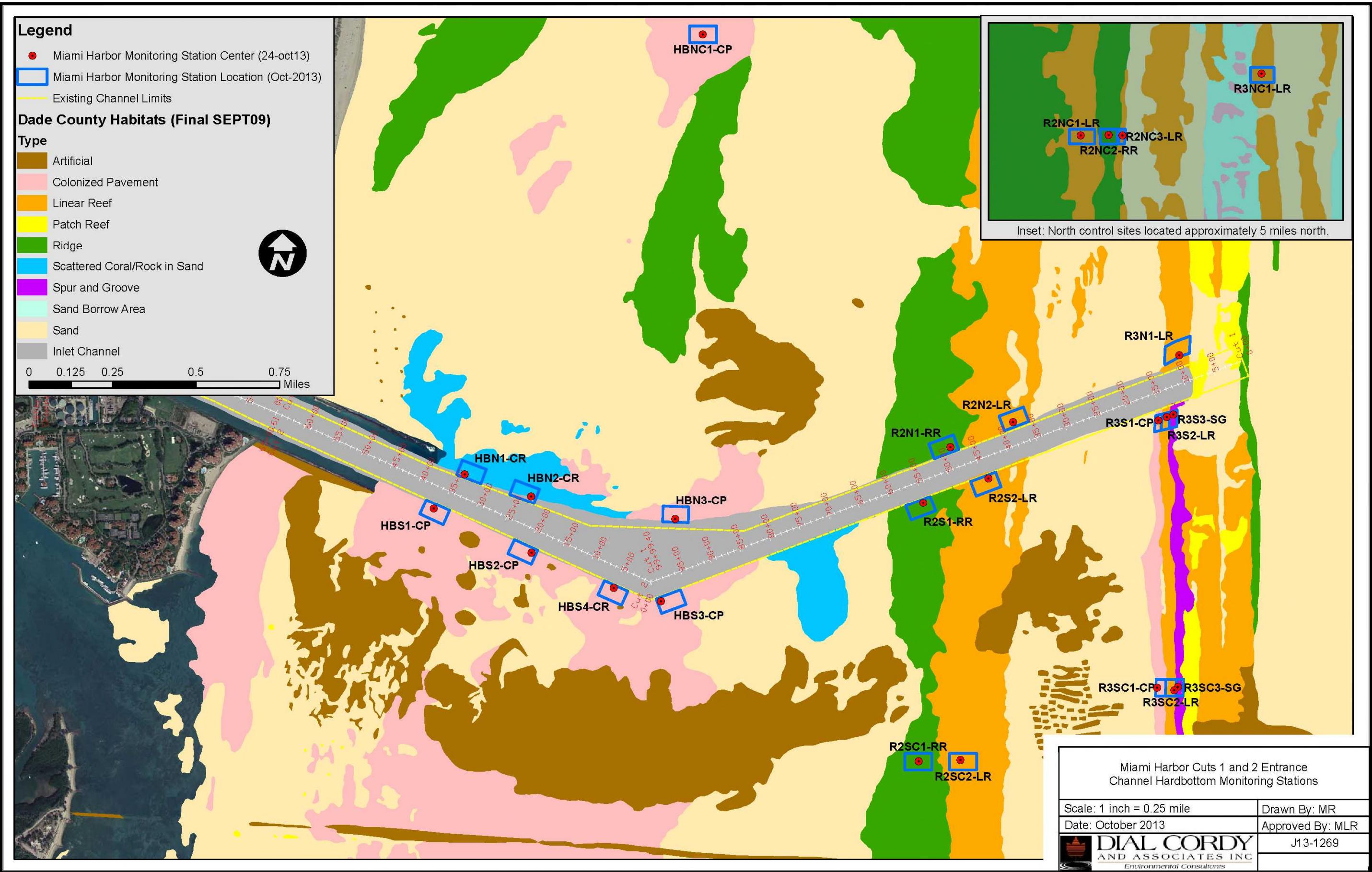
The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.

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Week 9 1/15/14-1/21/14 Dredge Activity

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging and ongoing cutterhead dredge scow loading operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.
4. Field observations of the dredging operation indicate that flushing of the lines on the spider barge used to fill scows with dredged material from the cutterhead occurs periodically. In order to eliminate direct inputs into the project area, a scow should be in place to capture the flushing water. .



Weekly Offshore Coral Stress and Sediment Block Compliance Report 010
FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening
Week 10 1/22/14-1/28/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. The cutterhead dredge Texas and spider barge dredged in Cut 2 between station 0+00 and 20+00, with the spider barge as far east as Cut 1 90+00, during Compliance Week 10, between January 15 and January 21 2014 (Figure 1). During Compliance Week 10 monitoring was required by permit at HBNC1, HBN2, HBN3, HBSC1, HBS2, HBS3, and HBS4 (Figure 1). Environmental factors during Week 10 of compliance monitoring made conditions unsafe for diving on 2/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Coral Stress

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by

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normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. week 1 HBSC1 v. week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1. Possible conditions for permanently marked hard corals receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Results

Coral Stress Surveys

Channel side compliance data were collected at HBS1, HBN2, and HBN3 in Compliance Week 10. Data were also collected at HBNC1 and HBSC1 reference sites in Week 10. These data were compared using a two-sample t-test (i.e., HBNC1 and HBN2). Data were not collected at HBS2, HBS3, and HBS4 during Compliance Week 10, because the active dredge was adjacent to this site, making dive conditions unsafe.

All sampled sites exhibited stress levels between 0.38 and 0.83, with reference sites at 0.50 (HBSC1) and 0.40 (HBNC1) in Compliance Week 10. Statistical differences were measured

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between HBN2 and HBNC1 (two sample t-test; $p \leq 0.05$). At HBN2 six out of twelve corals are buried beneath coarse beach sand, which appears to be the same material that has buried HBN1, this explains the significant result at this site. This burial is not thought to be related to the dredge. HBN2 is an area that may experience periodic burial by natural sand transport and hard corals may be acclimated to this type of environment. Corals that are found underneath buried sand are pale or bleached. Follow up surveys may reveal a recovery of buried corals at these sites, if and when the sand moves off the site. During Compliance Week 8, two corals at HBNC1 were buried. In Week 10 of Compliance monitoring the two corals at HBNC1 were still buried. The nearshore hardbottom environment is known to be a dynamic one, in terms of sediment transport, which may explain the burial of corals at channel side compliance and reference sites.

Multiple cold fronts with winds of 15-20 knots from the north and northeast began influencing the project site in November, coinciding with the start of dredging. A continuation of the winter season pattern of strong frontal system influences is expected for the next several months. Divers documented increased turbidity, qualitatively increased sedimentation, and constrained time frames for diving. Winter weather conditions and dredging activities may have confounding effects which may be separated as more data are collected. Sediment trap data comparisons between baseline and dredging periods (every 28 days) may be illustrative. These results are in the process of being analyzed and will be included in the baseline report for hardbottom sites.

Table 2. Compliance Week 10 scleractinian stress level data are presented below. Mean stress level as measured by a “0” or “1” for permanently marked corals at channel and reference sites in compliance monitoring Week 10.

Area	Site	Compliance Week 10	N	Compliance Week 10SD
South Sites	HBSC1	0.50	30	0.51
	HBS1	0.39	18	0.50
	HBS2	NA	NA	NA
	HBS3	NA	NA	NA
	HBS4	NA	NA	NA
North Sites	HBNC1	0.58	12	0.51
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.		
	HBN2	0.83*	6	0.41
	HBN3	0.44	27	0.51

N – Number of corals sampled to calculate the mean.

SD – Standard deviation for the mean.

NA – no data were collected due to unsafe diving conditions created by inclement weather.

* – denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

A sediment scum layer has formed on some channel side site blocks (Table 3). The depth is less than 0.25mm.

Table 3. Sediment block accumulation data for compliance Week 10.
All measurements are in mm.

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Area	Site	Compliance Week 10 (mm)	N
South Sites	HBSC1	0	1
	HBS1	0	1
	HBS2	NA	NA
	HBS3	NA	NA
	HBS4	NA	NA
North Sites	HBNC1	0	1
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.	
	HBN2	0	1
	HBN3	0	1

NA – no data were collected due to unsafe diving conditions created by inclement weather.

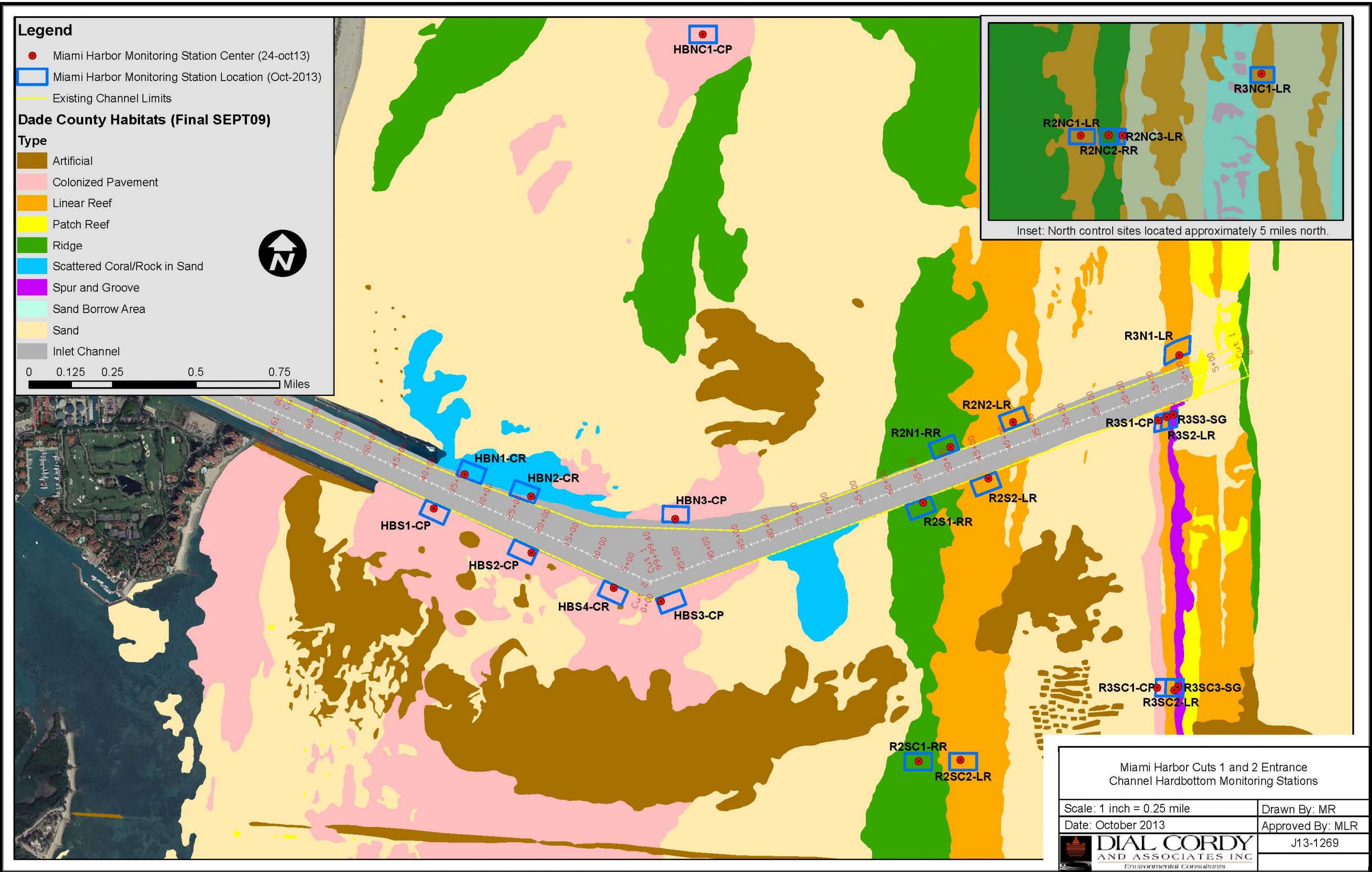
Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging and ongoing cutterhead dredge scow loading operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.
4. Field observations of the dredging operation indicate that flushing of the lines on the spider barge used to fill scows with dredged material from the cutterhead occurs periodically. In order to eliminate direct inputs into the project area, a scow should be in place to capture the flushing water.



Weekly Offshore Coral Stress and Sediment Block Compliance Report 011
FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening
Week 11 1/29/14-2/4/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. The cutterhead dredge Texas and spider barge dredged in Cut 2 between station 0+00 and 10+00, with the spider barge as far east as Cut 1 82+00, during Compliance Week 11, between January 29 and February 4, 2014 (Figure 1). During Compliance Week 11 monitoring was required by permit at HBNC1, HBN2, HBN3, HBSC1, HBS2, HBS3, and HBS4 (Figure 1). Environmental factors during Week 11 of compliance monitoring made conditions unsafe for diving on 2/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Coral Stress

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a "0"

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(normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1. Possible conditions for permanently marked hard corals receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Results

Coral Stress Surveys

Channel side hardbottom compliance data were collected at HBS1, HBS2, HBS3, and HBS4 in Compliance Week 11. Data were also collected at HBNC1 and HBSC1 reference sites in Week 11. These data were compared using a two-sample t-test (i.e., HBNC1 and HBN2). Data were not collected at HBN2 and HBN3 during Compliance Week 11, due to low visibility (<3 feet), which made diving conditions unsafe. All sampled sites exhibited stress levels between 0.37 and 0.90, with reference sites at 0.37 ± 0.49 (HBSC1) and 0.55 ± 0.52 (HBNC1) in Compliance Week 11. All southern sites exhibited significantly higher (two sample t-test; $p \leq 0.05$) stress levels than HBSC1, the southern reference site. Permanently marked corals at the southern

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channel-side sites were documented by scientific divers as covered by fine sediment, having extended polyps, and exuding mucus at significantly higher frequency than corals at HBSC1 (two sample t-test ≤ 0.05). Several corals at HBS3 are partially buried by sediment. Fine sediments on the benthos at these southern sites may be due to spider barge activity, which was closest to HBS2 for six days in Week 11, and has been between Cut 2 20+00 and Cut 1 82+00 (adjacent to HBS2, HBS3, and HBS4) since Week 9.

As of the writing of this report, and in recognition of reports that sedimentation increases have been documented at the monitoring stations, GLDD has moved the spider barge off-site to conduct maintenance for the next several days. As of February 9, 2014 the Texas is between the jetties in Cut 2, chopping rock only (no transport).

Multiple cold fronts with winds of 15-20 knots from the north and northeast began influencing the project site in November, coinciding with the start of dredging. A continuation of the winter season pattern of strong frontal system influences is expected for the next several months. Divers documented increased turbidity, qualitatively increased sedimentation, and constrained time frames for diving. Winter weather conditions and dredging activities may have confounding effects which may be separated as more data are collected. Sediment trap data comparisons between baseline and dredging periods (every 28 days) may be illustrative. These results are in the process of being analyzed and will be included in the baseline report for hardbottom sites. A qualitative assessment of the sediment covering HBN1, and parts of HBN2, have documented coarse grain sediment, typical of beach sand.

Table 2. Compliance Week 11 scleractinian stress level data are presented below. Mean stress level as measured by a “0” or “1” for permanently marked corals at channel and reference sites in compliance monitoring Week 11.

Area	Site	Compliance Week 11	N	Compliance Week 11SD
South Sites	HBSC1	0.37	30	0.49
	HBS1	*0.67	18	0.49
	HBS2	*0.90	18	0.31
	HBS3	*0.69	20	0.47
	HBS4	*0.76	20	0.44
North Sites	HBNC1	0.55	11	0.52
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.		
	HBN2	NA	NA	NA
	HBN3	NA	NA	NA

N – Number of corals sampled to calculate the mean.

SD – Standard deviation for the mean.

NA – no data were collected due to unsafe diving conditions created by inclement weather.

* – denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

A fine sediment and cyanobacterial mat layer has formed on some channel side site blocks (Table 3). The depth of this layer is approximately 0.25mm.

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Table 3. Sediment block accumulation data for compliance Week 11.
All measurements are in mm.

Area	Site	Compliance Week 11 (mm)	N
South Sites	HBSC1	0	1
	HBS1	0	0
	HBS2	<1	1
	HBS3	<1	1
	HBS4	<1	0
North Sites	HBNC1	0	1
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.	
	HBN2	NA	NA
	HBN3	NA	NA

NA – no data were collected due to unsafe diving conditions created by inclement weather.

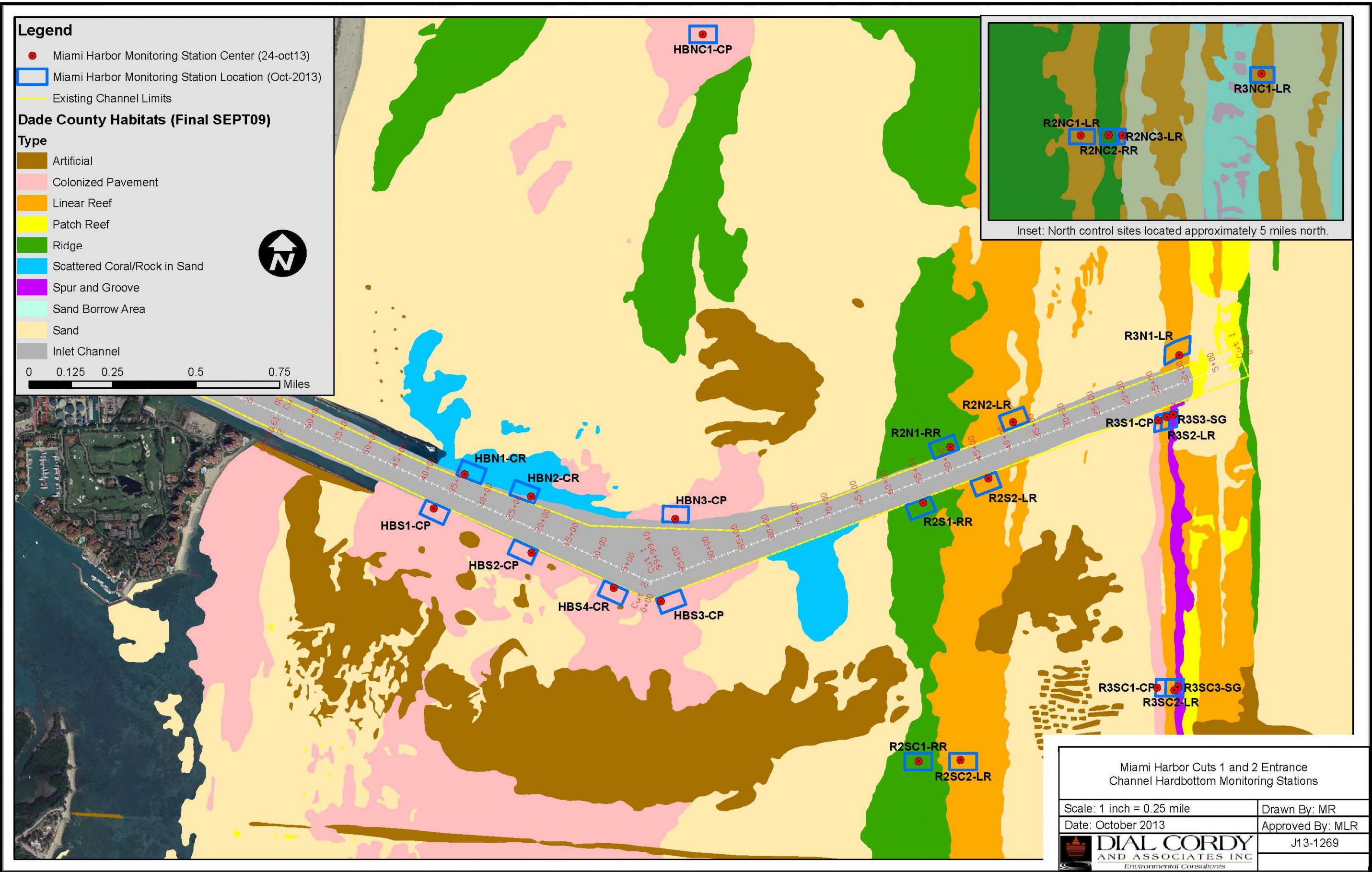
Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity has ceased as of 2/9/14 to allow time for the southern hardbottom sites to recover from dredging activity.
4. No transport of material is taking place while changes are being made to the spider barge and associate scows.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging and ongoing cutterhead dredge scow loading operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.
4. Field observations of the dredging operation indicate that flushing of the lines on the spider barge used to fill scows with dredged material from the cutterhead occurs periodically. In order to eliminate direct inputs into the project area, a scow should be in place to capture the flushing water. GLDD has been informed of these observations and is assessing alternatives to address the issue.



Weekly Offshore Coral Stress and Sediment Block Compliance Report 012
FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening
Week 12 02/05/14-02/11/14 Dredge Activity

Background

In Compliance Week 12 (February 5-11, 2014) the cutterhead dredge Texas and spider barge dredged in Cut 2 between station 0+00 and 10+00, with the spider barge as far east as Cut 1 90+00. On February 8 the spider barge went into Port for maintenance while the Texas continued to rock chop only (no transport) through February 11. (Figure 1). During Compliance Week 12 monitoring was required by permit at HBNC1, HBN2, HBN3, HBSC1, HBS2, HBS3, and HBS4 (Figure 1). Environmental factors during Week 12 of compliance monitoring made conditions unsafe for diving on 0/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Coral Stress

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a "0"

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(normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1. Possible conditions for permanently marked hard corals receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Results

Coral Stress Surveys

Channel side hardbottom compliance data were collected at HBS1, HBS2, HBS3, HBS4, HBN2, and HBN3 in Compliance Week 12. Data were also collected at HBNC1 and HBSC1 reference sites in Week 12. These data were compared using a two-sample t-test (i.e., HBNC1 and HBN2). All sampled sites exhibited stress levels between 0.50 and 1.00, with reference sites at 0.50 ± 0.52 (HBNC1) and 0.73 ± 0.45 (HBSC1) in Compliance Week 12. Two of the four southern sites exhibited significantly higher (two sample t-test; $p \leq 0.05$) stress levels than HBSC1, the southern reference site. Permanently marked corals at these sites were documented by scientific divers as covered by fine sediment, having extended polyps, and

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exuding mucus at significantly higher frequency than corals at HBSC1 (two sample t-test ≤ 0.05). Although not significantly different than HBSC1, several corals at HBS3 were observed to be partially buried by sediment. Fine sediments on the benthos at these southern sites may be due to spider barge activity, which was closest to HBS2 for all seven days in Week 12, and was between Cut 2 20+00 and Cut 1 82+00 (adjacent to HBS2, HBS3, and HBS4) since Week 9. Statistically significant differences between HBNC1 and HBN2 were recorded (two sample t-test; $p \leq 0.05$), however, these results are not related to dredging activity. Instead, results indicate corals are buried under sand that has travelled over the site from natural movement of a sand wave into the site.

As of the writing of this report, and in recognition of reports of increased sedimentation at the monitoring sites, GLDD has moved the spider barge off-site to conduct maintenance until further notice. From February 9-16, 2014 the Texas was between the jetties in Cut 2, chopping rock only (no sediment/substrate/material transport). As of February 19, the Texas was also undergoing maintenance.

Multiple cold fronts with winds of 15-20 knots from the north and northeast began influencing the project site in November, coinciding with the start of dredging. A continuation of the winter season pattern of strong frontal system influences is expected for the next several months. Divers documented increased turbidity, qualitatively increased sedimentation, and constrained time frames for diving. Winter weather conditions and dredging activities may have confounding effects which may be separated as more data are collected. Sediment trap data comparisons between baseline and dredging periods (every 28 days) may be illustrative. These results are in the process of being analyzed and will be included in the baseline report for hardbottom sites. A qualitative assessment of the sediment found to be covering HBN1, and parts of HBN2, have documented coarse grain sediment, typical of beach sand used in the recent beach renourishment projects at the adjacent Miami Beach.

Table 2. Compliance Week 12 scleractinian stress level data are presented below. Mean stress level as measured by a “0” or “1” for permanently marked corals at channel and reference sites in compliance monitoring Week 12.

Area	Site	Compliance Week 12	N	Compliance Week 12 SD
South Sites	HBSC1	0.73	30	0.45
	HBS1	0.78	18	0.43
	HBS2	*0.95	20	0.22
	HBS3	0.86	29	0.35
	HBS4	*0.92	25	0.28
North Sites	HBNC1	0.50	12	0.52
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.		
	HBN2	*1.00	11	0.00
	HBN3	0.78	27	0.42

N – Number of corals sampled to calculate the mean.

SD – Standard deviation for the mean.

NA – no data were collected due to unsafe diving conditions created by inclement weather.

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* – denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

A fine sediment and cyanobacterial mat layer has formed on some channel side site blocks (Table 3). The depth of this layer is approximately 0.25mm.

Table 3. Sediment block accumulation data for compliance Week 12.
All measurements are in mm.

Area	Site	Compliance Week 12 (mm)	N
South Sites	HBSC1	0	1
	HBS1	0	1
	HBS2	<1	1
	HBS3	<1	1
	HBS4	<1	1
North Sites	HBNC1	0	1
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.	
	HBN2	0	1
	HBN3	0	1

NA – no data were collected due to unsafe diving conditions created by inclement weather.

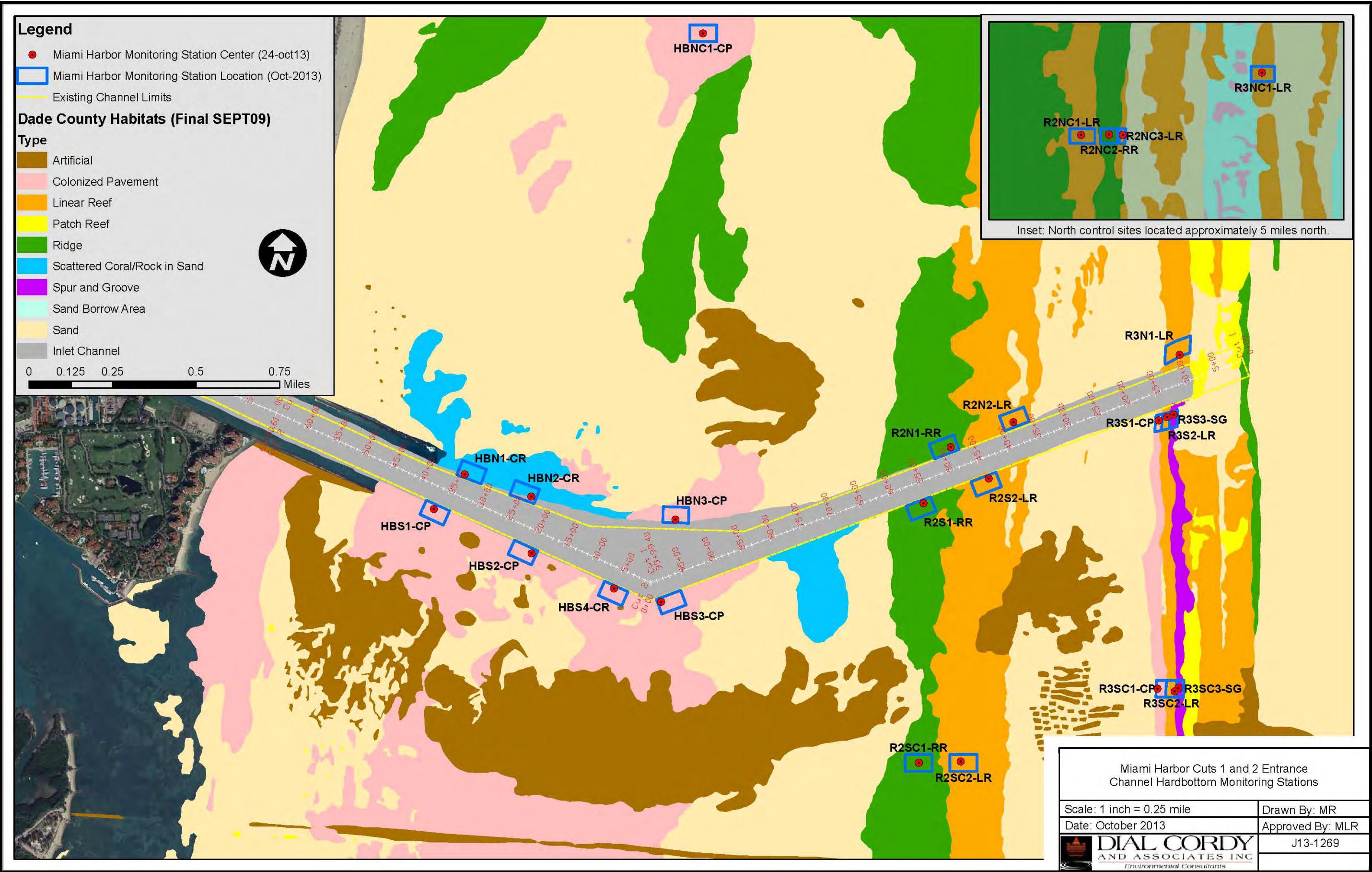
Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity has ceased as of 2/9/14 to allow time for the southern hardbottom sites to recover from dredging activity.
4. No transport of material is taking place while changes are being made to the spider barge and associate scows.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging and ongoing cutterhead scow loading operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.



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Week 13 02/12/14-02/18/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. The spider barge returned for repairs on February 9, 2014 and was not out in Week 13. The cutterhead dredge Texas was between 32+00 and 39+00 and between 59+00 and 65+00 in Cut 1 during Compliance Week 13 (February 12, 2014 and February 18, 2014) (Figure 1). During Compliance Week 13 monitoring was required by permit at HBNC1, HBN2, HBN3, HBSC1, HBS1, HBS2, HBS3, and HBS4 (Figure 1). Environmental factors during Week 13 of compliance monitoring made conditions unsafe for diving on 2.5/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Coral Stress

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

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Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1. Possible conditions for permanently marked hard corals receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Results

Coral Stress Surveys

Channel side hardbottom compliance data were collected at HBS1, HBS2, HBS3, and HBN2 in Compliance Week 13. Data were also collected at HBNC1 and HBSC1 reference sites in Week

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13. These data were compared using a two-sample t-test (i.e., HBNC1 and HBN2). All sampled sites exhibited stress levels between 0.63 and 1.00, with reference sites at 0.67 ± 0.41 (HBNC1) and 0.63 ± 0.49 (HBSC1) in Compliance Week 13. Two of the three southern sites exhibited significantly higher (two sample t-test; $p \leq 0.05$) stress levels than HBSC1, the southern reference site. Permanently marked corals at these sites were documented by scientific divers as covered by fine sediment, having extended polyps, and exuding mucus at significantly higher frequency than corals at HBSC1 (two sample t-test ≤ 0.05). Fine sediments on the benthos at these southern sites may be due to previous dredge activity (see Week 11 and Week 12 reports). Significant results at HBS2 and HBS3 were mainly due to the conditions of “poly extension” and sediment accumulation.

As of the writing of this report, and in recognition of reports of increased sediment loads at the monitoring stations, GLDD moved the spider barge off-site to conduct maintenance for the next several days. As of February 26, 2014 the Texas was between the jetties in Cut 2, chopping rock only (no sediment/substrate/material transport).

Multiple cold fronts with winds of 15-20 knots from the north and northeast began influencing the project site in November, coinciding with the start of dredging. A continuation of the winter season pattern of strong frontal system influences is expected for the next several months. Divers documented increased turbidity, qualitatively increased sedimentation, and constrained time frames for diving. Winter weather conditions and dredging activities may have confounding effects which may be separated as more data are collected. Sediment trap data comparisons between baseline and dredging periods (every 28 days) may be illustrative. The baseline results have been analyzed and will be included in the baseline report for hardbottom sites. A qualitative assessment of the sediment found to be covering HBN1, and parts of HBN2, have documented coarse grain sediment.

Table 2. Compliance Week 13 scleractinian stress level data are presented below. Mean stress level as measured by a “0” or “1” for permanently marked corals at channel and reference sites in compliance monitoring Week 13.

Area	Site	Compliance Week 13	N	Compliance Week 13 SD
South Sites	HBSC1	0.63	30	0.49
	HBS1	0.78	18	0.43
	HBS2	*1	30	0
	HBS3	*0.93	30	0.25
	HBS4	N/A	N/A	N/A
North Sites	HBNC1	0.67	12	0.49
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.		
	HBN2	0.80	15	0.41
	HBN3	N/A	N/A	N/A
	HBN4	N/A	N/A	N/A

N – Number of corals sampled to calculate the mean.

SD – Standard deviation for the mean.

NA – no data were collected due to unsafe diving conditions created by inclement weather.

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* – denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

A fine sediment and cyanobacterial mat layer has formed on some channel side site blocks (Table 3). The depth of this layer is approximately 0.25mm.

Table 3. Sediment block accumulation data for compliance Week 13.
All measurements are in mm.

Area	Site	Compliance Week 13 (mm)	N
South Sites	HBSC1	0	1
	HBS1	<1	1
	HBS2	<1	1
	HBS3	0	1
	HBS4	NA	NA
North Sites	HBNC1	<1	1
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.	
	HBN2	<1	1
	HBN3	NA	NA
	HBN4	NA	NA

NA – no data were collected due to unsafe diving conditions created by inclement weather.

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity has ceased as of 2/9/14 to allow time for the southern hardbottom sites to recover from dredging activity.
4. No transport of material is taking place while changes are being made to the spider barge and associate scows.

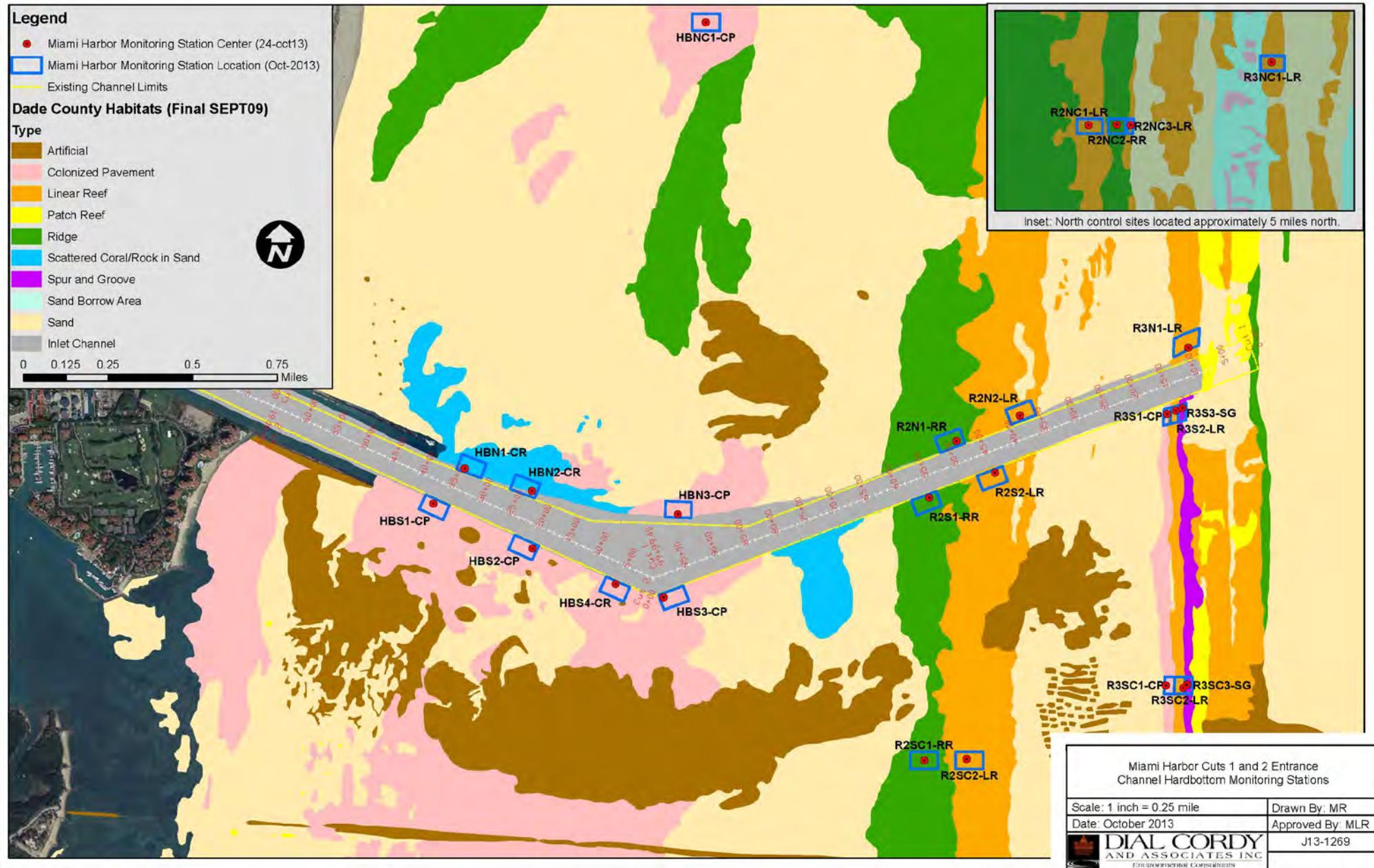
Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs.

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compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging and ongoing cutterhead dredge scow loading operations.

3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.



Weekly Offshore Coral Stress and Sediment Block Compliance Report 014
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Week 14 02/19/14-02/25/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. The cutterhead dredge Texas was between 30+00 and 40+00 in Cut 2 and between 0+00 and 5+00 in Cut 3, during Compliance Week 14 (February 19, 2014 and February 25, 2014) (Figure 1). During Compliance Week 14 monitoring was required by permit at HBNC1, HBN2, HBSC1, HBS1, and HBS2, (Figure 1). Environmental factors during Week 14 of compliance monitoring made conditions unsafe for diving on 0/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Coral Stress

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

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Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1. Possible conditions for permanently marked hard corals receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Results

Coral Stress Surveys

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Channel side hardbottom compliance data were collected at HBS1, HBS2, and HBN2 in Compliance Week 14. Data were also collected at HBNC1 and HBSC1 reference sites in Week 14. These data were compared using a two-sample t-test (i.e., HBNC1 and HBN2). All sampled sites exhibited stress levels between 0.43 and 0.96, with reference sites at 0.43 ± 0.51 (HBNC1-CP) and 0.53 ± 0.5 (HBSC1-CP) in Compliance Week 14. Both southern sites exhibited significantly higher (two sample t-test; $p \leq 0.05$) stress levels than HBSC1, the southern reference site. The northern site also exhibited significantly higher (sample t-test; $p \leq 0.05$) stress levels than HBN1, the northern reference site. Permanently marked corals at these sites were documented by scientific divers as covered by fine sediment, having extended polyps, and exuding mucus at significantly higher frequency than corals at HBSC1 (two sample t-test ≤ 0.05). Fine sediments on the benthos at these southern sites may be due to dredge activity. Significant results at HBS1, HBS2, HBN2 were mainly due to the conditions of “polyp extension” and sediment accumulation.

Multiple cold fronts with winds of 15-20 knots from the north and northeast began influencing the project site in November, coinciding with the start of dredging. A continuation of the winter season pattern of strong frontal system influences is expected for the next several months. Divers documented increased turbidity, qualitatively increased sedimentation, and constrained time frames for diving. Winter weather conditions and dredging activities may have confounding effects which may be separated as more data are collected. Sediment trap data comparisons between baseline and dredging periods (every 28 days) may be illustrative. The baseline results have been analyzed and will be included in the baseline report for hardbottom sites. A qualitative assessment of the sediment found to be covering HBN1, and parts of HBN2, have documented coarse grain sediment.

Table 2. Compliance Week 14 scleractinian stress level data are presented below. Mean stress level as measured by a “0” or “1” for permanently marked corals at channel and reference sites in compliance monitoring Week 14.

Area	Site	Compliance Week 14	N	Compliance Week 14 SD
South Sites	HBSC1	0.53	30	0.51
	HBS1	*0.96	18	0.24
	HBS2	*.8	21	0.36
	HBS3	NA	NA	NA
	HBS4	N/A	N/A	N/A
North Sites	HBNC1	0.43	10	0.51
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.		
	HBN2	*0.77	12	0.44
	HBN3	N/A	N/A	N/A
	HBN4	N/A	N/A	N/A

N – Number of corals sampled to calculate the mean.

SD – Standard deviation for the mean.

NA – no data were collected due to unsafe diving conditions created by inclement weather.

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Week 14 02/19/14-02/25/14 Dredge Activity

* – denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

A fine sediment and cyanobacterial mat layer has formed on some channel side site blocks (Table 3). The depth of this layer is approximately 0.25mm.

Table 3. Sediment block accumulation data for compliance Week 14
All measurements are in mm.

Area	Site	Compliance Week 13 (mm)	N
South Sites	HBSC1	<1	1
	HBS1	<1	1
	HBS2	<1	1
	HBS3	NA	NA
	HBS4	NA	NA
North Sites	HBNC1	<1	1
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.	
	HBN2	0	1
	HBN3	NA	NA
	HBN4	NA	NA

NA – no data were collected due to unsafe diving conditions created by inclement weather.

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity has ceased as of 2/9/14 to allow time for the southern hardbottom sites to recover from dredging activity.
4. No transport of material is taking place while changes are being made to the spider barge and associate scows.

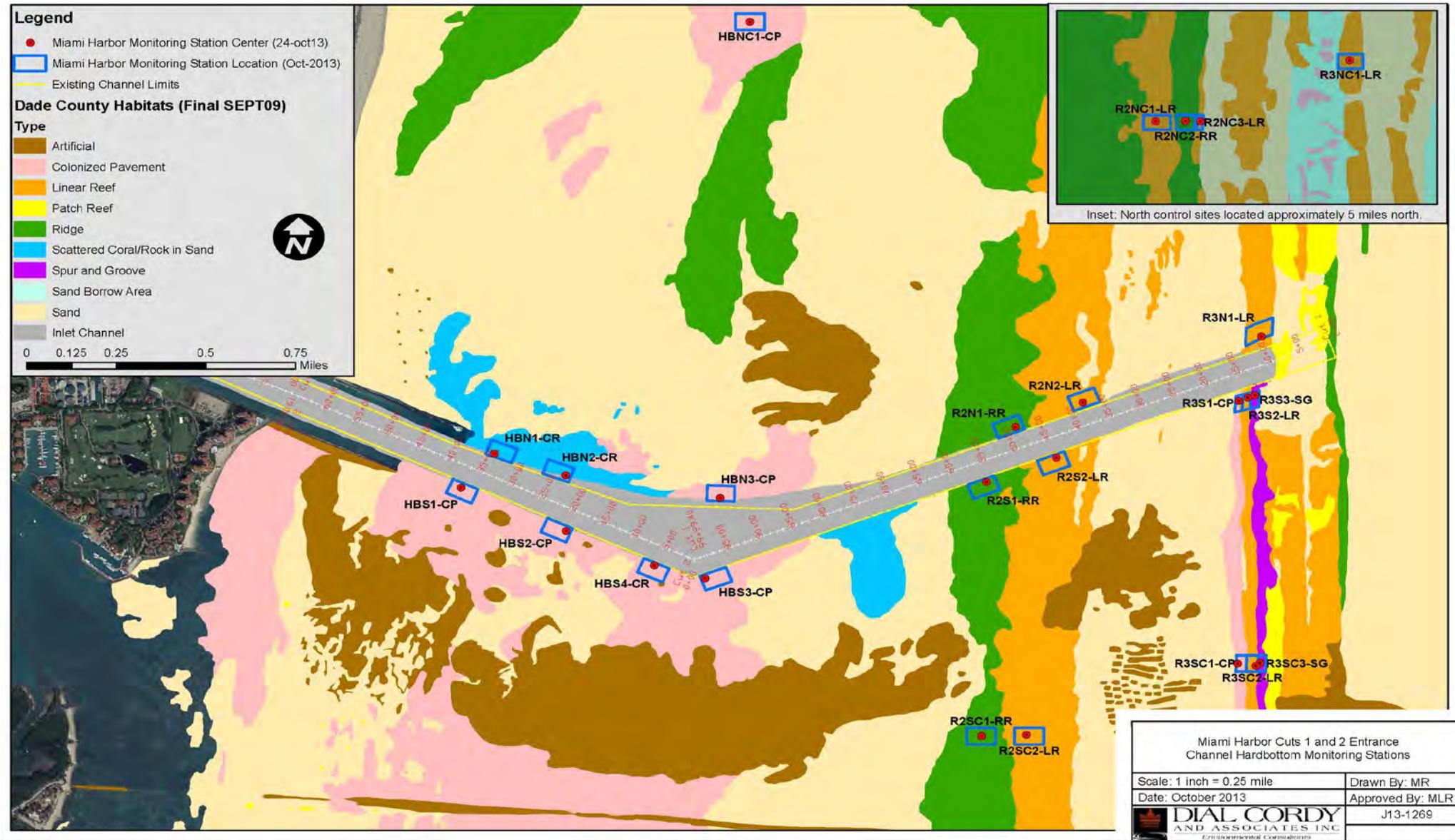
Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not

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associated with dredging operations.

2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging and ongoing cutterhead dredge scow loading operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.



Fisher, Rebecca

From: Kruempel, Craig
Sent: Thursday, March 13, 2014 1:53 PM
To: Rinne, Andrea; Becky Hope (bhope@miamidade.gov); Chris Dearing; Chris Pomfret (CPomfret@glld.com); Conn, Heather; Hague, Erin; Fisher, Rebecca; JCP Compliance; Kevin Zimmerman (KZimmerman@glld.com); Laurel Reichold; Martha Robbart (mrobbart@dialcordy.com); Michelle L. Loewe (MLLoewe@glld.com); Nestor.A.Rivera@usace.army.mil; Shealy.C.Bowell@usace.army.mil; Terri Jordan-Sellers (Terri.Jordan-Sellers@usace.army.mil)
Subject: Miami Harbor Phase III Federal Channel Expansion, FDEP Permit No. 0305721-001-BI - Week 15 Coral Stress & Sediment Block Monitoring Report Submittal

No coral stress and sediment block monitoring was required or performed during Week 15 (February 26, 2014 to March 4, 2014) because dredging operations were not conducted within 750 meters of the offshore monitoring sites as required in the FDEP permit. Therefore, no coral stress and sediment block monitoring report will be submitted for Week 15 and this email serves as the weekly notification of activity during Week 15.

Monitoring of the offshore sites will continue to be performed in compliance with the FDEP permit when dredging operations are within the stipulated zone.

If you have any questions in regards to this submittal, please feel free to contact me.

Thanks.

Craig J. Kruempel
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Weekly Offshore Coral Stress and Sediment Block Compliance Report 016
FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening
Week 16 03/05/14-03/11/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. The cutterhead dredge Texas dredged in Cut 2 between station 0+00 and 17+00 and the Clamshell Dredge 55 dredged between 29+50 and 32+00 in Cut 20, during Compliance Week 16, between March 5, 2014 and March 11, 2014 (Figure 1). During Compliance Week 16 monitoring was required by permit at HBNC1, HBN2, HBN3, HBSC1, HBS1, HBS2, HBS3, and HBS4 (Figure 1). Environmental factors during Week 16 of compliance monitoring made conditions unsafe for diving on only 1/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Coral Stress

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project areas' transect and each control areas' transect.

Permanently marked (tagged) corals are evaluated twice per week when diving safe diving conditions are found (see Background section) by qualified marine biologists during compliance

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monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1. Possible conditions for permanently marked hard corals receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Results

Coral Stress Surveys

Channel-side hardbottom compliance data were collected twice at all channel-side (i.e., HBS1, HBS2, HBS3, HBS4, HBN2, and HBN3) and both reference (i.e., HBNC1 and HBSC1) sites in Week 16. These data were compared using a two-sample t-test (e.g., HBNC1 and HBN2). All sampled sites exhibited stress levels between 0.50 and 1.00, with reference sites at 0.58 ± 0.51 (HBNC1) and 0.50 ± 0.52 (HBSC1) in Compliance Week 16.

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Three of the four southern channel-side sites (i.e., HBS1, HBS2, and HBS4) exhibited significantly higher (two sample t-test; $p \leq 0.05$) stress levels than HBSC1 during the first survey and all four exhibited significantly higher stress levels than the reference site (HBSC1) during the second survey of Compliance Week 16. One of the two northern channel-side sites (i.e., HBN3) exhibited significantly higher stress levels than HBNC1 during the first survey and both (HBN2 and HBN3) exhibited significantly higher stress levels than the reference site (HBNC1) in Compliance Week 16. In most instances (10/12 surveys), permanently marked corals across all sites were documented by scientific divers as covered by fine sediment, having extended polyps, and exuding mucus at significantly higher frequency than corals at their respective reference sites (two sample t-test ≤ 0.05). Although not significantly different than their respective reference sites, several corals at HBS3 and HBN2 were experiencing elevated stress levels during the first survey of Compliance Week 16.

Fine sediments on the benthos at these sites are thought to have been built up due to rock chopping activities which were suspended on March 1, 2014 during Week 15. As a result of these findings, suspension of rock chopping was maintained for the remainder of Week 16. High winds and associated wave action between March 13 and 19 may have dispersed sediment affecting the area. As soon as weather conditions permit, scientific divers will assess these sites.

Multiple cold fronts with winds of 15-20 knots from the north and northeast began influencing the project site in November, coinciding with the start of dredging. A continuation of the winter season pattern of strong frontal system influences is expected for the next several months. Divers documented increased turbidity, qualitatively increased sedimentation, and constrained time frames for diving. Winter weather conditions and dredging activities may have confounding effects which may be separated as more data are collected. Sediment trap data comparisons between baseline and dredging periods (every 28 days) may be illustrative. These results are in the process of being analyzed and will be included in the baseline report for hardbottom sites. A qualitative assessment of the sediment found to be covering HBN1, and parts of HBN2, have documented coarse grain sediment, typical of beach sand used in the recent beach renourishment projects at the adjacent Miami Beach.

Table 2: Compliance Week 16 scleractinian stress level data are presented below. Mean stress level as measured by a “0” or “1” for permanently marked corals at channel and reference sites in compliance monitoring Week 16.

Area	Site	Scleractinian Condition					
		First Survey			Second Survey		
		Mean	SD	N	Mean	SD	N
South Sites	HBSC1	0.53	0.51	30	0.60	0.50	30
	HBS1	1.00*	0.00	18	0.94*	0.24	18
	HBS2	0.89*	0.32	19	1.00*	0.00	21
	HBS3	0.55	0.51	29	1.00*	0.00	28
	HBS4	0.96*	0.20	25	0.96*	0.20	25
North Sites	HBNC1	0.58	0.51	12	0.50	0.52	12
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.					
	HBN2	0.77	0.44	13	1.00*	0.00	15

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Area	Site	Scleractinian Condition					
		First Survey			Second Survey		
		Mean	SD	N	Mean	SD	N
	HBN3	0.92*	0.27	26	0.93*	0.27	27

N – Number of corals sampled to calculate the mean.

SD – Standard deviation for the mean.

* – denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

A fine sediment and cyanobacterial mat layer has formed on some channel-side site sediment blocks (Table 3). The depth of this layer is <1 mm. Sedimentation measurements were collected once during the first survey of Compliance Week 16. per permit conditions.

Table 3: Sedimentation blocks' accumulation data collected for Compliance Week 16. All measurements are in mm.

Area	Site	Compliance Week 16 (mm)	N
South Sites	HBSC1	0	1
	HBS1	0	1
	HBS2	<1	1
	HBS3	<1	1
	HBS4	<1	1
North Sites	HBNC1	0	1
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.	
	HBN2	<1	1
	HBN3	<1	1

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

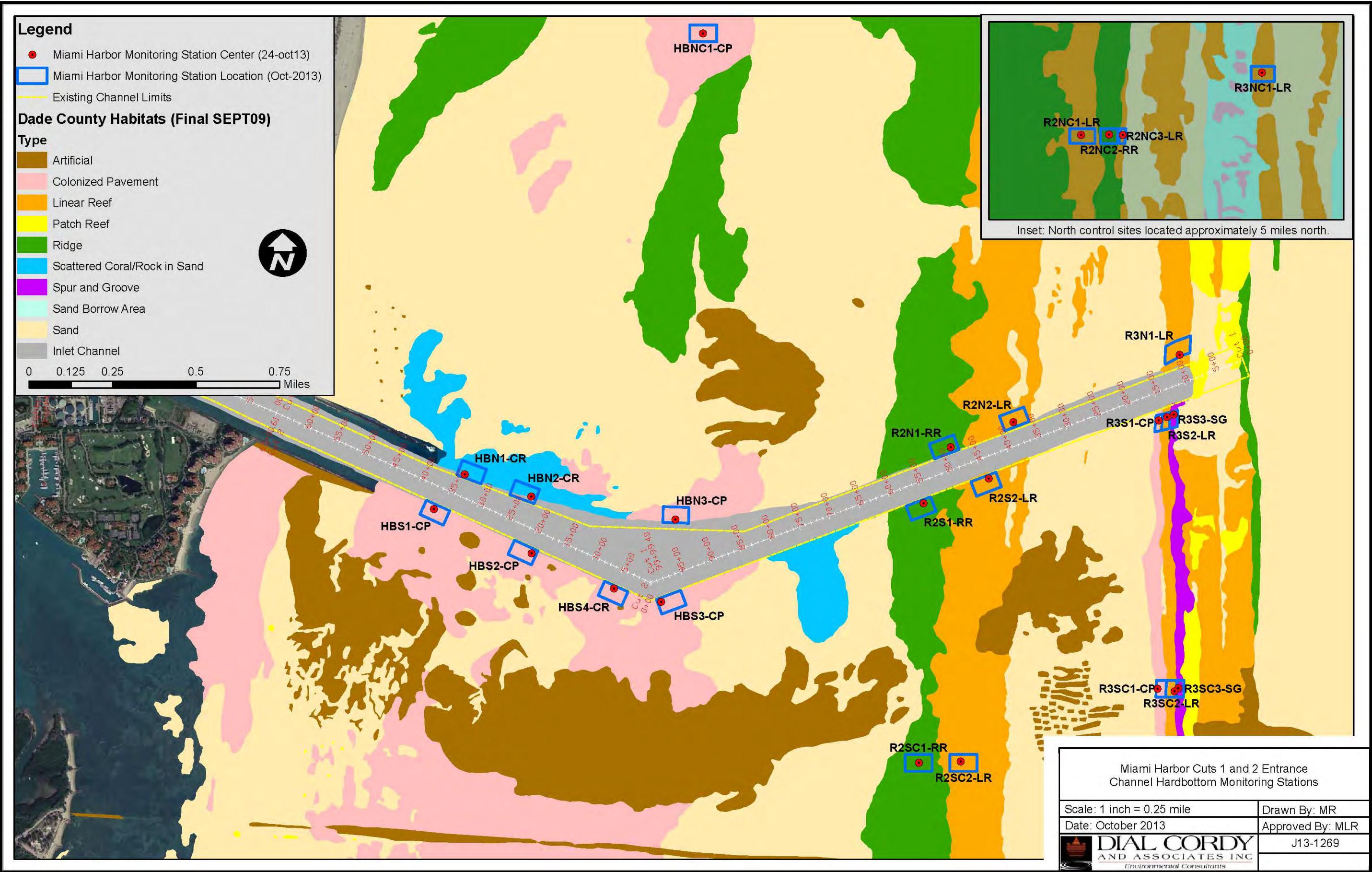
1. Turtle excluder devices (TEDs) removed from the hopper dredge Terrapin Island on 12/9/13 and removal coordinated with NMFS as required under the SARBO.
2. Dredge movements and operations are closely coordinated with coral stress and sediment block compliance monitoring scientific dive team.
3. Spider barge activity has ceased as of 2/9/14 to allow time for the southern hardbottom monitoring stations to recover from dredging activity adjacent to these sites.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The use of the green valves on the scows has been restricted or stopped completely.
6. An additional scow will be brought into service in the next several days to allow for more efficient loading from the spider barge.

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7. Minimization of overflow from scows to the greatest extent practical. This is partially accomplished by limiting flow velocity to 19 ft/s from the Texas to the spider barge. Less water transporting material to the spider barge, equals a reduction in the amount of overflow.
8. Suspended rock chopping operations for the immediate future.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging and ongoing cutterhead dredge scow loading operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.



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Week 17 03/12/14-03/18/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. The cutterhead dredge Texas and DR55 were between 65+00 and 16+95 in Cut 2 and between 10+52 and 16+00 (Texas only) in Cut 3, during Compliance Week 17 (March 12, 2014 and March 18, 2014) (Figure 1). During Compliance Week 17 monitoring was required by permit at HBNC1, HBN2, HBSC1, HBS1, and HBS2 (Figure 1). Environmental factors during Week 17 of compliance monitoring made conditions unsafe for diving on 5/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility <3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Coral Stress

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

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Week 17 03/12/14-03/18/14 Dredge Activity

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a "0" (normal or non-stressed) or "1" (stressed), and photographed. If a "1" is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1. Possible conditions for permanently marked hard corals receiving a "1" during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Results

Coral Stress Surveys

Channel side hardbottom compliance data were collected at HBS3 and HBN2 in Compliance Week 17. Data were also collected at HBNC1 and HBSC1 reference sites in Week 17. These data were compared using a two-sample t-test (i.e., HBNC1 and HBN2). All sampled sites exhibited stress levels between 0.50 and 1.00, with reference sites at 0.50 ± 0.52 (HBNC1-CP) and 0.50 ± 0.51 (HBSC1-CP) in Compliance Week 17. Both channel side sites exhibited

Weekly Offshore Coral Stress and Sediment Block Compliance Report 017

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Week 17 03/12/14-03/18/14 Dredge Activity

significantly higher (two sample t-test; $p \leq 0.05$) stress levels than their respective reference sites. Permanently marked corals at these sites were documented by scientific divers as covered by fine sediment, having extended polyps, exuding mucus, and partial burial at significantly higher frequency than corals at reference sites (two sample t-test ≤ 0.05). Significant results at HBS3 were mainly due to the conditions of polyp extension and sediment accumulation. Significant results at HBN2 were mostly due to partial burial by coarse grain sediment which may be attributed to the continuing influence of the sand wave.

Multiple cold fronts with winds of 15-20 knots from the north and northeast began influencing the project site in November, coinciding with the start of dredging. A continuation of the winter season pattern of strong frontal system influences is expected for the next several months. Divers documented increased turbidity, qualitatively increased sedimentation, and constrained time frames for diving. Winter weather conditions and dredging activities may have confounding effects which may be separated as more data are collected. Sediment trap data comparisons between baseline and dredging periods (every 28 days) may be illustrative. The baseline results have been analyzed and will be included in the baseline report for hardbottom sites. A qualitative assessment of the sediment found to be covering HBN1, and parts of HBN2, have documented coarse grain sediment.

Table 2. Compliance Week 17 scleractinian stress level data are presented below. Mean stress level as measured by a “0” or “1” for permanently marked corals at channel and reference sites in compliance monitoring Week 14.

Area	Site	Compliance Week 17	N	Compliance Week 17 SD
South Sites	HBSC1	0.50	30	0.51
	HBS1	NA	NA	NA
	HBS2	NA	NA	NA
	HBS3	0.86*	29	0.35
	HBS4	NA	NA	NA
North Sites	HBNC1	0.50	12	0.52
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.		
	HBN2	1.00*	15	0.00
	HBN3	NA	NA	NA
	HBN4	NA	NA	NA

N – Number of corals sampled to calculate the mean.

SD – Standard deviation for the mean.

NA – No data were collected due to unsafe diving conditions created by inclement weather.

* – Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

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Week 17 03/12/14-03/18/14 Dredge Activity

Sediment Block Survey

A fine sediment and cyanobacterial mat layer has formed on some channel-side site blocks (Table 3). The depth of this layer is less than 1mm.

Table 3. Sediment block accumulation data for compliance Week 14. All measurements are in mm.

Area	Site	Compliance Week 13 (mm)	N
South Sites	HBSC1	0	<1
	HBS1	NA	NA
	HBS2	NA	NA
	HBS3	<1	<1
	HBS4	NA	NA
North Sites	HBNC1	0	<1
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.	
	HBN2	0	<1
	HBN3	NA	NA
	HBN4	NA	NA

NA – No data were collected due to unsafe diving conditions created by inclement weather.

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity has ceased as of 2/9/14 to allow time for the southern hardbottom sites to recover from dredging activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The use of the green valves on the scows has been restricted or stopped completely.
6. An additional scow will be brought into service in the next several days to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical. This is partially accomplished by limiting flow velocity to 19 ft/s from the Texas to the spider barge. Less water transporting material to the spider barge, equals a reduction in the amount of overflow.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.

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2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging and ongoing cutterhead dredge scow loading operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.



Weekly Offshore Coral Stress and Sediment Block Compliance Report 018
FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening
Week 18 03/19/14-03/25/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. The cutterhead dredge Texas and DR55 were between 33+75 and 62+25 in Cut 2 and between 15+96 and 17+54 in Cut 3, during Compliance Week 18 (March 19, 2014 and March 25, 2014) (Figure 1). During Compliance Week 18 monitoring was required by permit at HBNC1, HBN2, HBSC1, HBS1, HBS2, HBS3, and HBS4 (Figure 1). Environmental factors during Week 18 of compliance monitoring made conditions unsafe for diving on 1/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Weekly Coral Stress Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

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Week 18 03/19/14-03/25/14 Dredge Activity

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1: Possible conditions for permanently marked hard corals receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal Siderastrea spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Sediment trap bottles are collected every 28 days (conditions permitting). Sediment traps are positioned as stated in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the

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comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design being used in the Broward County Shore Preservation Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibial growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.

2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

Results

Coral Stress Surveys

Channel-side hardbottom compliance data were collected twice for HBS1, HBS2, HBN2, and once for HBS3, HBS4, and HBN3 in Compliance Week 18. Data were also collected twice for HBNC1 and HBSC1 reference sites in Week 18. These data were compared using a two-sample t-test (e.g., HBNC1 and HBN2). All sampled sites exhibited stress levels between 0.57 and 1.00, with reference site maxima at 0.57 ± 0.50 (HBSC1-CP) and 0.87 ± 0.39 (HBNC1-CP) in Compliance Week 18. In the previous compliance week (Week 17) adverse weather conditions (e.g., winds in excess of 20 knots) were present over the monitoring sites and reference sites for 5/7 days. These conditions may have resuspended sediments and fine particulate matter in the water column across compliance and reference sites. Although no northern channel-side sites were significantly different from HBNC1, all southern channel side sites exhibited significantly higher (two sample t-test; $p \leq 0.05$) stress levels than HBSC1. Most, if not all, permanently marked corals across all channel-side and reference sites were documented by scientific divers as covered by fine sediment, having extended polyps, exuding mucus, and partial burial at significantly higher frequency than corals at reference sites (two sample t-test ≤ 0.05).

Multiple cold fronts with winds of 15-20 knots from the north and northeast began influencing the project site in November, coinciding with the start of dredging. A continuation of the winter season pattern of strong frontal system influences is expected for the next several months. Divers documented increased turbidity, qualitatively increased sedimentation, and constrained time frames for diving. Winter weather conditions and dredging activities may have confounding effects which may be separated as more data are collected. Sediment trap data comparisons between baseline and dredging periods (every 28 days) may be illustrative. The baseline results have been analyzed and will be included in the baseline report for hardbottom sites. A qualitative assessment of the sediment found to be covering HBN1, and parts of HBN2, have documented coarse grain sediment.

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Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 18. Permanently marked corals at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators (e.g., sediment accumulation, extended polyps, etc.).

Area	Site	Scleractinian Condition					
		First Survey			Second Survey		
		Mean	SD	N	Mean	SD	N
South Sites	HBSC1	0.57	0.50	30	0.57	0.50	30
	HBS1	1.00*	0.00	18	0.93*	0.24	18
	HBS2	1.00*	0.00	21	0.93*	0.22	18
	HBS3	1.00*	0.00	29	NA	NA	NA
	HBS4	0.92	0.28	25	NA	NA	NA
North Sites	HBNC1	0.87	0.39	12	0.80	0.45	12
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.					
	HBN2	1.00	0.00	15	0.92	0.27	13
	HBN3	1.00	0.00	23	NA	NA	NA

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

NA: No data collected due to unsafe diving conditions.

*: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

No sediment accumulated on sediment blocks at any compliance monitoring sites in Week 18.

Table 3: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 18. All measurements are in mm.

Area	Site	Sediment Accumulation (mm)	N
South Sites	HBSC1	0	1
	HBS1	0	1
	HBS2	0	1
	HBS3	0	1
	HBS4	0	1
North Sites	HBNC1	0	1
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.	
	HBN2	0	1
	HBN3	0	1
	HBN4	0	1

Quantitative Sediment Accumulation

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Observations of sediment accumulation have been made every 28 days as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2) and are included in this report (Table 4).

Table 4: Sedimentation daily rate data from monthly collected sediment traps since baseline (October 2013). Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in grams per day.

Site	Baseline	Month 1	Month 2	Month 3
HBN1-CR				
Sample Start Date	10/21/2013	-	-	-
Sample End Date	11/18/2013	-	-	-
Grain size > #230 Sieve (g/day)	6.98	-	-	-
Grain Size < # 230 Sieve (g/day)	0.87	-	-	-
HBN2-CR				
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014
Grain size > #230 Sieve (g/day)	2.51	3.65	1.87	1.15
Grain Size < # 230 Sieve (g/day)	0.96	0.96	0.80	0.20
HBN3-CP				
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014
Grain size > #230 Sieve (g/day)	4.13	3.38	3.23	1.83
Grain Size < # 230 Sieve (g/day)	0.81	1.13	0.97	0.79
HBNC1-CP (control)				
Sample Start Date	10/15/2013	11/12/2013	1/13/2014	-
Sample End Date	11/12/2013	1/13/2014	2/7/2014	-
Grain size > #230 Sieve (g/day)	0.37	0.40	0.02	-
Grain Size < # 230 Sieve (g/day)	0.76	0.99	0.16	-
HBS1-CP				
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014
Grain size > #230 Sieve (g/day)	0.67	2.42	1.21	0.95
Grain Size < # 230 Sieve (g/day)	0.62	0.90	0.73	0.24
HBS2-CP				
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014
Grain size > #230 Sieve (g/day)	0.76	3.18	2.05	0.84
Grain Size < # 230 Sieve (g/day)	0.65	1.35	1.03	0.40
HBS3-CP				
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014
Grain size > #230 Sieve (g/day)	0.40	1.98	0.71	1.46
Grain Size < # 230 Sieve (g/day)	0.72	1.50	0.79	1.73
HBS4-CR				
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014
Grain size > #230 Sieve (g/day)	0.98	2.50	1.18	1.09
Grain Size < # 230 Sieve (g/day)	0.82	1.71	0.79	0.83
HBSC1-CP (control)				
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014
Grain size > #230 Sieve (g/day)	0.30	0.59	0.30	0.01
Grain Size < # 230 Sieve (g/day)	0.49	0.92	1.06	0.10

Adaptive Management

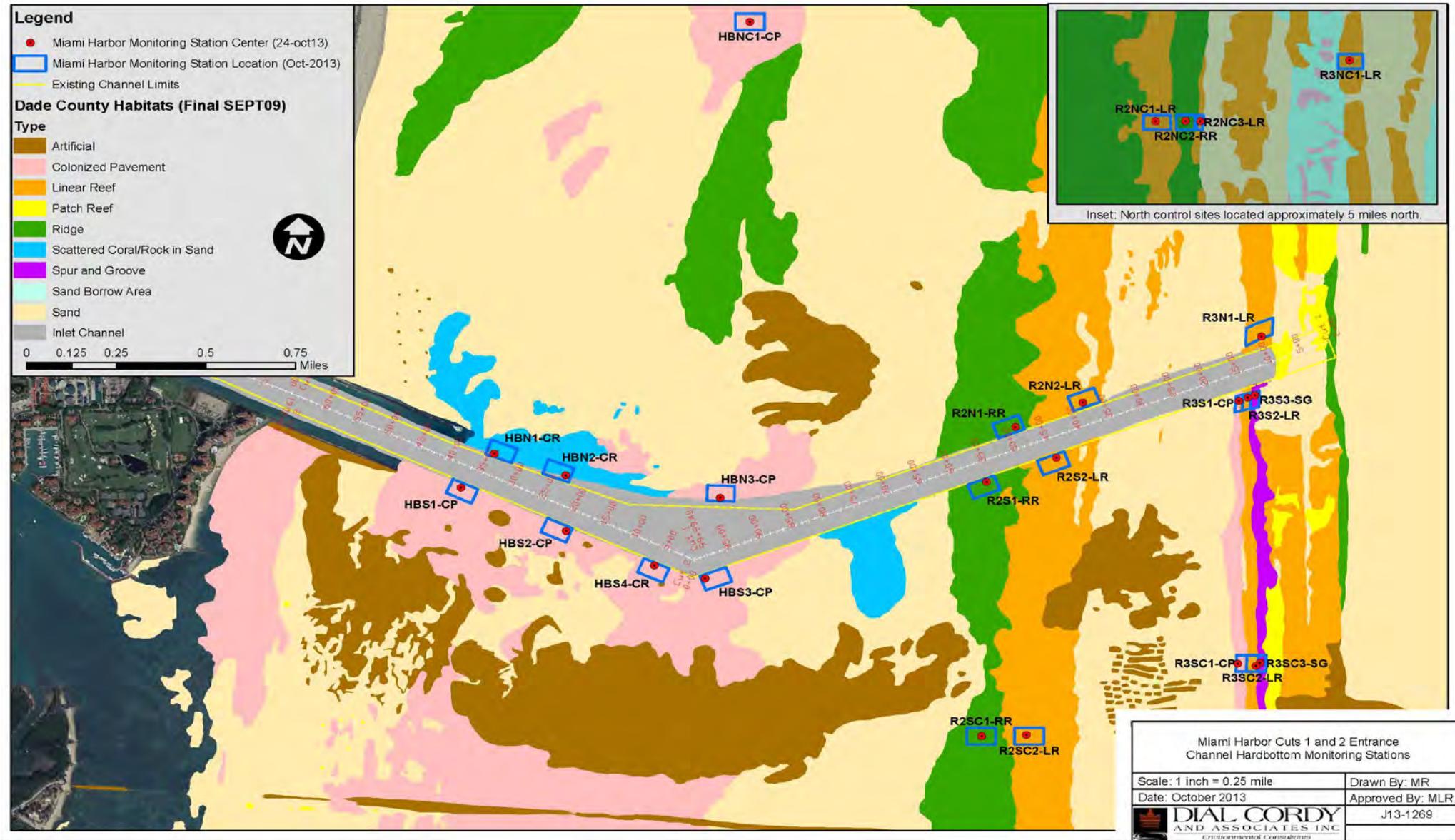
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Week 18 03/19/14-03/25/14 Dredge Activity

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity has ceased as of 2/9/14 to allow time for the southern hardbottom sites to recover from dredging activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The use of the green valves on the scows has been restricted or stopped completely.
6. An additional scow will be brought into service in the next several days to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical. This is partially accomplished by limiting flow velocity to 19 ft/s from the Texas to the spider barge. Less water transporting material to the spider barge equals a reduction in the amount of overflow.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging and ongoing cutterhead dredge scow loading operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.



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Subject: Miami Harbor Phase III Federal Channel Expansion, FDEP Permit No. 0305721-001-BI - Week 19 Coral Stress & Sediment Block Monitoring Report Submittal
Date: Thursday, April 10, 2014 4:01:21 PM

No coral stress and sediment block monitoring was required or performed during Week 19 (March 26, 2014 to April 1, 2014) because dredging operations were not conducted within 750 meters of the offshore monitoring sites as required in the FDEP permit. Therefore, no coral stress and sediment block monitoring report will be submitted for Week 19 and this email serves as the weekly notification of activity during Week 19.

Monitoring of the offshore sites will continue to be performed in compliance with the FDEP permit when dredging operations are within the stipulated zone.

If you have any questions in regards to this submittal, please feel free to contact me.

Thanks.

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Weekly Offshore Coral Stress and Sediment Block Compliance Report 020
FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening
Week 20 04/02/14-04/08/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. The cutterhead dredge Texas and Spider Barge were in Cut 2 between STA 30+00 and 5+00 during Compliance Week 20 (April 2, 2014 and April 8, 2014) (Figure 1). During Compliance Week 20, monitoring was required by permit at HBNC1, HBN2, HBN3, HBSC1, HBS1, HBS2, HBS3, and HBS4 (Figure 1). Environmental factors during Week 20 of compliance monitoring made conditions unsafe for diving on 3/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility <3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Weekly Coral Stress Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

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Week 20 04/02/14-04/08/14 Dredge Activity

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Partial mortality	Sedimentation	Dead tissue around the base margin of the colony
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

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Week 20 04/02/14-04/08/14 Dredge Activity

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design being used in the Broward County Shore Preservation Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibiotic growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

Results

Coral Stress Surveys

Channel-side hardbottom compliance data were collected twice for HBN3, HBS1, HBS2, HBS3, and once for HBN2 and HBS4, in Compliance Week 20, when diving conditions were safe for operations. Data were also collected twice for HBNC1 and HBSC1 reference sites in Week 20. These data were compared using a two-sample t-test (e.g., HBNC1 and HBN2). All sampled sites exhibited stress levels between 0.60 and 1.00, with reference site maxima at 0.66 ± 0.48 (HBSC1-CP) and 0.83 ± 0.39 (HBNC1-CP) in Compliance Week 20. HBN3 was significantly different from HBNC1 in the first survey of the week, but neither HBN3 nor HBN2 were significantly different from HBNC1 in the second survey. All southern channel-side sites exhibited significantly different (two sample t-test; $p \leq 0.05$) conditions than HBSC1. Most permanently marked corals across all channel-side and reference sites were documented by scientific divers as covered by fine sediment, having extended polyps, exuding mucus. Partial burial and partial mortality were more frequent at channel-side sites, when compared to reference sites. The qualitatively documented sedimentation at southern channel-side sites appeared to have receded, revealing bleached and/or dead tissue around the margins of several permanently marked corals.

Divers documented increased turbidity and constrained time frames for diving in Week 20 of compliance monitoring. Week 19, when the dredge was not active offshore, was also a week of elevated winds and waves. Although adverse weather conditions and dredging activities may have confounding effects, reference site coral condition continues to be significantly different from channel-side coral condition. Daily sedimentation rates calculated from quantitative

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sedimentation values, collected approximately every 28 days, show generally lower levels of coarse (>#230 sieve) and fine grain (<#230 sieve) at reference sites when compared to channel-side sites. This pattern was documented during baseline investigations as well as during the construction phase (Table 4).

Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 20. Permanently marked corals at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators (e.g., sediment accumulation, extended polyps, etc.).

Area	Site	Scleractinian Condition					
		First Survey			Second Survey		
		Mean	SD	N	Mean	SD	N
South Sites	HBSC1	0.60	0.50	30	0.67	0.48	30
	HBS1	0.83*	0.38	18	0.94*	0.24	18
	HBS2	0.90*	0.30	21	0.90*	0.30	21
	HBS3	0.89*	0.31	28	0.86*	0.36	28
	HBS4	0.88*	0.33	25	NA	NA	NA
North Sites	HBNC1	0.75	0.45	12	0.83	0.39	12
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.					
	HBN2	NA	NA	NA	1.00	0.00	13
	HBN3	1.00*	0.00	26	1.00	0.00	26

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

NA: No data collected.

*: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

No sediment was found accumulating on sediment blocks at any compliance monitoring sites in Week 20.

Table 3: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 20. All measurements are in mm.

Area	Site	Sediment Accumulation (mm)	N
South Sites	HBSC1	0	1
	HBS1	0	1
	HBS2	0	1
	HBS3	0	1
	HBS4	0	1
North Sites	HBNC1	0	1
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.	
	HBN2	0	1

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Area	Site	Sediment Accumulation (mm)	N
	HBN3	0	1
	HBN4	0	1

NA: No data were collected.

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 4).

Table 4: Sediment accumulation data collected from sediment traps since October 2013. Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in grams per day.

Site	Baseline	Month 1	Month 2	Month 3	Month 4
HBN1					
Sample Start Date	10/21/2013				
Sample End Date	11/18/2013				
Grain size \geq #230 Sieve (g/day)	6.98				-
Grain Size \leq # 230 Sieve (g/day)	0.87				
HBN2				-	
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	2/7/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	2.51	3.65	1.87	1.15	2.35
Grain Size \leq # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.41
HBN3					
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	2/9/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	4.13	3.38	3.23	1.83	1.24
Grain Size \leq # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	0.46
HBNC1					
Sample Start Date	10/15/2013	11/12/2013	-	1/13/2014	2/7/2014
Sample End Date	11/12/2013	1/13/2014	-	2/7/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	0.37	0.40	-	0.02	0.01
Grain Size \leq # 230 Sieve (g/day)	0.76	0.99	-	0.16	0.13
HBS1					
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	3/7/2014

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Site	Baseline	Month 1	Month 2	Month 3	Month 4
Grain size \geq #230 Sieve (g/day)	0.67	2.42	1.21	0.95	1.04
Grain Size \leq # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.40
HBS2					
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	3/7/2014
Grain size \geq #230 Sieve (g/day)	0.76	3.18	2.05	0.84	0.97
Grain Size \leq # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.41
HBS3					
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	3/5/2014
Grain size \geq #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.50
Grain Size \leq # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.41
HBS4					
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	3/5/2014
Grain size \geq #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.45
Grain Size \leq # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	0.42
HBSC1					
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	2/7/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.01
Grain Size \leq # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.12

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from of 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.

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4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. The use of the green valves on the scows has been restricted or stopped completely to reduce the amount of overflow.
7. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
8. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging and ongoing cutterhead dredge scow loading operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.



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Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. During Compliance Week 21 (April 9, 2014 to April 15, 2014) the cutterhead dredge Texas was in Cut 1 between STA 60+00 and 80+00 and in Cut 2 between STA 20+00 and 25+00. During Compliance Week 21, monitoring was required by permit at R2NC1, R2N1, R2N2, R2SC1, R2SC2, R2S1, and R2S2 (Figure 1). Environmental factors during Week 21 of compliance monitoring made conditions unsafe for offshore dive operations on 4/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility <3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Weekly Coral Stress Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

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Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Partial mortality	Sedimentation	Dead tissue around the base margin of the colony
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as

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required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design being used in the Broward County Shore Preservation Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibiotic growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

Results

Coral Stress Surveys

Reef 2 compliance data were collected once for R2SC1, R2SC2, R2S1, R2S2, R2NC1, R2N1, and R2N2 during Compliance Week 21 due to adverse weather conditions preventing safe dive operations during 4 out of the 7 monitoring days. Coral stress values at Reef 2 channel-side sites were compared with reference sites using a two-sampled t-test. Due to the existence of more than one habitat type within the Reef 2 monitoring area, channel-side sites were compared to reference sites of the same habitat, where possible. Coral stress values at R2S1 were compared with the values at R2SC1 and values at R2S2 were compared with R2SC2 reference values. Both northern channel-side sites were compared with R2NC1 reference values because that was the only northern reference site visited in the monitoring week.

Three of the four channel-side sites surveyed (R2S2, R2N1, and R2N2) exhibited stress levels that were significantly different than their corresponding reference sites (Table 2). Stress levels at Reef 2 reference sites ranged from 0.47 ± 0.5 to 0.63 ± 0.49 whereas stress levels at Reef 2 channel-side sites ranged from $0.72 \pm .46$ to 1.0 ± 0.0 . Most permanently marked corals across channel-side and reference sites were documented by scientific divers as having dustings of fine sediment on the colony, extended polyps, and/or excess mucus. Sediment accumulation was common at all channel-side sites but was most notable at R2N1 where nearly all marked corals had a buildup of fine sediment on top of, or around the base, of the coral colonies. The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was present in tagged corals during Compliance Week 21 at R2SC1, and R2S1.

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Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 21. Permanently marked corals at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators (e.g., sediment accumulation, extended polyps, etc.).

Area	Site	Scleractinian Condition					
		First Survey			Second Survey		
		Mean	SD	N	Mean	SD	N
South Sites	R2SC1	0.63	0.49	30	NA	NA	NA
	R2SC2	0.52	0.51	25	NA	NA	NA
	R2S1	.81	0.40	27	NA	NA	NA
	R2S2	0.79*	0.41	24	NA	NA	NA
North Sites	R2NC1	0.47	0.50	30	NA	NA	NA
	R2N1	1.0*	0.00	30	NA	NA	NA
	R2N2	0.72*	0.46	25	NA	NA	NA

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

NA: No data collected.

*: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

No sediment was found accumulating on sediment blocks at any compliance monitoring sites in Week 21.

Table 3: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 21. All measurements are in mm.

Area	Site	Sediment Accumulation (mm)	N
South Sites	R2SC1	0	1
	R2SC2	0	1
	R2S1	0	1
	R2S2	0	1
North Sites	R2NC1	0	1
	R2N1	0	1
	R2N2	0	1

NA: No data were collected.

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 4).

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**Table 4: Sediment accumulation data collected from sediment traps since October 2013.
 Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in
 grams per day.**

Site	Baseline	Month 1	Month 2	Month 3	Month 4
HBN1					
Sample Start Date	10/21/2013				
Sample End Date	11/18/2013				
Grain size \geq #230 Sieve (g/day)	6.98			-	
Grain Size \leq # 230 Sieve (g/day)	0.87				
HBN2				-	
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	2/7/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	2.51	3.65	1.87	1.15	2.35
Grain Size \leq # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.41
HBN3					
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	2/9/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	4.13	3.38	3.23	1.83	1.24
Grain Size \leq # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	0.46
HBNC1					
Sample Start Date	10/15/2013	11/12/2013	-	1/13/2014	2/7/2014
Sample End Date	11/12/2013	1/13/2014	-	2/7/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	0.37	0.40	-	0.02	0.01
Grain Size \leq # 230 Sieve (g/day)	0.76	0.99	-	0.16	0.13
HBS1					
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	3/7/2014
Grain size \geq #230 Sieve (g/day)	0.67	2.42	1.21	0.95	1.04
Grain Size \leq # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.40
HBS2					
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	3/7/2014

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Site	Baseline	Month 1	Month 2	Month 3	Month 4
Grain size \geq #230 Sieve (g/day)	0.76	3.18	2.05	0.84	0.97
Grain Size \leq # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.41
HBS3					
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	3/5/2014
Grain size \geq #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.50
Grain Size \leq # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.41
HBS4					
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	3/5/2014
Grain size \geq #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.45
Grain Size \leq # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	0.42
HBSC1					
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	2/7/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.01
Grain Size \leq # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.12

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from of 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. The use of the green valves on the scows has been restricted or stopped completely to reduce the amount of overflow.

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7. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
8. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging and ongoing cutterhead dredge scow loading operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.



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Week 22 04/16/14-04/22/14 Dredge Activity

Background

The hopper dredge, Terrapin Island, began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. During Compliance Week 22 (April 16, 2014 to April 22, 2014) the cutterhead dredge Texas and spider barge were in Cut 2 between stations 10+00 and 25+00. During Compliance Week 22, monitoring was required by permit at all hardbottom sites (i.e., HBN2, HBN3, HBNC1, HBS1, HBS2, HBS3, HBS4, HBSC1; Figure 1). Environmental factors during Week 22 of compliance monitoring made conditions unsafe for offshore dive operations on 2/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility <3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried at week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Weekly Coral Stress Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

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Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Partial mortality	Sedimentation	Dead tissue around the base margin of the colony
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

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Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design being used in the Broward County Shore Preservation Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibiotic growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

Results

Coral Stress Surveys

Channel-side hardbottom compliance data were collected once for HBN2-CR, HBN3-CP, HBNC1-CP, HBS1-CP, and HBS2-CP and twice for HBS3-CP, HBS4-CR, and HBSC1-CP in Compliance Week 22 when scientific diving conditions were safe per EM-385 (visibility >3 feet; current <1 knot). These data were compared using a two-sample t-test (e.g., HBNC1-CP and HBN2-CR). All sampled sites exhibited stress levels between 0.50 and 1.00, with reference site maxima at 0.53 ± 0.51 (HBSC1-CP) and 0.83 ± 0.39 (HBNC1-CP).

All northern sites, including the reference exhibited higher than average stress levels. As a result northern channel-side sites were not significantly different from their reference, because the reference level was also elevated (two sample t-test ≤ 0.05). High proportions of permanently marked corals across all northern channel side and reference sites were documented by scientific divers as having extended polyps, exuding mucus, sediment accumulation, and/or partial burial. South of the channel, permanently marked corals at all of the channel-side sites exhibited sediment stress conditions at significantly higher frequencies (two sample t-test ≤ 0.05) than their southern reference site (HBSC1-CP) during 1/1 or 1/2 survey(s). At these sites, divers noted increased frequencies of permanently marked corals experiencing partial burial, partial mortality and sediment accumulation.

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Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 22. Permanently marked corals at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators (e.g., sediment accumulation, extended polyps, etc.).

Area	Site	Scleractinian Condition					
		First Survey			Second Survey		
		Mean	SD	N	Mean	SD	N
Southern Hardbottom	HBS1	0.77*	0.43	18	NA	NA	NA
	HBS2	0.86*	0.36	21	NA	NA	NA
	HBS3	0.86*	0.36	28	0.68	0.48	28
	HBS4	0.72	0.46	25	0.72*	0.46	25
	HBSC1	0.53	0.51	30	0.50	0.51	30
Northern Hardbottom	HBN2	1.00	0.00	14	NA	NA	NA
	HBN3	0.96	0.20	26	NA	NA	NA
	HBNC1	0.83	0.39	12	NA	NA	NA

N: Number of corals sampled to calculate the mean.

SD: Standard deviation of the mean.

NA: No data collected.

*: Denotes a statistically significant difference ($P \leq 0.05$) between the channel side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

No sediment was found accumulating on sediment blocks at any compliance monitoring sites in Week 22.

Table 3: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 22. All measurements are in mm.

Area	Site	Sediment Accumulation (mm)	N
Southern Hardbottom	HBSC1	0	1
	HBS1	0	1
	HBS2	0	1
	HBS3	0	1
	HBS4	0	1
Northern Hardbottom	HBNC1	0	1
	HBN1	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.	
	HBN2	0	1
	HBN3	0	1

NA: No data were collected.

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 4).

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Table 4: Sediment accumulation data collected from sediment traps since October 2013.
Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in grams per day.

Site	Baseline	Month 1	Month 2	Month 3	Month 4
HBN1					
Sample Start Date	10/21/2013				
Sample End Date	11/18/2013				
Grain size \geq #230 sieve (g/day)	6.98				
Grain Size \leq # 230 sieve (g/day)	0.87				
HBN2					
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	2/7/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	2.51	3.65	1.87	1.15	2.35
Grain Size \leq # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.41
HBN3					
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	2/9/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	4.13	3.38	3.23	1.83	1.24
Grain Size \leq # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	0.46
HBNC1					
Sample Start Date	10/15/2013	11/12/2013	-	1/13/2014	2/7/2014
Sample End Date	11/12/2013	1/13/2014	-	2/7/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	0.37	0.40	-	0.02	0.01
Grain Size \leq # 230 Sieve (g/day)	0.76	0.99	-	0.16	0.13
HBS1					
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	3/7/2014
Grain size \geq #230 Sieve (g/day)	0.67	2.42	1.21	0.95	1.04
Grain Size \leq # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.40
HBS2					
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	3/7/2014
Grain size \geq #230 Sieve (g/day)	0.76	3.18	2.05	0.84	0.97
Grain Size \leq # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.41
HBS3					
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	3/5/2014
Grain size \geq #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.50
Grain Size \leq # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.41
HBS4					
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	3/5/2014

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Site	Baseline	Month 1	Month 2	Month 3	Month 4
Grain size \geq #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.45
Grain Size \leq # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	0.42
HBSC1					
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	2/7/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.01
Grain Size \leq # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.12

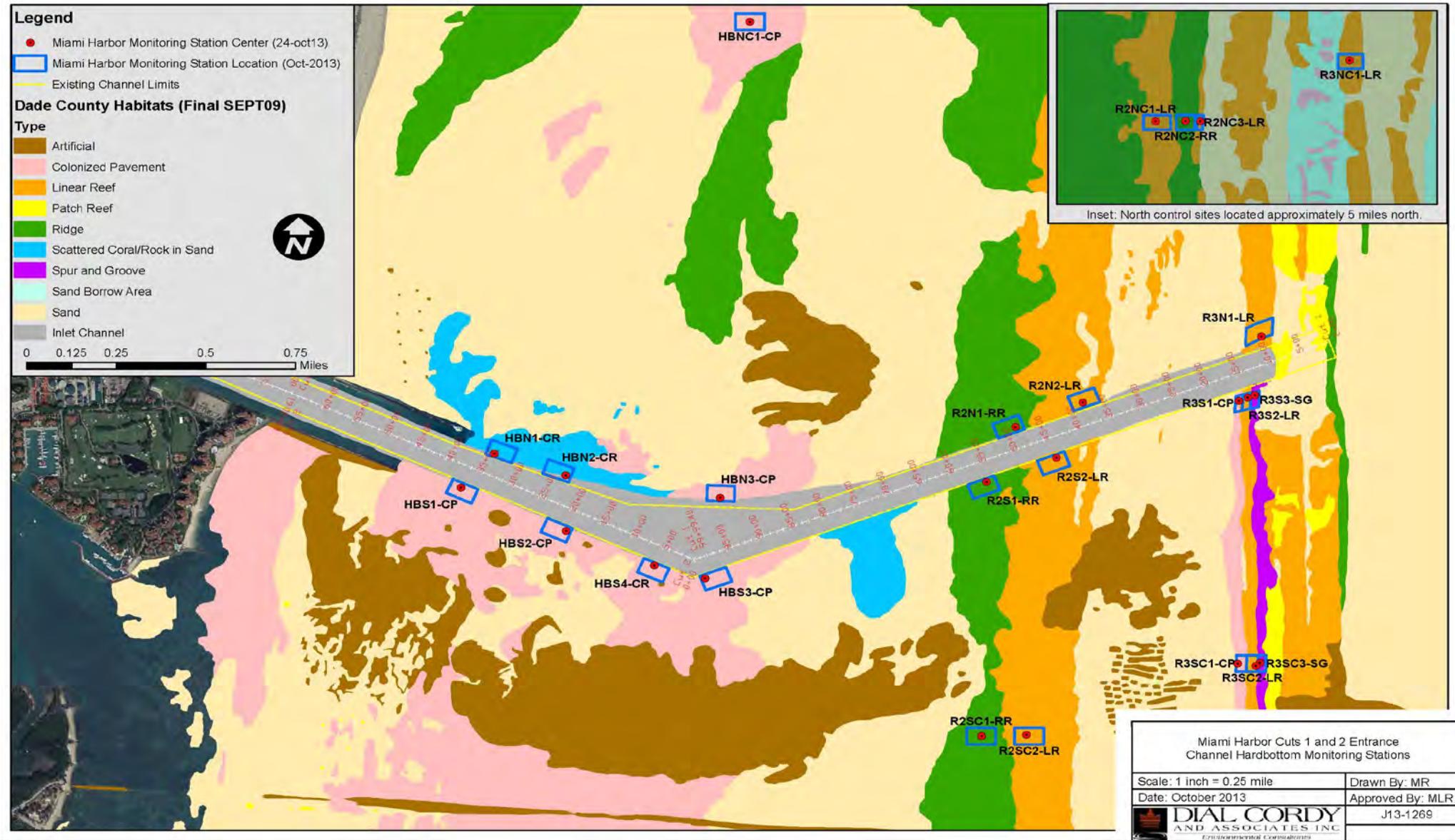
Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from of 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. Green valves on the scows are being used to pond water so that the decanted water is less turbid.
7. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
8. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging and ongoing cutterhead dredge scow loading operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.



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Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. During Compliance Week 23 (April 23, 2014 to April 29, 2014), the cutterhead dredge Texas chopped rock in Cut 1 from STA 77+50 to 82+50, Dredge 55 dredged in Cut 2 from STA 52+50 to 65+00, and scow loading operations were conducted in Cut 2 from STA 1+00 to 3+00 and STA 23+50 to 31+50. Texas operations required monitoring at HBN3, HBS3, HBS4 and R2S1; scow loading operations triggered monitoring at all hardbottom sites; and Dredge 55 operations necessitated monitoring at HBS1. Reference sites HBNC1, HBSC1, and R2SC1 were monitored for comparison (Figure 1). Environmental factors during Week 23 of compliance monitoring made conditions unsafe for offshore dive operations on 2/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility <3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Weekly Coral Stress Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see

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example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Partial mortality	Sedimentation	Dead tissue around the base margin of the colony
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

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Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design being used in the Broward County Shore Preservation Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibial growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

Results

Coral Stress Surveys

Weekly compliance monitoring data were collected twice for all sites within 750 m of dredging operations (i.e., HBN2, HBN3, HBS1, HBS2, HBS3, HBS4, and R2S1), with the exception of HBN2, which was only monitored once because dredging operations were ongoing in the vicinity during the second survey period. Coral condition data for reference sites HBNC1, HBSC1, and R2SC1 and channel-side sites were compared using a two-sampled t-test ($p \leq 0.05$).

All channel-side sites surveyed exhibited stress levels that were significantly different than their corresponding reference sites (Table 2) during one or both monitoring surveys. Stress levels at reference sites ranged from 0.43 ± 0.5 (R2SC1) to 0.83 ± 0.39 (HBNC1) whereas stress levels at channel-side sites ranged from 0.60 ± 0.50 (HBS4) to 1.0 ± 0.0 (HBN2; Table 2). Elevated stress levels of permanently marked corals across channel-side and reference sites were documented by scientific divers as being predominantly attributed to dustings of fine sediment on the colony, extended polyps, and/or excess mucus. Sediment accumulation was widespread at all channel-side sites but was most notable at HBN2 where all marked corals had a buildup of fine sediment on top of, or around the base, of the coral colonies. The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was present in permanently marked corals at HBN2, HBN3, HBNC1, HBS1, HBS2, HBS4, HBSC1, R2S1, and R2SC1.

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Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 23. Permanently marked corals at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators (e.g., sediment accumulation, extended polyps, etc.).

Area	Site	Scleractinian Condition					
		First Survey			Second Survey		
		Mean	SD	N	Mean	SD	N
South Sites	HBS1	0.61	0.50	18	0.94*	0.24	18
	HBS2	0.90*	0.30	21	0.90*	0.30	21
	HBS3	0.71*	0.46	28	0.96*	0.19	28
	HBS4	0.60	0.50	25	0.83*	0.33	24
	HBSC1	0.50	0.51	30	0.43	0.50	30
	R2S1	0.96*	0.19	27	0.92*	0.27	27
	R2SC1	0.43	0.50	30	0.63	0.49	30
North Sites	HBN2	1.00*	0.00	13	NA	NA	NA
	HBN3	0.96*	0.20	26	1.00	0.00	26
	HBNC1	0.66	0.49	12	0.83	0.39	12

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

NA: No data collected.

*: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

No sediment was found accumulating on sediment blocks at any compliance monitoring sites in Week 23.

Table 3: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 23. All measurements are in mm.

Area	Site	Sediment Accumulation (mm)	N
South Sites	HBS1	0	1
	HBS2	0	1
	HBS3	0	1
	HBS4	0	1
	HBSC1	0	1
	R2S1	0	1
	R2SC1	0	1
North Sites	HBN2	0	1
	HBN3	0	1
	HBNC1	0	1

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Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 4).

**Table 4: Sediment accumulation data collected from sediment traps since October 2013.
Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in
grams per day.**

Site	Baseline	Month 1	Month 2	Month 3	Month 4
HBN1					
Sample Start Date	10/21/2013				
Sample End Date	11/18/2013				
Grain size \geq #230 Sieve (g/day)	6.98				
Grain Size \leq # 230 Sieve (g/day)	0.87				
HBN2				-	
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	2/7/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	2.51	3.65	1.87	1.15	2.35
Grain Size \leq # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.41
HBN3					
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	2/9/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	4.13	3.38	3.23	1.83	1.24
Grain Size \leq # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	0.46
HBNC1					
Sample Start Date	10/15/2013	11/12/2013	-	1/13/2014	2/7/2014
Sample End Date	11/12/2013	1/13/2014	-	2/7/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	0.37	0.40	-	0.02	0.01
Grain Size \leq # 230 Sieve (g/day)	0.76	0.99	-	0.16	0.13
HBS1					
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	3/7/2014
Grain size \geq #230 Sieve (g/day)	0.67	2.42	1.21	0.95	1.04
Grain Size \leq # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.40
HBS2					

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Site	Baseline	Month 1	Month 2	Month 3	Month 4
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	3/7/2014
Grain size \geq #230 Sieve (g/day)	0.76	3.18	2.05	0.84	0.97
Grain Size \leq # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.41
HBS3					
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	3/5/2014
Grain size \geq #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.50
Grain Size \leq # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.41
HBS4					
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	3/5/2014
Grain size \geq #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.45
Grain Size \leq # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	0.42
HBSC1					
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	2/7/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.01
Grain Size \leq # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.12

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

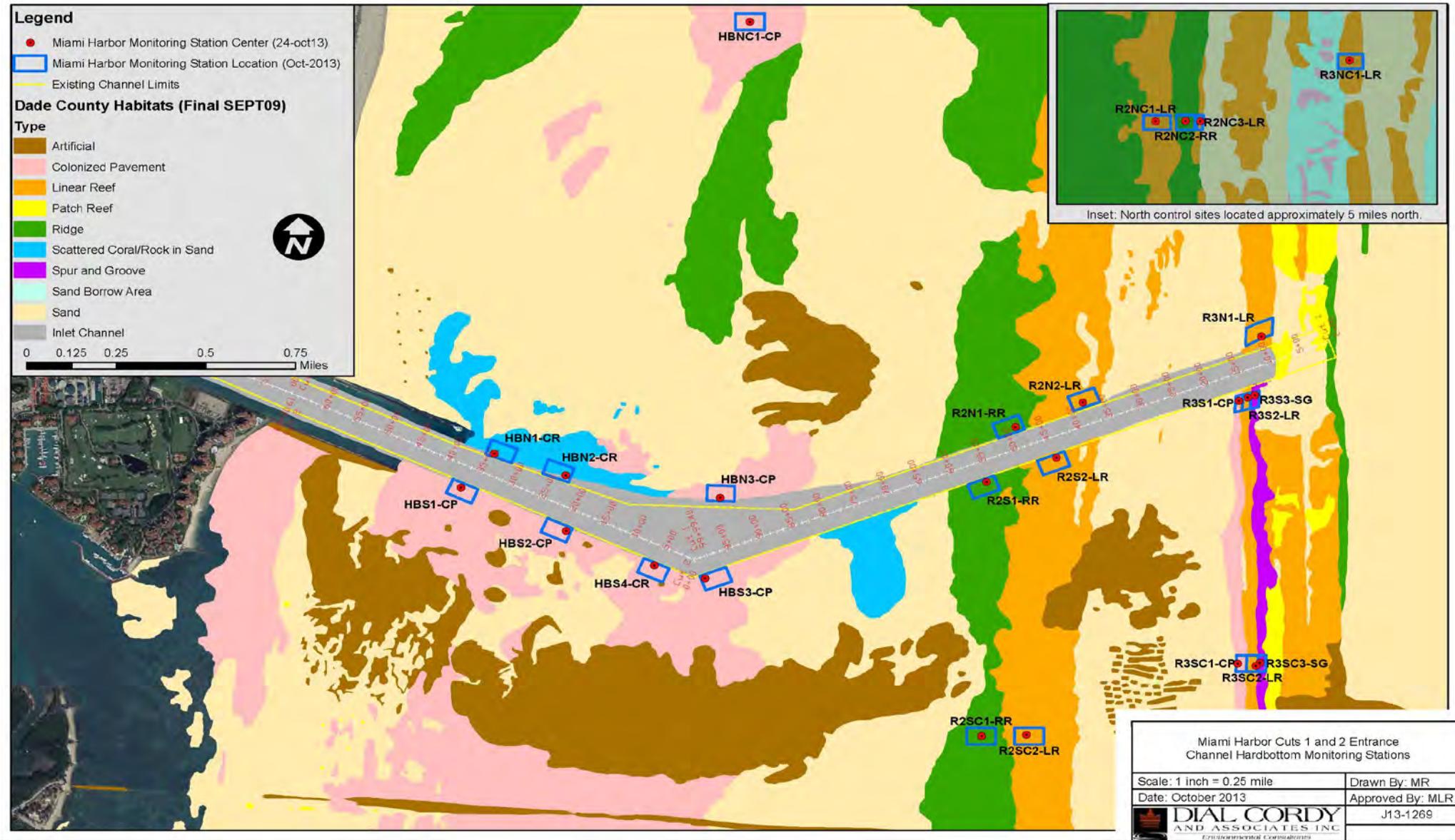
1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from of 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.

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6. The use of the green valves on the scows has been restricted or stopped completely to reduce the amount of overflow.
7. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
8. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging and ongoing cutterhead dredge scow loading operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.



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Week 24 04/30/14-05/06/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. During Compliance Week 24 (April 30, 2014 to May 6, 2014), the cutterhead dredge Texas chopped rock in Cut 1 from STA 82+00 to 91+00, Dredge 55 dredged in Cut 2 from STA 58+45 to 62+62, and scow loading operations were conducted in Cut 2 from STA 2+00 to 4+50 and Cut 1 STA 91+00 to 95+00. Texas operations required monitoring at HBN3, HBS3, HBS4 and R2S1; scow loading operations triggered monitoring at all hardbottom sites except HBS1; and Dredge 55 operations necessitated monitoring at HBS1. Reference sites HBNC1, HBSC1, and R2SC1 were monitored for comparison (Figure 1). Environmental factors during Week 24 of compliance monitoring made conditions unsafe for offshore dive operations on 4/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Weekly Coral Stress Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see

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example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Partial mortality	Sedimentation	Dead tissue around the base margin of the colony
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

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Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design used in the Broward County Shore Protection Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibiotic growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

Results

Coral Stress Surveys

Weekly compliance monitoring data were collected twice for all sites within 750 m of dredging operations (i.e., HBN2, HBN3, HBS1, HBS2, HBS3, HBS4, and R2S1), with the exception of R2S1, which was only monitored once due to time constraints associated with hazardous environmental conditions (e.g., seas greater than 3-5 ft) on 4/7 monitoring days. Coral condition data for reference sites (i.e., HBNC1, HBSC1, and R2SC1) and channel-side sites were compared using a two-sampled t-test ($p \leq 0.05$).

All channel-side sites surveyed exhibited stress levels that were significantly different than their corresponding reference sites (Table 2) during all monitoring surveys, with the exception of HBN2. Stress levels at reference sites ranged from 0.43 ± 0.50 (HBSC1) to 0.75 ± 0.45 (HBNC1) whereas stress levels at channel-side sites ranged from 0.80 ± 0.41 (HBS4) to 1.00 ± 0.00 (HBN3 and R2S1; Table 2). Elevated stress levels of permanently marked corals across channel-side and reference sites were documented by scientific divers as being predominantly attributed to sediment accumulation on the colony, extended polyps, and/or excess mucus production. Sediment accumulation was the most common stress condition at HBN3 and R2S1; partial burial was common at HBN3, and partial mortality was present but rare at both sites among all surveyed corals. The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was present in permanently marked corals at HBN2, HBN3, HBNC1, HBS1, HBS2, HBS4, HBSC1, and R2SC1.

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Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 24. Permanently marked corals at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators (e.g., sediment accumulation, extended polyps, etc.).

Area	Site	Scleractinian Condition					
		First Survey			Second Survey		
		Mean	SD	N	Mean	SD	N
South Sites	HBS1	0.83*	0.38	18	0.83*	0.38	18
	HBS2	0.86*	0.36	21	0.86*	0.36	21
	HBS3	0.82*	0.39	28	0.96*	0.19	28
	HBS4	0.80*	0.41	25	0.96*	0.20	25
	HBSC1	0.43	0.50	30	0.60	0.51	30
	R2S1	1.00*	0.00	28	NA	NA	NA
	R2SC1	0.70	0.47	30	NA	NA	NA
North Sites	HBN2	0.93	0.26	15	0.93	0.26	15
	HBN3	0.96*	0.20	26	1.00*	0.00	26
	HBNC1	0.67	0.49	12	0.75	0.45	12

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

NA: No data collected.

*: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test. NA indicates sites not sampled due to adverse diving conditions.

Sediment Block Survey

No sediment was found accumulating on sediment blocks at any compliance monitoring sites in Week 24.

Table 3: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 24. All measurements are in mm.

Area	Site	Sediment Accumulation (mm)	N
South Sites	HBS1	0	1
	HBS2	0	1
	HBS3	0	1
	HBS4	0	1
	HBSC1	0	1
	R2S1	0	1
	R2SC1	0	1
North Sites	HBN2	0	1
	HBN3	0	1
	HBNC1	0	1

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Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 4).

**Table 4: Sediment accumulation data collected from sediment traps since October 2013.
Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in
grams per day.**

Site	Baseline	Month 1	Month 2	Month 3	Month 4
HBN1					
Sample Start Date	10/21/2013				
Sample End Date	11/18/2013				
Grain size \geq #230 Sieve (g/day)	6.98				
Grain Size \leq # 230 Sieve (g/day)	0.87				
HBN2					
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	2/7/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	2.51	3.65	1.87	1.15	2.35
Grain Size \leq # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.41
HBN3					
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	2/9/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	4.13	3.38	3.23	1.83	1.24
Grain Size \leq # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	0.46
HBNC1					
Sample Start Date	10/15/2013	11/12/2013	-	1/13/2014	2/7/2014
Sample End Date	11/12/2013	1/13/2014	-	2/7/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	0.37	0.40	-	0.02	0.01
Grain Size \leq # 230 Sieve (g/day)	0.76	0.99	-	0.16	0.13
HBS1					
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	3/7/2014
Grain size \geq #230 Sieve (g/day)	0.67	2.42	1.21	0.95	1.04
Grain Size \leq # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.40
HBS2					
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	3/7/2014
Grain size \geq #230 Sieve (g/day)	0.76	3.18	2.05	0.84	0.97
Grain Size \leq # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.41
HBS3					
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	3/5/2014
Grain size \geq #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.50
Grain Size \leq # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.41
HBS4					
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	3/5/2014
Grain size \geq #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.45
Grain Size \leq # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	0.42
HBSC1					
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	2/7/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.01
Grain Size \leq # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.12

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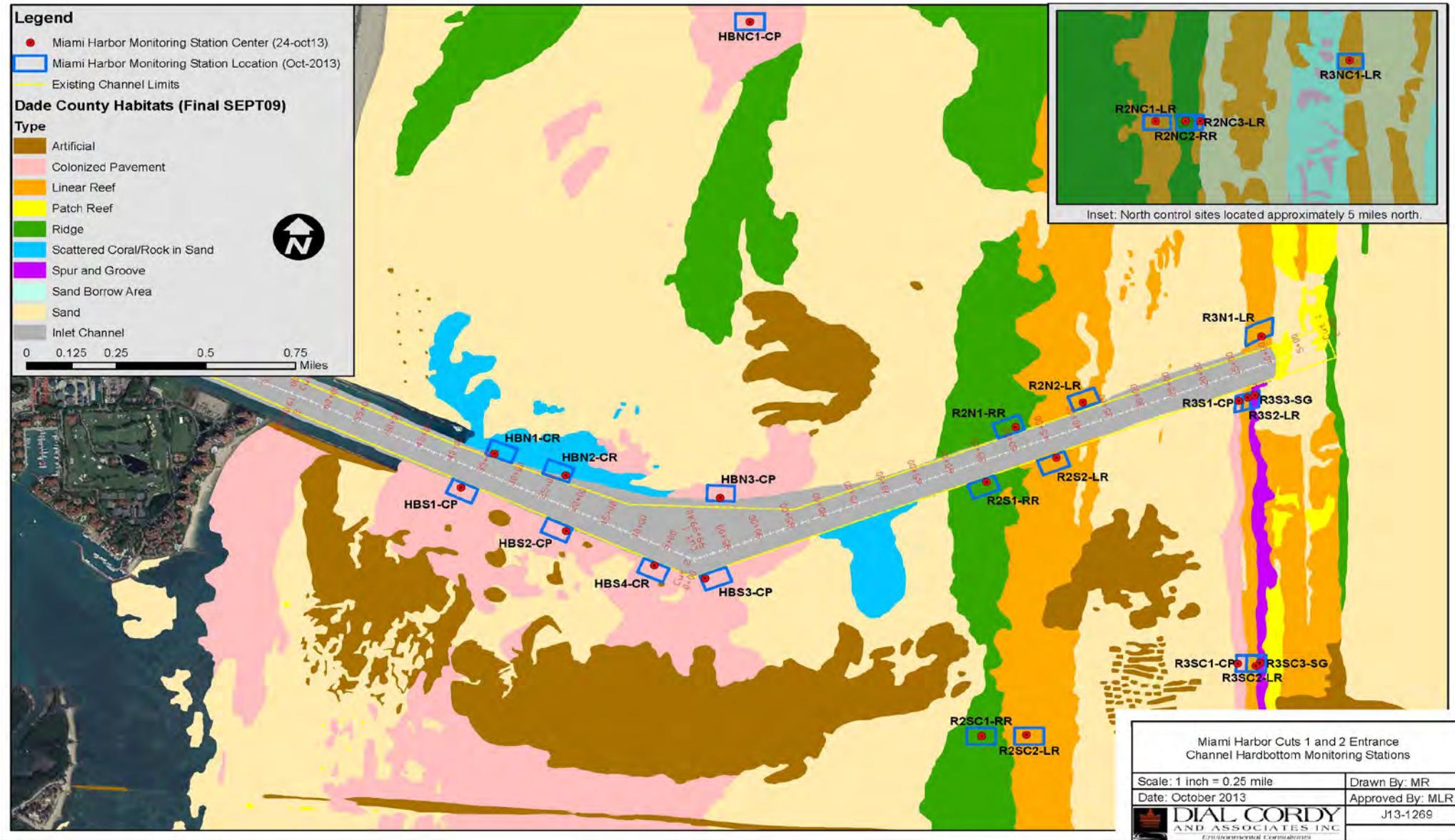
Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. The use of the green valves on the scows has been restricted or stopped completely to reduce the amount of overflow.
7. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
8. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging and ongoing cutterhead dredge scow loading operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.



Weekly Offshore Coral Stress and Sediment Block Compliance Report 025
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Week 25 05/07/14-05/13/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. During Compliance Week 25 (May 7, 2014 to May 13, 2014), the cutterhead dredge Texas (STA 94+61 to 95+23) pumped dredge material to the Spider Barge (STA 89+20) in Cut 1. Biological monitoring was required for sites within 750 m of an active dredge and included HBN3, HBS2, HBS3, and HBS4, as well as reference sites HBNC1 and HBSC1 (Figure 1). Environmental factors during Week 25 of compliance monitoring made conditions unsafe for offshore dive operations on 6.5/7 days. Only HBN2, HBN3, HBNC1, HBS3 and HBSC1 were monitored once in Week 25, due to adverse weather which created unsafe diving conditions. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Weekly Coral Stress Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

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Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Partial mortality	Sedimentation	Dead tissue around the base margin of the colony
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as

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required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design used in the Broward County Shore Protection Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibial growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

Results

Coral Stress Surveys

Weekly compliance monitoring was only conducted during the first half of the first day of compliance Week 25. Data were collected once for 5/7 sites within 750 m of dredging operations (i.e., HBN2, HBN3, HBNC1, HBS3, and HBSC1). HBS2 and HBS4 were not possible to monitor due to unsafe diving conditions for 6.5/7 days. Monitored sites were only monitored once due to adverse weather and diving conditions. Hazardous environmental conditions including high winds (>15 knots) and resulting waves persisted through 6.5/7 monitoring days. Coral condition data for reference sites (i.e., HBNC1 and HBSC1) and channel-side sites were compared using a two-sampled t-test ($p \leq 0.05$).

Two of three sites surveyed exhibited stress levels that were significantly different than their corresponding reference sites (i.e., HBN2 and HBS3; Table 2). Although HBN3 was elevated (0.96 ± 0.20), it was not significantly different from the reference site. Stress levels at reference sites, HBNC1 and HBSC1, were 0.75 ± 0.45 and 0.66 ± 0.48 respectively. Channel-side site stress levels ranged from 0.90 ± 0.31 (HBS3) to 1.00 ± 0.00 (HBN2; Table 2). Elevated stress levels of permanently marked corals across channel-side and reference sites were documented by scientific divers as being predominantly attributed to sediment accumulation on the colony, extended polyps, and/or excess mucus production. Sediment accumulation was the most common stress condition at HBN2; partial burial was common at HBN2 and HBN3, and recent partial mortality was present among all surveyed sites, most notably at HBS3 and HBN3. The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was present in permanently marked corals at all sites visited during Week 25 of compliance monitoring.

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Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 25. Permanently marked corals at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators (e.g., sediment accumulation, extended polyps, etc.).

Area	Site	Scleractinian Condition					
		First Survey			Second Survey		
		Mean	SD	N	Mean	SD	N
South Sites	HBS1	NA	NA	NA	NA	NA	NA
	HBS2	NA	NA	NA	NA	NA	NA
	HBS3	0.90*	0.31	29	NA	NA	NA
	HBS4	NA	NA	NA	NA	NA	NA
	HBSC1	0.66	0.48	29	NA	NA	NA
North Sites	HBN2	1.00*	0.00	15	NA	NA	NA
	HBN3	0.96	0.20	26	NA	NA	NA
	HBNC1	0.75	0.45	12	NA	NA	NA

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

NA: No data collected.

*: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test.

Sediment Block Survey

No sediment was found accumulating on sediment blocks at any compliance monitoring sites in Week 25.

Table 3: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 25. All measurements are in mm.

Area	Site	Sediment Accumulation (mm)	N
South Sites	HBS1	0	1
	HBS2	0	1
	HBS3	0	1
	HBS4	0	1
	HBSC1	0	1
North Sites	HBN2	0	1
	HBN3	0	1
	HBNC1	0	1

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 4).

Table 4: Sediment accumulation data collected from sediment traps since October 2013. Coarse ($\geq \#230$ sieve) and fine ($\leq \#230$ sieve) grain sedimentation rates are presented in grams per day.

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Site	Baseline	Month 1	Month 2	Month 3	Month 4
HBN1					
Sample Start Date	10/21/2013				
Sample End Date	11/18/2013				
Grain size \geq #230 Sieve (g/day)	6.98	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.			
Grain Size \leq # 230 Sieve (g/day)	0.87				
HBN2					
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	2/7/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	2.51	3.65	1.87	1.15	2.35
Grain Size \leq # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.41
HBN3					
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	2/9/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	4.13	3.38	3.23	1.83	1.24
Grain Size \leq # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	0.46
HBNC1					
Sample Start Date	10/15/2013	11/12/2013	-	1/13/2014	2/7/2014
Sample End Date	11/12/2013	1/13/2014	-	2/7/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	0.37	0.40	-	0.02	0.01
Grain Size \leq # 230 Sieve (g/day)	0.76	0.99	-	0.16	0.13
HBS1					
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	3/7/2014
Grain size \geq #230 Sieve (g/day)	0.67	2.42	1.21	0.95	1.04
Grain Size \leq # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.40
HBS2					
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	3/7/2014
Grain size \geq #230 Sieve (g/day)	0.76	3.18	2.05	0.84	0.97
Grain Size \leq # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.41
HBS3					
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	3/5/2014
Grain size \geq #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.50
Grain Size \leq # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.41
HBS4					
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	2/8/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	3/5/2014
Grain size \geq #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.45
Grain Size \leq # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	0.42
HBSC1					
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	2/7/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	3/6/2014
Grain size \geq #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.01
Grain Size \leq # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.12

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

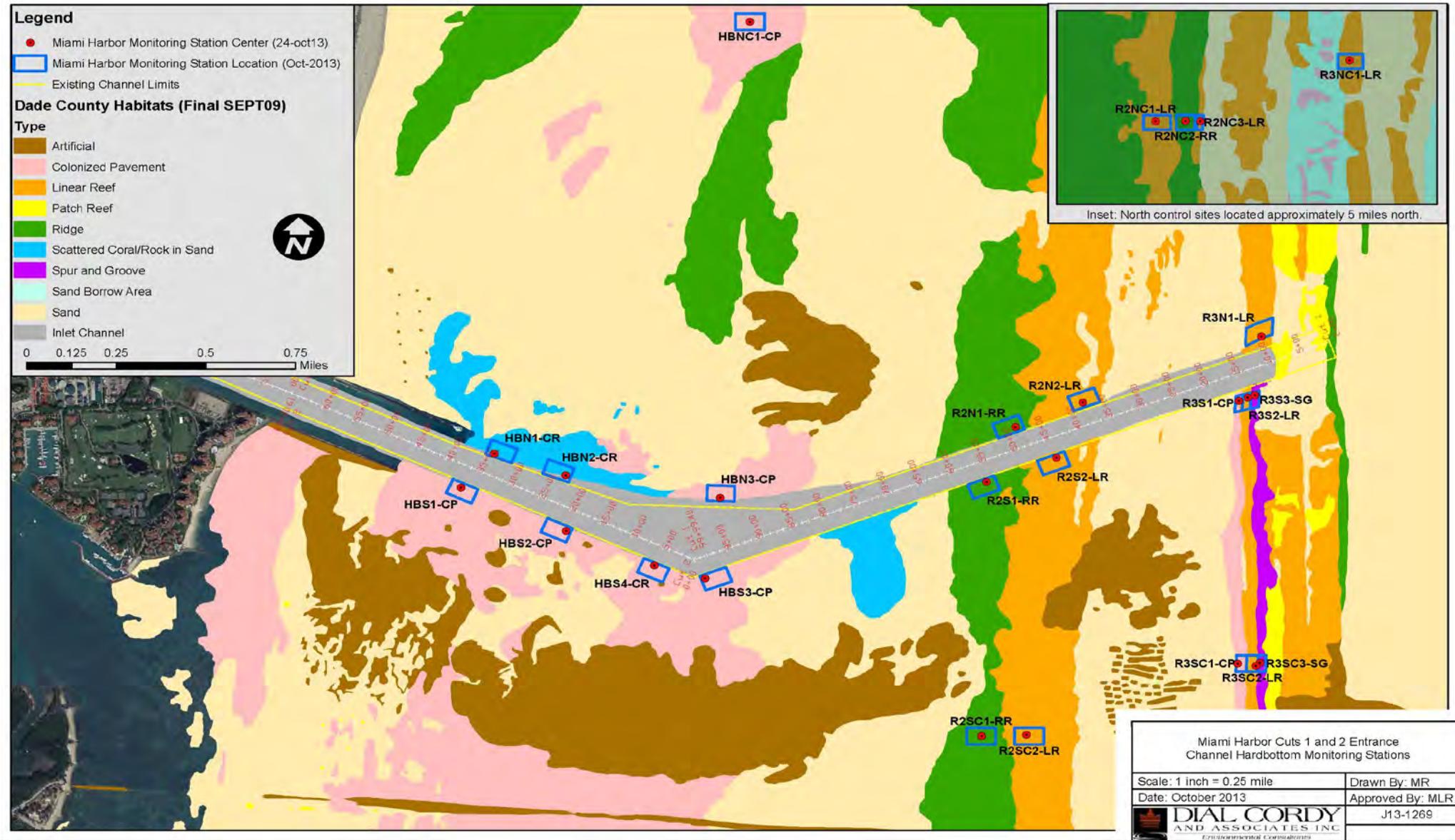
1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.

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2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from of 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.
2. Analysis and comparison of overall weather conditions during initial baseline vs. compliance will be undertaken to try to determine if turbid conditions described above are related to natural weather events (passage of multiple cold fronts) or initial hopper dredging and ongoing cutterhead dredge scow loading operations.
3. Species specific stress responses in corals reveal differing patterns in time and space. The long-term, repetitive monitoring at each of these sites may allow differentiation between background stresses and project related stress events.



Miami Harbor Phase III Federal Channel Expansion, FDEP Permit No. 0305721-001-BI - Week 26 Coral Stress & Sediment Block Monitoring Report Submittal

Kruempel, Craig

Sent: Wednesday, May 28, 2014 3:32 PM

To: Rinne, Andrea; Becky Hope (bhope@miamidade.gov); Chris Dearing [cdearing@glld.com]; Chris Pomfret (CPomfret@glld.com); Conn, Heather; Kruempel, Craig; Hague, Erin; JCP Compliance [JCPCompliance@dep.state.fl.us]; Kevin Zimmerman [KZimmerman@glld.com]; Laurel Reichold [Laurel.P.Reichold@usace.army.mil]; Martha Robbart (mrobbart@dialcordy.com); Matt Miller (matthew.j.miller@usace.army.mil); Michelle L. Loewe (MLLoewe@glld.com); Nestor.A.Rivera@usace.army.mil; S. Thanner [ThannS@miamidade.gov]; Shealy.C.Bowell@usace.army.mil; Terri Jordan-Sellers (Terri.Jordan-Sellers@usace.army.mil)

No coral stress and sediment block monitoring was required or performed during Week 26 (May 14, 2014 and May 20, 2014) because dredging operations were not conducted within 750 meters of the offshore monitoring sites as required in the FDEP permit. Therefore, no coral stress and sediment block monitoring report will be submitted for Week 26 and this email serves as the weekly notification of activity during Week 26.

A copy of this correspondence and all subsequent Offshore Coral Stress & Sediment Block Monitoring Reports will be saved to the 4Projects site in the 10.Agency/Agency/6 Hardbottom Monitoring/6.2 Construction folder.

If you have any questions in regards to this submittal, please contact Terri Jordan-Sellers (Terri.Jordan-Sellers@usace.army.mil).

Thanks.

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Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. During Compliance Week 27 (May 21, 2014 to May 27, 2014), the cutterhead dredge Texas chopped rock in Cut 1 (STA 94+40 to 99+58) and Cut 2 (STA 2+06 to 4+93). The Spider barge loaded scows in Cut 1 from STA 78+50 to 89+00. Biological monitoring was required for sites within 750 m of an active dredge and included HBN2, HBN3, HBS2, HBS3, HBS4 and R2S1 as well as reference sites HBNC1, HBSC1, and R2SC1 (Figure 1). Environmental factors during Week 27 of compliance monitoring made conditions unsafe for offshore dive operations on 1/7 days. As a result, monitoring was conducted at all sites twice, except HBN3, which was too close to the dredge to safely conduct dive operations. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Weekly Coral Stress Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1"

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would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Partial mortality	Sedimentation	Dead tissue around the base margin of the colony
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

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Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design used in the Broward County Shore Protection Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibiotic growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

Results

Coral Stress Surveys

Weekly compliance monitoring data were collected twice for all sites within 750 m of dredging operations (i.e., HBN2, HBN3, HBS1, HBS2, HBS3, HBS4, and R2S1), with the exception of HBN3, which was only monitored once because dredging operations were ongoing in the vicinity during the second survey period, making dive conditions unsafe. Coral condition data for reference sites HBNC1, HBSC1, and R2SC1 and channel-side sites were compared using a two-sampled t-test ($p \leq 0.05$).

All channel-side sites surveyed exhibited stress levels that were significantly different than their corresponding reference sites (Table 2) during one or both monitoring surveys, except for the two sites furthest from dredging operations (i.e., HBS1 and HBN2). Stress levels at reference sites ranged from 0.53 ± 0.51 (HBSC1) to 0.83 ± 0.38 (R2SC1 and HBNC1) whereas stress levels at channel-side sites ranged from 0.72 ± 0.46 (HBS1) to 1.0 ± 0.0 (HBN3; Table 2). Significantly elevated stress levels of permanently marked corals across channel-side sites were documented by scientific divers as being predominantly attributed to accumulation of fine sediment on the colony, extended polyps, and/or excess mucus. Sediment accumulation was widespread at all channel-side sites but was most notable at HBN3 and R2S1 where nearly all marked corals had a buildup of fine sediment on top of, or around the base of, the coral colonies. Partial mortality at the base of several corals was documented under accumulated fine

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sediment. The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was present in permanently marked corals at HBN3, HBNC1, HBS1, HBS2, HBS4, HBSC1, R2S1, and R2SC1.

Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 27. Permanently marked corals at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators (e.g., sediment accumulation, extended polyps, etc.).

Area	Site	Scleractinian Condition					
		First Survey			Second Survey		
		Mean	SD	N	Mean	SD	N
South Sites	HBS1	0.72	0.46	18	0.72	0.46	18
	HBS2	0.95*	0.22	21	0.95*	0.22	21
	HBS3	0.96*	0.19	28	0.86*	0.36	28
	HBS4	0.84	0.37	25	0.92*	0.28	25
	HBSC1	0.80	0.41	30	0.53	0.51	30
	R2S1	0.89	0.31	28	0.93*	0.26	28
	R2SC1	0.83	0.38	30	0.63	0.49	30
North Sites	HBN2	0.93	0.27	14	0.86	0.36	14
	HBN3	1.00*	0.00	26	NA	NA	NA
	HBNC1	0.75	0.45	12	0.83	0.39	12

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

NA: No data collected.

*: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test.

Sediment Block Survey

No sediment was found accumulating on sediment blocks at any compliance monitoring sites in Week 27 (Table 4).

Table 4: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 27. All measurements are in mm.

Area	Site	Sediment Accumulation (mm)	N
South Sites	HBS1	0	1
	HBS2	0	1
	HBS3	0	1
	HBS4	0	1
	HBSC1	0	1
North Sites	HBN2	0	1
	HBN3	0	1
	HBNC1	0	1

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Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 5).

**Table 5: Sediment accumulation data collected from sediment traps since October 2013.
Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in grams per day.**

Site	Baseline	Month 1	Month 2	Month 3	Month 4	Month 5
HBN1						
Sample Start Date	10/21/2013					
Sample End Date	11/18/2013					
Grain size \geq #230 Sieve (g/day)	6.98	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.				
Grain Size \leq # 230 Sieve (g/day)	0.87					
HBN2						
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	2/7/2014	3/5/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	3/6/2014	4/2/2014
Grain size \geq #230 Sieve (g/day)	2.51	3.65	1.87	1.15	2.35	4.91
Grain Size \leq # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.41	0.70
HBN3						
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	2/9/2014	3/6/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	3/6/2014	4/3/2014
Grain size \geq #230 Sieve (g/day)	4.13	3.38	3.23	1.83	1.24	3.28
Grain Size \leq # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	0.46	1.01
HBNC1						
Sample Start Date	10/15/2013	11/12/2013	-	1/13/2014	2/7/2014	3/6/2014
Sample End Date	11/12/2013	1/13/2014	-	2/7/2014	3/6/2014	4/2/2014
Grain size \geq #230 Sieve (g/day)	0.37	0.40	-	0.02	0.01	0.08
Grain Size \leq # 230 Sieve (g/day)	0.76	0.99	-	0.16	0.13	1.09
HBS1						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	2/8/2014	3/7/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	3/7/2014	4/4/2014
Grain size \geq #230 Sieve (g/day)	0.67	2.42	1.21	0.95	1.04	TBD
Grain Size \leq # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.40	TBD
HBS2						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	2/8/2014	3/7/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	3/7/2014	4/4/2014
Grain size \geq #230 Sieve (g/day)	0.76	3.18	2.05	0.84	0.97	TBD
Grain Size \leq # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.41	TBD
HBS3						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	2/8/2014	3/5/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	3/5/2014	4/2/2014
Grain size \geq #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.50	0.43
Grain Size \leq # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.41	0.72
HBS4						
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	2/8/2014	3/5/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	3/5/2014	4/2/2014
Grain size \geq #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.45	0.61
Grain Size \leq # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	0.42	1.09
HBSC1						
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	2/7/2014	3/6/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	3/6/2014	4/2/2014
Grain size \geq #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.01	0.03

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Week 27 05/21/14-05/27/14 Dredge Activity

Site	Baseline	Month 1	Month 2	Month 3	Month 4	Month 5
Grain Size ≤ # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.12	0.32

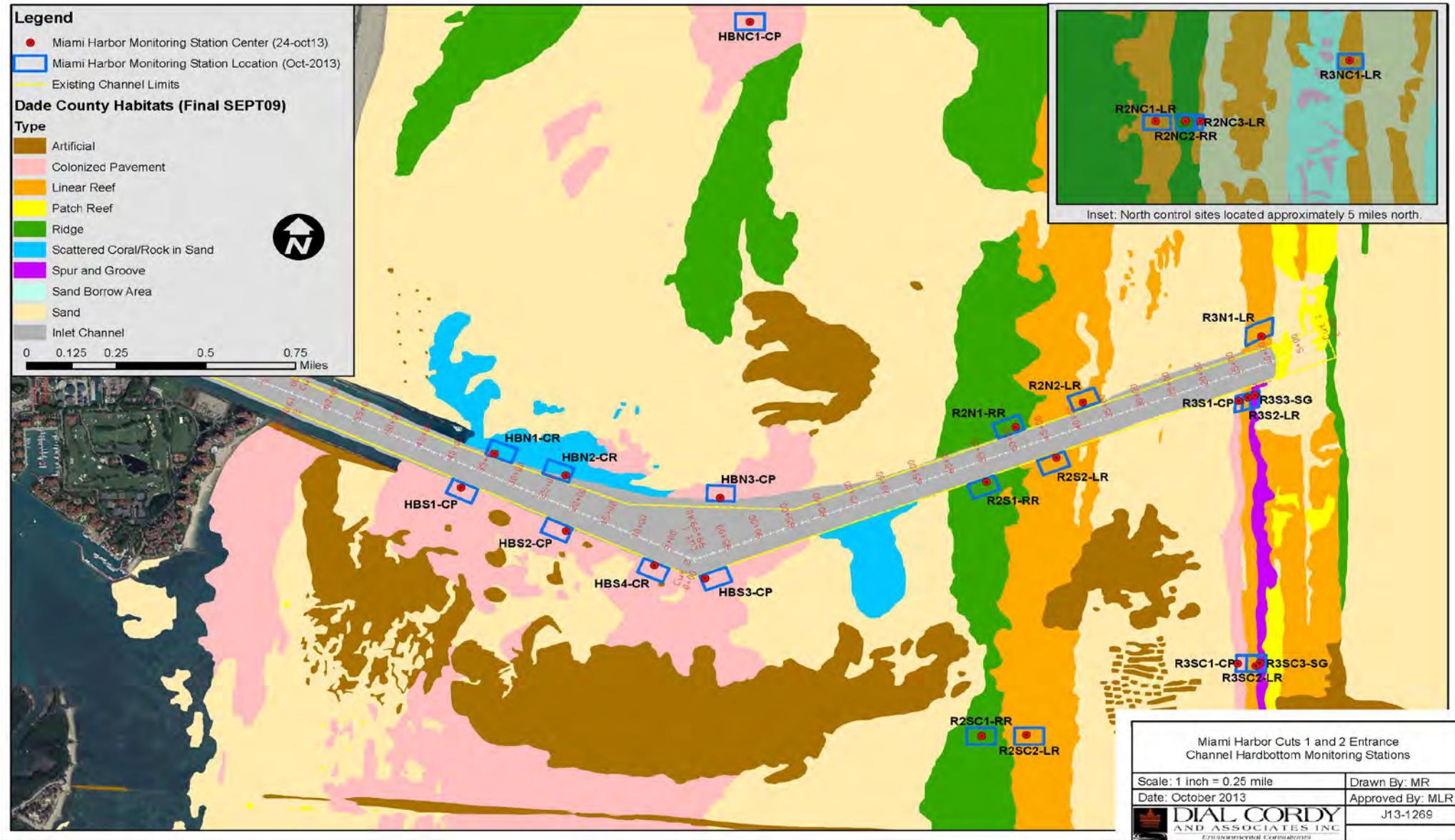
Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.



Weekly Offshore Coral Stress and Sediment Block Compliance Report 028
FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening
Week 28 05/28/14-06/03/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. During Compliance Week 28 (May 28, 2014 to June 3, 2014), the cutterhead dredge Texas chopped rock in Cut 2 from STA 4+50 to 12+50; the Spider barge loaded scows in Cut 1 from STA 84+50 to 94+00; and Dredge 55 worked in Cut 2 from STA 45+60 to 53+60. Biological monitoring was required for sites within 750 m of an active dredge and included HBN2, HBN3, HBS1, HBS2, HBS3, and HBS4 as well as reference sites HBNC1 and HBSC1 (Figure 1). Environmental factors during Week 28 of compliance monitoring made conditions unsafe for offshore dive operations on 2/7 days. As a result, monitoring was conducted at all sites twice, except HBN3, which was too close to the dredge to safely conduct dive operations. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Weekly Coral Stress Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1"

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would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Partial mortality	Sedimentation	Dead tissue around the base margin of the colony
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

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Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design used in the Broward County Shore Protection Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibiotic growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed. Narrative

Results

Coral Stress Surveys

Weekly compliance monitoring data were collected twice for all sites within 750 m of dredging operations (i.e., HBN2, HBN3, HBS1, HBS2, HBS3, HBS4, and R2S1), with the exception of HBN3, which was not monitored because dredging operations were ongoing in the vicinity during the second survey period, making dive conditions unsafe. Coral condition data for reference sites (HBNC1 and HBSC1), and channel-side sites were compared using a two-sampled t-test ($p \leq 0.05$).

All channel-side sites surveyed exhibited stress levels that were significantly different than their corresponding reference sites (Table 2) during one or both monitoring surveys, except for HBN2. Stress levels at reference sites ranged from 0.60 ± 0.50 (HBSC1) to 0.75 ± 0.45 (HBNC1) whereas stress levels at channel-side sites ranged from 0.69 ± 0.48 (HBN2) to 1.0 ± 0.0 (HBS3 and HBS4; Table 2). Significantly elevated stress levels of permanently marked corals across channel-side sites were documented by scientific divers as being predominantly attributed to accumulation of fine sediment on the colony, extended polyps, and/or excess mucus. Sediment accumulation was widespread at all channel-side sites but was most notable at HBS3 and HBS4 where nearly all marked corals had a buildup of fine sediment on top of, or around the base of, the coral colonies. Partial mortality at the base of several corals was documented under accumulated fine sediment. The unknown disease affecting colonies of

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Solenastrea bournoni, which was documented during baseline surveys, was present in permanently marked corals at HBNC1, HBS1, HBS2, HBS4, and HBSC1.

Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 28. Permanently marked corals at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators (e.g., sediment accumulation, extended polyps, etc.).

Area	Site	Scleractinian Condition					
		First Survey			Second Survey		
		Mean	SD	N	Mean	SD	N
South Sites	HBS1	0.83*	0.38	18	0.83	0.38	18
	HBS2	0.86*	0.36	21	0.86	0.36	21
	HBS3	0.74	0.45	27	1.00*	0.00	28
	HBS4	0.88*	0.34	24	1.00*	0.00	25
	HBSC1	0.60	0.50	30	0.70	0.47	30
North Sites	HBN2	0.92	0.28	13	0.69	0.48	13
	HBN3	NA	NA	NA	NA	NA	NA
	HBNC1	0.75	0.45	12	0.75	0.45	12

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

NA: No data collected.

*: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test.

Sediment Block Survey

No sediment was found accumulating on sediment blocks at any compliance monitoring sites in Week 28 (Table 4).

Table 4: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 28. All measurements are in mm.

Area	Site	Sediment Accumulation (mm)	N
South Sites	HBS1	0	1
	HBS2	0	1
	HBS3	0	1
	HBS4	0	1
	HBSC1	0	1
North Sites	HBN2	0	1
	HBN3	0	1
	HBNC1	0	1

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 5).

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**Table 5: Sediment accumulation data collected from sediment traps since October 2013.
Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in
grams per day.**

Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6
HBN1-CR						
Sample Start Date	10/21/2013					
Sample End Date	11/18/2013					
Grain size > #230 Sieve (g/day)	6.98					
Grain Size < # 230 Sieve (g/day)	0.87					
HBN2-CR						
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	3/5/2014	4/4/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	4/2/2014	5/3/2014
Grain size > #230 Sieve (g/day)	2.51	3.65	1.87	1.15	4.91	2.74
Grain Size < # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.70	0.48
HBN3-CP						
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	3/6/2014	4/3/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	4/3/2014	5/3/2014
Grain size > #230 Sieve (g/day)	4.13	3.38	3.23	1.83	3.28	1.20
Grain Size < # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	1.01	0.54
HBNC1-CP						
Sample Start Date	10/15/2013	11/12/2013	1/13/2014	-	3/6/2014	4/2/2014
Sample End Date	11/12/2013	1/13/2014	2/7/2014	-	4/2/2014	5/3/2014
Grain size > #230 Sieve (g/day)	0.37	0.40	0.02	-	0.08	0.02
Grain Size < # 230 Sieve (g/day)	0.76	0.99	0.16	-	1.09	0.19
HBS1-CP						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	3/7/2014	4/4/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	4/4/2014	5/3/2014
Grain size > #230 Sieve (g/day)	0.67	2.42	1.21	0.95	0.77	0.44
Grain Size < # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.74	0.26
HBS2-CP						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	3/7/2014	4/4/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	4/4/2014	5/3/2014
Grain size > #230 Sieve (g/day)	0.76	3.18	2.05	0.84	1.66	0.54
Grain Size < # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.50	0.32
HBS3-CP						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	4/2/2014	4/30/2014
Grain size > #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.43	0.26
Grain Size < # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.72	0.36
HBS4-CR						
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	4/2/2014	4/30/2014
Grain size > #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.61	0.33
Grain Size < # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	1.09	0.50
HBSC1-CP						
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	3/6/2014	4/2/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	4/2/2014	4/30/2014
Grain size > #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.03	0.01
Grain Size < # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.32	0.08

Adaptive Management

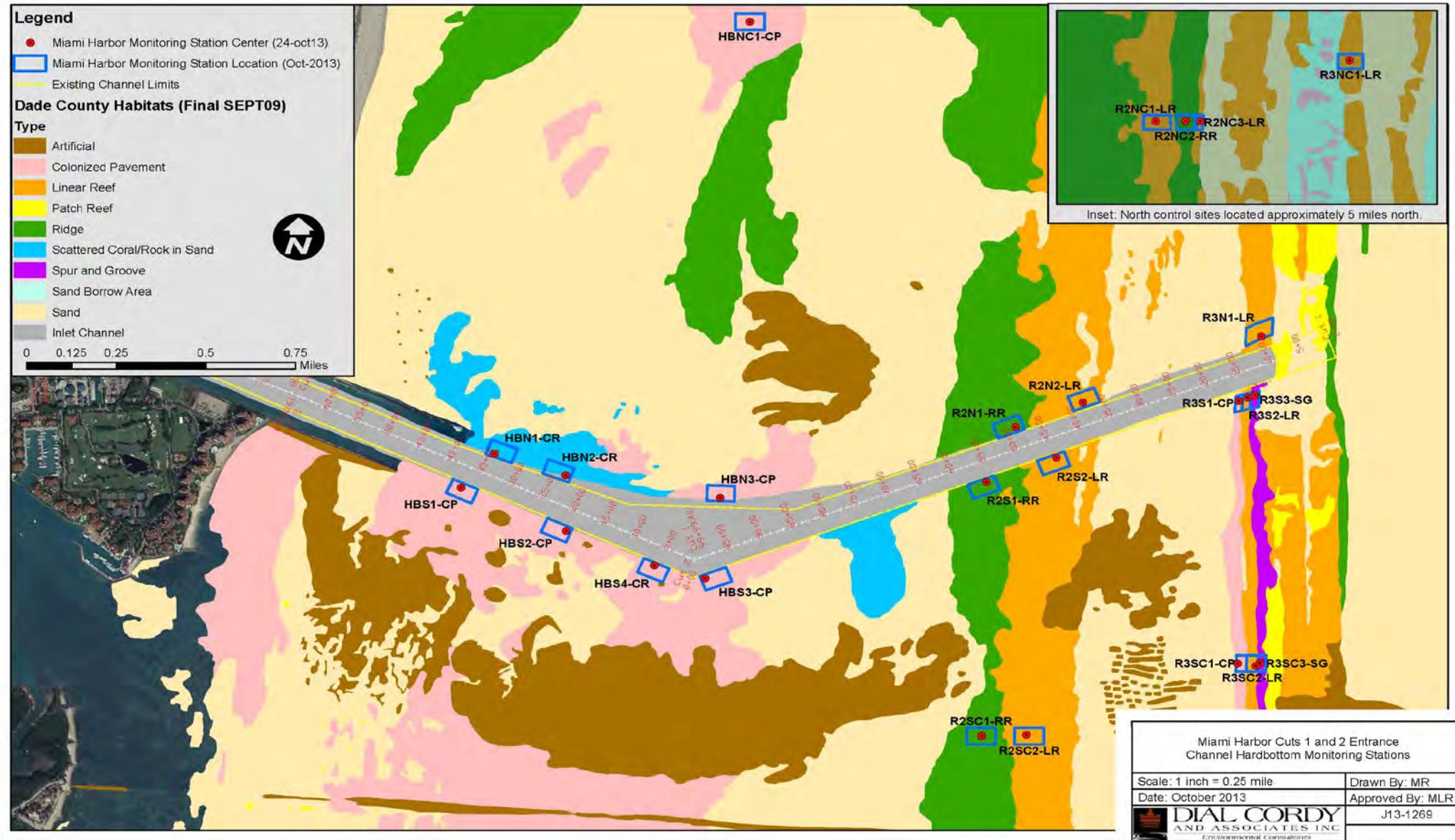
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Week 28 05/28/14-06/03/14 Dredge Activity

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.



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Week 29 06/04/14-06/10/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. During Compliance Week 29 (June 4, 2014 to June 10, 2014), the cutterhead dredge Texas chopped rock in Cut 1 from STA 82+78 to 99+99; the Spider barge loaded scows in Cut 1 from STA 70+00 to 79+50; the Dredge 55 worked in Cut 2 from STA 44+80 to 56+00; and the hopper dredge Liberty began dredging in Cut 1 from STA 5+00 to 99+99. The Liberty began dredging on June 7, in the middle of the compliance week. Biological monitoring was required for sites within 750 m of an active dredge and included all hardbottom, middle, and outer reef monitoring sites (Figure 1). Environmental conditions during Week 29 of compliance monitoring made conditions unsafe for offshore dive operations on 6/7 days, adverse environmental conditions included reduced visibility at channel-side sites on 4/7 days and thunderstorms with lightning on 2/7 days. Biological monitoring was conducted at all hardbottom and middle reef sites once, with the exception of HBS1 and R2S2, which were not surveyed due to reduced visibility. Outer reef channel-side sites were also not surveyed due to reduced visibility and thunderstorm activity. All reference sites were surveyed at least once in Week 29. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind and wave conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Weekly Coral Stress Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus,

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extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of “0” or “1” for each parameter (A score of “0” would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a “1” would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Partial mortality	Sedimentation	Dead tissue around the base margin of the colony
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five

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positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design used in the Broward County Shore Protection Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibiotic growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed. Narrative

Results

Coral Stress Surveys

Weekly compliance monitoring data were collected for all sites within 750 m of dredging operations in hardbottom and middle reef habitats (Table 2). Reference site data were collected for hardbottom and middle reef sites twice and for outer reef sites once, but are not shown here since data at comparative channel-side sites were not collected due to unsafe dive conditions related to thunderstorms and/or reduced visibility. Coral condition data for reference sites (e.g. HBNC1), and channel-side sites were compared using a two-sampled t-test ($p \leq 0.05$). HBS1, R2S2, and all outer reef compliance sites (i.e., R3N1, R3S1, R3S2, and R3S3) were not monitored due to unsafe diving conditions related to thunderstorms or reduced visibility at these sites.

Of the channel-side sites surveyed, most exhibited stress levels that were significantly different than their corresponding reference sites, with the exception of HBN2 and HBN3. Stress levels at reference sites ranged from 0.23 ± 0.43 (R2NC2) to 0.75 ± 0.45 (HBNC1) whereas stress levels

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at channel-side sites ranged from 0.79 ± 0.41 (HBS4) to 1.0 ± 0.0 (R2S1 and R2N1; Table 2). Significantly elevated stress levels of permanently marked corals across channel-side sites were documented by scientific divers as being predominantly attributed to accumulation of fine sediment on the colony, extended polyps, and/or excess mucus. Sediment accumulation was widespread at all channel-side sites but was most notable at R2S1 and R2N1 where all permanently marked scleractinians had a buildup of fine sediment on top of, or around the base of, the colony. Partial mortality at the base of several corals was also documented under accumulated fine sediment. The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was present in permanently marked corals at HBN3, HBNC1, HBS2, HBSC1, R2SC1, and R2NC1.

Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 29. Permanently marked scleractinians at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators (e.g., sediment accumulation, extended polyps, etc.).

Survey Zone	Area	Site	Scleractinian Condition					
			First Survey			Second Survey		
			Mean	SD	N	Mean	SD	N
Hard-bottom	South Sites	HBS1	NA	NA	NA	NA	NA	NA
		HBS2	0.86*	0.36	21	NA	NA	NA
		HBS3	0.86*	0.36	28	NA	NA	NA
		HBS4	0.79*	0.41	24	NA	NA	NA
		HBSC1	0.57	0.50	30	NA	NA	NA
	North Sites	HBN2	0.83	0.39	12	NA	NA	NA
		HBN3	0.85	0.37	26	NA	NA	NA
		HBNC1	0.75	0.45	12	NA	NA	NA
Middle Reef	South Sites	R2S1	1.00*	0.00	28	NA	NA	NA
		R2SC1	0.63	0.49	30	NA	NA	NA
		R2S2	NA	NA	NA	NA	NA	NA
		R2SC2	NA	NA	NA	NA	NA	NA
	North Sites	R2N1	1.00*	0.00	28	NA	NA	NA
		R2NC2	0.23	0.43	30	NA	NA	NA
		R2N2	0.96*	0.20	24	NA	NA	NA
		R2NC1	0.67	0.48	30	NA	NA	NA
Outer Reef	South Sites	R3S1	NA	NA	NA	NA	NA	NA
		R3SC1	NA	NA	NA	NA	NA	NA
		R3S2	NA	NA	NA	NA	NA	NA
		R3SC2	NA	NA	NA	NA	NA	NA
		R3S3	NA	NA	NA	NA	NA	NA
		R3SC3	NA	NA	NA	NA	NA	NA
	North Sites	R3N1	NA	NA	NA	NA	NA	NA
		R3NC1	NA	NA	NA	NA	NA	NA

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

NA: No data.

*****: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test.

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Sediment Block Survey

No sediment accumulated on sediment blocks at any compliance monitoring sites in Week 29 (Table 4).

Table 4: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 29. All measurements are in mm.

Survey Zone	Area	Site	Qualitative Sedimentation (mm)	N
Hardbottom	South	HBS1	N	NA
		HBS2	0	1
		HBS3	0	1
		HBS4	0	1
		HBSC1	0	1
	North	HBN2	0	1
		HBN3	0	1
		HBNC1	0	1
Middle Reef	South	R2S1	0	1
		R2SC1	0	1
		R2S2	NA	NA
		R2SC2	0	1
	North	R2N1	0	1
		R2NC2	0	1
		R2N2	0	1
		R2NC1	0	1
Outer Reef	South	R3S1	NA	NA
		R3SC1	0	1
		R3S2	NA	NA
		R3SC2	0	1
		R3S3	NA	NA
		R3SC3	0	1
	North	R3N1	NA	NA
		R3NC1	0	1

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 5).

Table 5: Sediment accumulation data collected from sediment traps since October 2013. Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in grams per day.

Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6
HBN1-CR						
Sample Start Date	10/21/2013					
Sample End Date	11/18/2013					
Grain size > #230 Sieve (g/day)	6.98					
Grain Size < # 230 Sieve (g/day)	0.87					
HBN2-CR						

SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.

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Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	3/5/2014	4/4/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	4/2/2014	5/3/2014
Grain size > #230 Sieve (g/day)	2.51	3.65	1.87	1.15	4.91	2.74
Grain Size < # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.70	0.48
HBN3-CP						
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	3/6/2014	4/3/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	4/3/2014	5/3/2014
Grain size > #230 Sieve (g/day)	4.13	3.38	3.23	1.83	3.28	1.20
Grain Size < # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	1.01	0.54
HBNC1-CP						
Sample Start Date	10/15/2013	11/12/2013	1/13/2014	-	3/6/2014	4/2/2014
Sample End Date	11/12/2013	1/13/2014	2/7/2014	-	4/2/2014	5/3/2014
Grain size > #230 Sieve (g/day)	0.37	0.40	0.02	-	0.08	0.02
Grain Size < # 230 Sieve (g/day)	0.76	0.99	0.16	-	1.09	0.19
HBS1-CP						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	3/7/2014	4/4/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	4/4/2014	5/3/2014
Grain size > #230 Sieve (g/day)	0.67	2.42	1.21	0.95	0.77	0.44
Grain Size < # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.74	0.26
HBS2-CP						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	3/7/2014	4/4/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	4/4/2014	5/3/2014
Grain size > #230 Sieve (g/day)	0.76	3.18	2.05	0.84	1.66	0.54
Grain Size < # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.50	0.32
HBS3-CP						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	4/2/2014	4/30/2014
Grain size > #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.43	0.26
Grain Size < # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.72	0.36
HBS4-CR						
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	4/2/2014	4/30/2014
Grain size > #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.61	0.33
Grain Size < # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	1.09	0.50
HBSC1-CP						
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	3/6/2014	4/2/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	4/2/2014	4/30/2014
Grain size > #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.03	0.01
Grain Size < # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.32	0.08

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

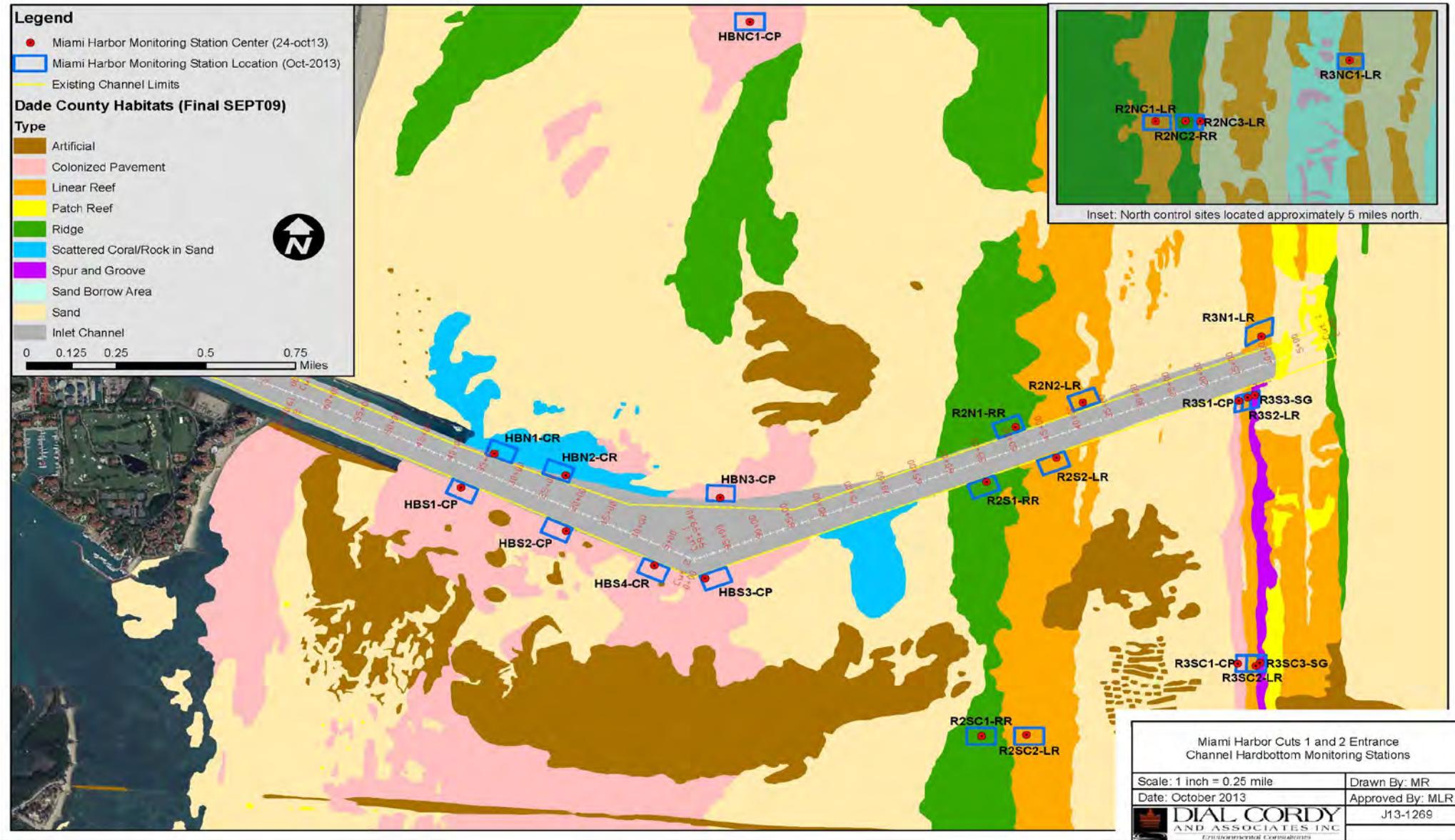
1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from of 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.

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4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.
8. The hopper dredge Liberty is being held to the same minimization of over flow standards as the scows being loaded by the spider barge.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.



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Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. During Compliance Week 30 (June 11, 2014 to June 17, 2014), the cutterhead dredge Texas chopped rock in Cut 1 (STA 84+00 to 99+00) and Cut 2 (STA 0+00 to 7+00); the Spider barge loaded scows in Cut 1 (STA 70+00 to 90+00); Dredge 55 loaded scows in Cut 2 (STA 56+00 to 65+00), Cut 3 (STA 00+00 to 5+00) and FITB (STA 32+00 to 24+75); and the hopper dredge Liberty Island loaded material for offshore disposal in Cut 1 (STA 5+00 to 65+00). Biological monitoring was required for sites within 750 m of an active dredge and included all hardbottom, middle, and outer reef monitoring sites (Figure 1). Adverse environmental conditions (e.g., severe thunderstorms, excessive wind speeds, wave heights, low visibility) during Week 30 of compliance monitoring made conditions unsafe for offshore dive operations during portions of 4/7 days. Low visibility (< 3 feet) and strong currents made conducting the second set of channel-side surveys impossible for several monitoring stations. Biological monitoring was conducted at all hardbottom, middle, and outer reef sites once, with the exception of HBN3 which could not be safely monitored due to its proximity to ongoing dredge operations. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind, wave and traffic conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Weekly Coral Stress Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus,

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extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of “0” or “1” for each parameter (A score of “0” would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a “1” would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of one or more polyps on the coral.
Mucus	Stress	A mucus film is apparent and/or sediment is balled up in mucus.
Paling	Stress	Pale
Bleaching	Stress	White
Partial mortality	Sedimentation	Dead tissue around the base margin of the colony
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Sediment on top of corals (more than dusting)
Partial Burial	Sedimentation	Coral colony partially buried by sediment
Burial	Sedimentation	Coral colony buried, completely covered by sediment

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

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Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design used in the Broward County Shore Protection Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibiotic growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed. Narrative

Results

Coral Stress Surveys

Weekly compliance monitoring data were collected for all sites within 750 m of dredging operations in hardbottom and middle reef habitats, with the exception of HBN3 (see Background section; Table 2). Coral condition data for reference sites (e.g., HBSC1) and channel-side sites (e.g., HBS1) were compared using a two-sampled t-test ($p \leq 0.05$). Most channel-side sites exhibited stress levels that were significantly different than their corresponding reference sites, except sites farthest from dredging activities (i.e., HBN2, HBS1, R3S2, and R3S3). Stress levels at reference sites ranged from 0.20 ± 0.41 (R2NC2) to 0.83 ± 0.39 (HBNC1) whereas stress levels at channel-side sites ranged from 0.36 ± 0.49 (R3S3) to 1.0 ± 0.0 (HBN2, HBS2, HBS3, HBS4, R2S2 and R2N1) (Table 2). Significantly elevated stress levels of permanently marked

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corals across channel-side sites were documented by scientific divers as being predominantly attributed to accumulation of fine sediment on the colony, extended polyps, and/or excess mucus. Sediment accumulation was widespread at all channel-side sites but was most notable at HBN2, HBS2, HBS3, HBS4, R2S2 and R2N1 where all permanently marked scleractinians had a buildup of fine sediment on top of, or around the base of, the colony. Partial mortality at the base of several corals has been documented at several sites. The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was present in permanently marked corals at all hardbottom sites, R2N1, R2N2, R2S1, R2S2, R3N1, R3S2, and R3SC2.

Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 30. Permanently marked scleractinians at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators (e.g., sediment accumulation, extended polyps, etc.).

Survey Zone	Area	Site	Scleractinian Condition					
			First Survey			Second Survey		
			Mean	SD	N	Mean	SD	
Hard-bottom	South	HBS1	0.78	0.43	18	NA	NA	NA
		HBS2	1.00*	0.00	21	0.86*	0.36	21
		HBS3	1.00*	0.00	28	NA	NA	NA
		HBS4	1.00*	0.00	25	NA	NA	NA
		HBSC1	0.60	0.50	30	0.67	0.48	30
	North	HBN2	1.00	0.00	12	NA	NA	NA
		HBN3	NA	NA	NA	NA	NA	NA
		HBNC1	0.83	0.39	12	NA	NA	NA
Middle Reef	South	R2S1	0.96*	0.19	28	NA	NA	NA
		R2SC1	0.70	0.47	30	NA	NA	NA
		R2S2	1.00*	0.00	24	NA	NA	NA
		R2SC2	0.44	0.51	25	NA	NA	NA
	North	R2N1	0.97*	0.18	30	1.00*	0.00	30
		R2NC2	0.20	0.41	30	0.47	0.51	30
		R2N2	0.96*	0.20	25	NA	NA	NA
		R2NC1	0.50	0.51	30	NA	NA	NA
Outer Reef	South	R3S1	0.89*	0.32	19	NA	NA	NA
		R3SC1	0.57	0.51	25	NA	NA	NA
		R3S2	0.60	0.50	25	0.56	0.51	25
		R3SC2	0.51	0.51	21	0.71	0.46	21
		R3S3	0.36	0.49	25	0.40	0.50	25
		R3SC3	0.42	0.50	24	0.50	0.51	24
	North	R3N1	0.64*	0.49	22	0.82*	0.39	22
		R3NC1	0.38	0.49	24	0.46	0.51	24

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

NA: No data.

*: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test.

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Sediment Block Survey

No sediment accumulated on sediment blocks at any compliance monitoring sites in Week 30 (Table 4).

Table 4: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 30. All measurements are in mm.

Survey Zone	Area	Site	Qualitative Sedimentation (mm)	N
Hardbottom	South	HBS1	0	1
		HBS2	0	1
		HBS3	0	1
		HBS4	0	1
		HBSC1	0	1
	North	HBN2	0	1
		HBN3	NA	NA
		HBNC1	0	1
Middle Reef	South	R2S1	0	1
		R2SC1	0	1
		R2S2	0	1
		R2SC2	0	1
	North	R2N1	0	1
		R2NC2	0	1
		R2N2	0	1
		R2NC1	0	1
Outer Reef	South	R3S1	0	1
		R3SC1	0	1
		R3S2	0	1
		R3SC2	0	1
		R3S3	0	1
		R3SC3	0	1
	North	R3N1	0	1
		R3NC1	0	1

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 5).

Table 5: Sediment accumulation data collected from sediment traps since October 2013. Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in grams per day.

Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6
HBN1-CR						
Sample Start Date	10/21/2013	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.				
Sample End Date	11/18/2013					

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Grain size > #230 Sieve (g/day)	6.98					
Grain Size < # 230 Sieve (g/day)	0.87					
HBN2-CR						
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	3/5/2014	4/4/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	4/2/2014	5/3/2014
Grain size > #230 Sieve (g/day)	2.51	3.65	1.87	1.15	4.91	2.74
Grain Size < # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.70	0.48
HBN3-CP						
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	3/6/2014	4/3/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	4/3/2014	5/3/2014
Grain size > #230 Sieve (g/day)	4.13	3.38	3.23	1.83	3.28	1.20
Grain Size < # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	1.01	0.54
HBNC1-CP						
Sample Start Date	10/15/2013	11/12/2013	1/13/2014	-	3/6/2014	4/2/2014
Sample End Date	11/12/2013	1/13/2014	2/7/2014	-	4/2/2014	5/3/2014
Grain size > #230 Sieve (g/day)	0.37	0.40	0.02	-	0.08	0.02
Grain Size < # 230 Sieve (g/day)	0.76	0.99	0.16	-	1.09	0.19
HBS1-CP						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	3/7/2014	4/4/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	4/4/2014	5/3/2014
Grain size > #230 Sieve (g/day)	0.67	2.42	1.21	0.95	0.77	0.44
Grain Size < # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.74	0.26
HBS2-CP						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	3/7/2014	4/4/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	4/4/2014	5/3/2014
Grain size > #230 Sieve (g/day)	0.76	3.18	2.05	0.84	1.66	0.54
Grain Size < # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.50	0.32
HBS3-CP						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	4/2/2014	4/30/2014
Grain size > #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.43	0.26
Grain Size < # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.72	0.36
HBS4-CR						
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	4/2/2014	4/30/2014
Grain size > #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.61	0.33
Grain Size < # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	1.09	0.50
HBSC1-CP						
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	3/6/2014	4/2/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	4/2/2014	4/30/2014
Grain size > #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.03	0.01
Grain Size < # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.32	0.08

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

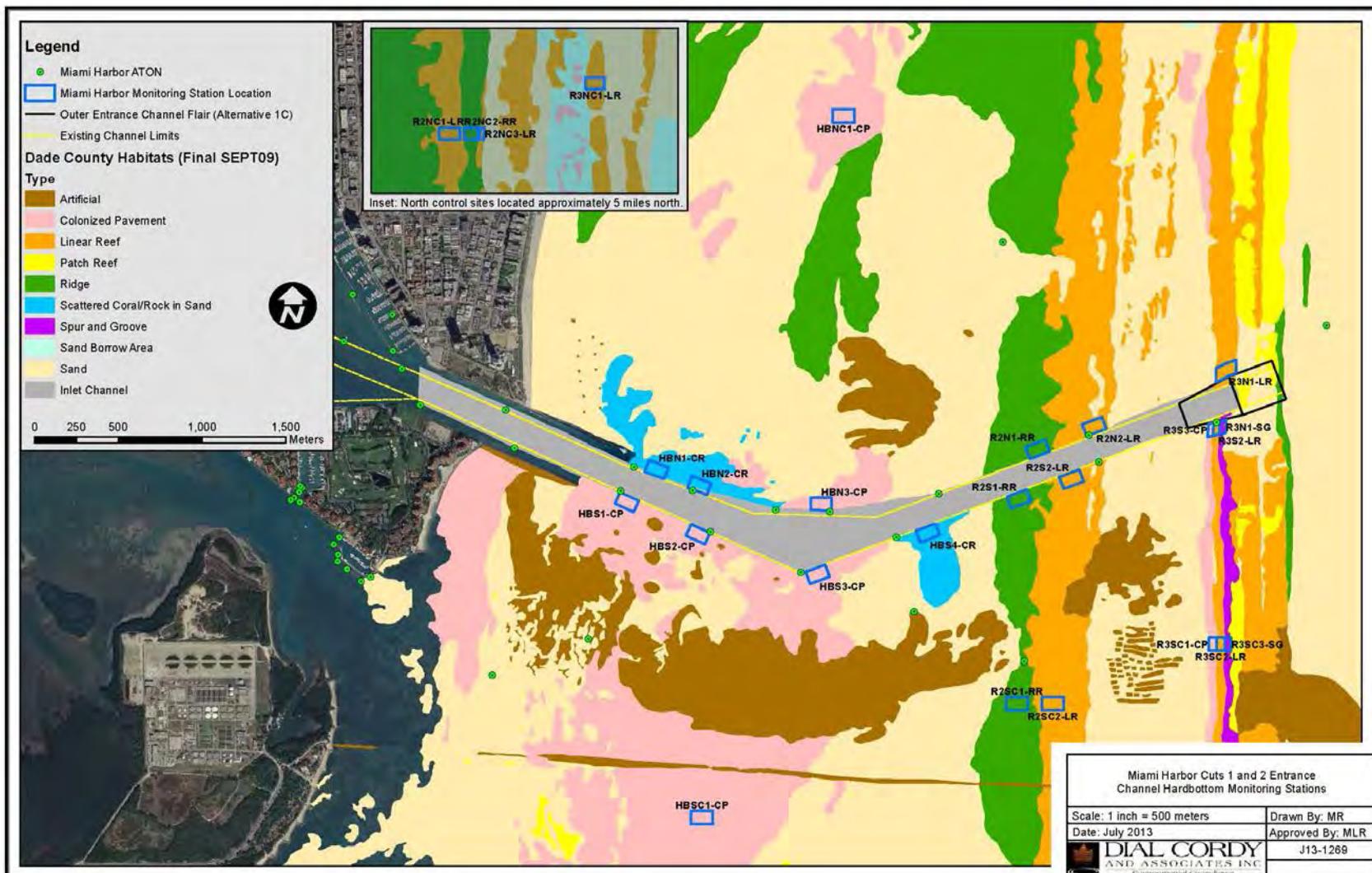
1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.

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3. Spider barge activity ceased from of 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.



Weekly Offshore Coral Stress and Sediment Block Compliance Report 031
FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening
Week 31 06/18/14-06/24/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. During Compliance Week 31 (June 18, 2014 to June 24, 2014), the cutterhead dredge Texas and the Spider Barge worked in Cut 1 (STA 93+80 to 99+00 and STA 69+33 to 79+66); Dredge 55 loaded scows in Cut 2 (STA 53+07 to 60+90); and the hopper dredge Liberty Island loaded material for offshore disposal in Cut 1 (STA 5+00 to 20+00). Biological monitoring was required for sites within 750 m of an active dredge and included all hardbottom (except HBS1), middle, and outer reef monitoring sites (Figure 1). Adverse environmental conditions (e.g., severe thunderstorms, excessive wind speeds, wave heights, and/or low visibility) during Week 31 of compliance monitoring made conditions unsafe for offshore dive operations during portions of 3/7 days. Biological monitoring was conducted twice at all hardbottom, middle, and outer reef sites within 750 m of dredge activity, with the exception of R2S1 which could not be safely monitored a second time due to its proximity to ongoing dredge operations. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind, wave and traffic conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Weekly Coral Stress Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the

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health parameters and assigned a health level of “0” or “1” for each parameter (A score of “0” would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a “1” would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of all polyps on the colony.
Mucus	Sediment Stress	Excessive mucus production resulting in a mucus film and/or sediment balled up in mucus.
Paling	Stress	Live tissue with some loss of color.
Bleaching	Stress	Live tissue with complete loss of color.
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Moderate sediment accumulation on top of colony (more than dusting)
Partial Burial	Sedimentation	Portion(s) of the colony buried by sediment
Burial	Sedimentation	Entire colony buried by sediment
Recent Partial Mortality	Sedimentation	Partial mortality of coral colony appears white with no live polyps visible. Generally, occurs around the margin of the colony. Visible when sediment recedes.

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Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design used in the Broward County Shore Protection Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibiotic growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

Results

Coral Stress Surveys

Weekly compliance monitoring data were collected for all sites within 750 m of dredging operations in hardbottom, middle reef, and outer reef habitats, with the exception of R2S1 (see Background section; Table 2). Coral condition data for reference sites (e.g., R2SC1) and channel-side sites (e.g., R2S1) were compared using a two-sampled t-test ($p \leq 0.05$). Channel-

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side sites located closest to ongoing dredge operations of the Texas and Spider Barge exhibited elevated stress levels that were significantly different than their corresponding reference sites. Stress levels at reference sites ranged from 0.36 ± 0.49 (R3SC3) to 0.83 ± 0.39 (HBNC1) whereas stress levels at channel-side sites ranged from 0.36 ± 0.49 (R3S3) to 1.0 ± 0.0 (R2N1; Table 2). Significantly elevated stress levels of permanently marked corals at channel-side sites were documented by scientific divers as being predominantly attributed to accumulation of fine sediment on the colony, partial burial of the colony by fine sediment, and extended polyps. Sediment accumulation was widespread at many channel-side sites but was most notable at R2N1 where all permanently marked scleractinians were partially buried by fine sediment on top of, or around the base of the colony. Recent partial mortality at the base of several corals has also been documented at several sites, typically in areas where the sediment has receded. The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was present in permanently marked corals at all hardbottom sites, R2N1, R2N2, R2S1, R2S2, R3N1, R3S2, and R3SC2.

Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 31. Permanently marked scleractinians at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators (e.g., sediment accumulation, extended polyps, etc.).

Survey Zone	Area	Site	Scleractinian Condition					
			First Survey			Second Survey		
			Mean	SD	N	Mean	SD	N
Hard-bottom	South	HBS1	NA	NA	NA	NA	NA	NA
		HBS2	0.81	0.40	21	0.81	0.40	21
		HBS3	0.93*	0.26	29	0.54	0.51	28
		HBS4	0.84*	0.37	25	0.72	0.46	25
		HBSC1	0.60	0.50	30	0.60	0.50	30
	North	HBN2	0.73	0.47	11	0.92	0.28	13
		HBN3	0.77	0.43	26	0.88	0.33	26
		HBNC1	0.75	0.45	12	0.83	0.39	12
Middle Reef	South	R2S1	0.74*	0.45	27	NA	NA	NA
		R2SC1	0.40	0.50	30	NA	NA	NA
		R2S2	0.78*	0.42	23	0.91*	0.29	23
		R2SC2	0.44	0.51	25	0.40	0.50	25
	North	R2N1	1.00*	0.00	30	1.00*	0.00	30
		R2NC2	0.50	0.51	30	0.50	0.51	30
		R2N2	0.84*	0.37	25	0.75*	0.44	24
		R2NC1	0.70	0.47	30	0.52	0.51	29
Outer Reef	South	R3S1	0.58	0.51	19	0.63	0.50	19
		R3SC1	0.38	0.49	24	0.46	0.51	24
		R3S2	0.52	0.51	25	0.72	0.46	25
		R3SC2	0.57	0.51	21	0.52	0.51	21
		R3S3	0.36	0.49	25	0.52	0.51	25
		R3SC3	0.36	0.49	25	0.42	0.50	24
	North	R3N1	0.68	0.48	22	0.74	0.45	23
		R3NC1	0.58	0.50	24	0.67	0.48	24

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N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

NA: No data.

*: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test.

Sediment Block Survey

No sediment accumulated on sediment blocks at any compliance monitoring sites in Week 31 (Table 4).

Table 4: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 31. All measurements are in mm. N represents the number of sediment blocks surveyed.

Survey Zone	Area	Site	Qualitative Sedimentation (mm)	N
Hardbottom	South	HBS1	NA	NA
		HBS2	0	1
		HBS3	0	1
		HBS4	0	1
		HBSC1	0	1
	North	HBN2	0	1
		HBNC3	0	1
		HBNC1	0	1
Middle Reef	South	R2S1	0	1
		R2SC1	0	1
		R2S2	0	1
		R2SC2	0	1
	North	R2N1	0	1
		R2NC2	0	1
		R2N2	0	1
		R2NC1	0	1
Outer Reef	South	R3S1	0	1
		R3SC1	0	1
		R3S2	0	1
		R3SC2	0	1
		R3S3	0	1
		R3SC3	0	1
	North	R3N1	0	1
		R3NC1	0	1

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 5).

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Table 5: Sediment accumulation data collected from sediment traps since October 2013.
Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in grams per day.

Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6
HBN1-CR						
Sample Start Date	10/21/2013					
Sample End Date	11/18/2013					
Grain size > #230 Sieve (g/day)	6.98					
Grain Size < # 230 Sieve (g/day)	0.87					
		SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.				
HBN2-CR						
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	3/5/2014	4/4/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	4/2/2014	5/3/2014
Grain size > #230 Sieve (g/day)	2.51	3.65	1.87	1.15	4.91	2.74
Grain Size < # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.70	0.48
HBN3-CP						
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	3/6/2014	4/3/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	4/3/2014	5/3/2014
Grain size > #230 Sieve (g/day)	4.13	3.38	3.23	1.83	3.28	1.20
Grain Size < # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	1.01	0.54
HBNC1-CP						
Sample Start Date	10/15/2013	11/12/2013	1/13/2014	-	3/6/2014	4/2/2014
Sample End Date	11/12/2013	1/13/2014	2/7/2014	-	4/2/2014	5/3/2014
Grain size > #230 Sieve (g/day)	0.37	0.40	0.02	-	0.08	0.02
Grain Size < # 230 Sieve (g/day)	0.76	0.99	0.16	-	1.09	0.19
HBS1-CP						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	3/7/2014	4/4/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	4/4/2014	5/3/2014
Grain size > #230 Sieve (g/day)	0.67	2.42	1.21	0.95	0.77	0.44
Grain Size < # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.74	0.26
HBS2-CP						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	3/7/2014	4/4/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	4/4/2014	5/3/2014
Grain size > #230 Sieve (g/day)	0.76	3.18	2.05	0.84	1.66	0.54
Grain Size < # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.50	0.32
HBS3-CP						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	4/2/2014	4/30/2014
Grain size > #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.43	0.26
Grain Size < # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.72	0.36
HBS4-CR						
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	4/2/2014	4/30/2014
Grain size > #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.61	0.33
Grain Size < # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	1.09	0.50
HBSC1-CP						
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	3/6/2014	4/2/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	4/2/2014	4/30/2014
Grain size > #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.03	0.01
Grain Size < # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.32	0.08

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

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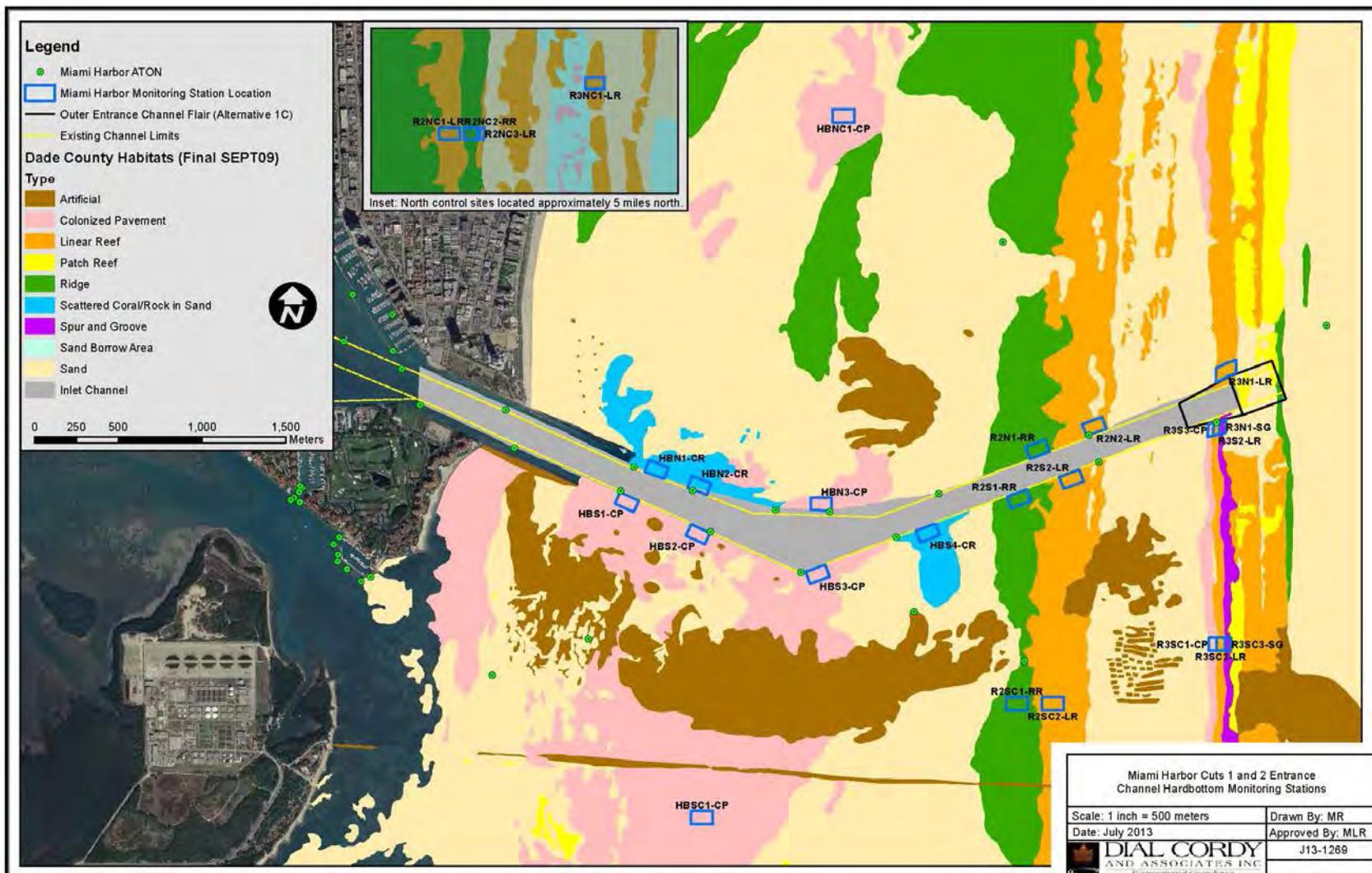
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Week 31 06/18/14-06/24/14 Dredge Activity

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.
8. Liberty Island dredging with no overflow as of 6/19/14.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.



Weekly Offshore Coral Stress and Sediment Block Compliance Report 32
FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening
Week 32 06/25/14-07/01/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. During Compliance Week 32 (June 25, 2014 to July 1, 2014), the cutterhead dredge Texas and the Spider Barge worked in Cut 1 (STA 69+15 to 72+00 and STA 79+66 to 86+27); Dredge 55 loaded scows in Cut 2 (STA 23+30 to 65+00); and the hopper dredge Liberty Island loaded material for offshore disposal in Cut 1 (STA 5+00 to 30+00). Biological monitoring was required for sites within 750 m of an active dredge and included all hardbottom, middle, and outer reef monitoring sites (Figure 1). Adverse environmental conditions (e.g., severe thunderstorms, excessive wind speeds, wave heights, and/or low visibility) during Week 32 of compliance monitoring made conditions unsafe for offshore dive operations during portions of 4/7 days. Biological monitoring was conducted twice at all hardbottom, middle, and outer reef sites within 750 m of dredge activity, with the exception of HBS2 and HBN2 which could not be monitored due to safety constraints. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind, wave and traffic conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Weekly Coral Stress Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each

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Week 32 06/25/14-07/01/14 Dredge Activity

parameter (A score of “0” would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a “1” would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of all polyps on the colony.
Mucus	Sediment Stress	Excessive mucus production resulting in a mucus film and/or sediment balled up in mucus.
Paling	Stress	Live tissue with some loss of color.
Bleaching	Stress	Live tissue with complete loss of color.
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Moderate sediment accumulation on top of colony (more than dusting)
Partial Burial	Sedimentation	Portion(s) of the colony buried by sediment
Burial	Sedimentation	Entire colony buried by sediment
Recent Partial Mortality	Sedimentation	Partial mortality of coral colony appears white with no live polyps visible. Generally, occurs around the margin of the colony. Visible when sediment recedes.

Weekly Sediment Block Survey

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Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design used in the Broward County Shore Protection Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibiotic growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

Results

Coral Stress Surveys

Weekly compliance monitoring data were collected for all sites within 750 m of dredging operations in hardbottom, middle reef, and outer reef habitats, with the exception of HBS2 and HBN2 (see Background section; Table 2). Coral condition data for reference sites (e.g., R2SC1) and channel-side sites (e.g., R2S1) were compared using a two-sampled t-test ($p \leq 0.05$). Stress levels at reference sites ranged from 0.23 ± 0.43 (R2NC2) to 0.87 ± 0.35 (R2SC1) whereas

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stress levels at channel-side sites ranged from 0.36 ± 0.49 (R3S3) to 1.0 ± 0.0 (R2N1 and HBS1; Table 2). Significantly elevated stress levels of permanently marked corals at channel-side sites were documented by scientific divers as being predominantly attributed to sediment accumulation of fine sediment on the colony, partial burial of the colony by fine sediment, excess mucus production, and/or extended polyps. Sediment accumulation was documented at all surveyed channel-side sites. Partial mortality at the base of several corals has also been documented at HBS3 and HBS4, typically in areas where the sediment has receded. The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was present in permanently marked corals at HBN3, HBNC1, HBS4, HBSC1, R2N1, R2N2, R2S1, R2S2, R2SC1, R3N1, R3S3, R3SC1, R3SC2, and R3SC3.

Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 32. Permanently marked scleractinians at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators (e.g., sediment accumulation, extended polyps, etc.).

Survey Zone	Area	Site	Scleractinian Condition					
			First Survey			Second Survey		
			Mean	SD	N	Mean	SD	N
Hard-bottom	South	HBS1	0.72	0.46	18	1.00*	0.00	18
		HBS2	NA	NA	NA	NA	NA	NA
		HBS3	0.82	0.39	28	0.89*	0.31	28
		HBS4	0.96*	0.20	24	0.96*	0.20	24
		HBSC1	0.80	0.41	30	0.63	0.49	30
	North	HBN2	NA	NA	NA	NA	NA	NA
		HBN3	0.92	0.27	26	0.92*	0.27	26
		HBNC1	0.83	0.39	12	0.62	0.51	13
		R2S1	0.96	0.19	27	0.81	0.40	27
		R2SC1	0.87	0.35	30	0.77	0.43	30
Middle Reef	South	R2S2	0.92*	0.28	24	0.96*	0.20	24
		R2SC2	0.64	0.49	25	0.56	0.51	25
		R2N1	1.00*	0.00	30	1.00*	0.00	30
		R2NC2	0.50	0.51	30	0.23	0.43	30
	North	R2N2	0.96	0.20	25	0.48	0.51	25
		R2NC1	0.57	0.50	30	0.50	0.51	30
		R3S1	0.79	0.42	19	0.63	0.50	19
		R3SC1	0.75	0.44	24	0.58	0.50	24
Outer Reef	South	R3S2	0.92	0.28	25	0.60	0.50	25
		R3SC2	0.76	0.44	21	0.76	0.44	21
		R3S3	0.92	0.28	25	0.52	0.51	25
		R3SC3	0.83	0.38	24	0.63	0.49	24
		R3N1	0.96*	0.21	23	0.64	0.49	22
		R3NC1	0.63	0.49	24	0.50	0.51	24

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

NA: No data.

*****: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test.

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Sediment Block Survey

Little to no sediment accumulated on sediment blocks at any compliance monitoring sites in Week 32 (Table 4).

Table 4: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 32. All measurements are in mm. N represents the number of sediment blocks surveyed.

Survey Zone	Area	Site	Qualitative Sedimentation (mm)	N
Hardbottom	South	HBS1	<1	1
		HBS2	NA	NA
		HBS3	0	1
		HBS4	<1	1
		HBSC1	0	1
	North	HBN2	NA	NA
		HBN3	0	1
		HBNC1	0	1
Middle Reef	South	R2S1	0	1
		R2SC1	0	1
		R2S2	0	1
		R2SC2	0	1
	North	R2N1	0	1
		R2NC2	0	1
		R2N2	0	1
		R2NC1	0	1
Outer Reef	South	R3S1	0	1
		R3SC1	0	1
		R3S2	0	1
		R3SC2	0	1
		R3S3	0	1
		R3SC3	0	1
	North	R3N1	0	1
		R3NC1	0	1

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 5).

Table 5: Sediment accumulation data collected from sediment traps since October 2013. Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in grams per day.

Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6
HBN1-CR						
Sample Start Date	10/21/2013	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL				

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Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6
Sample End Date	11/18/2013	SAND TRANSPORT. NOT DREDGE RELATED.				
Grain size > #230 Sieve (g/day)	6.98					
Grain Size < # 230 Sieve (g/day)	0.87					
HBN2-CR						
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	3/5/2014	4/4/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	4/2/2014	5/3/2014
Grain size > #230 Sieve (g/day)	2.51	3.65	1.87	1.15	4.91	2.74
Grain Size < # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.70	0.48
HBN3-CP						
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	3/6/2014	4/3/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	4/3/2014	5/3/2014
Grain size > #230 Sieve (g/day)	4.13	3.38	3.23	1.83	3.28	1.20
Grain Size < # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	1.01	0.54
HBNC1-CP						
Sample Start Date	10/15/2013	11/12/2013	1/13/2014	-	3/6/2014	4/2/2014
Sample End Date	11/12/2013	1/13/2014	2/7/2014	-	4/2/2014	5/3/2014
Grain size > #230 Sieve (g/day)	0.37	0.40	0.02	-	0.08	0.02
Grain Size < # 230 Sieve (g/day)	0.76	0.99	0.16	-	1.09	0.19
HBS1-CP						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	3/7/2014	4/4/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	4/4/2014	5/3/2014
Grain size > #230 Sieve (g/day)	0.67	2.42	1.21	0.95	0.77	0.44
Grain Size < # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.74	0.26
HBS2-CP						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	3/7/2014	4/4/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	4/4/2014	5/3/2014
Grain size > #230 Sieve (g/day)	0.76	3.18	2.05	0.84	1.66	0.54
Grain Size < # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.50	0.32
HBS3-CP						
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	4/2/2014	4/30/2014
Grain size > #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.43	0.26
Grain Size < # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.72	0.36
HBS4-CR						
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	4/2/2014	4/30/2014
Grain size > #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.61	0.33
Grain Size < # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	1.09	0.50
HBSC1-CP						
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	3/6/2014	4/2/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	4/2/2014	4/30/2014
Grain size > #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.03	0.01
Grain Size < # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.32	0.08

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.

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3. Spider barge activity ceased from of 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.
8. Liberty Island dredging with no overflow as of 6/19/14. Liberty Island departed the project site on July 3, 2014, and is not expected to return to service on this project in the foreseeable future.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.

Legend

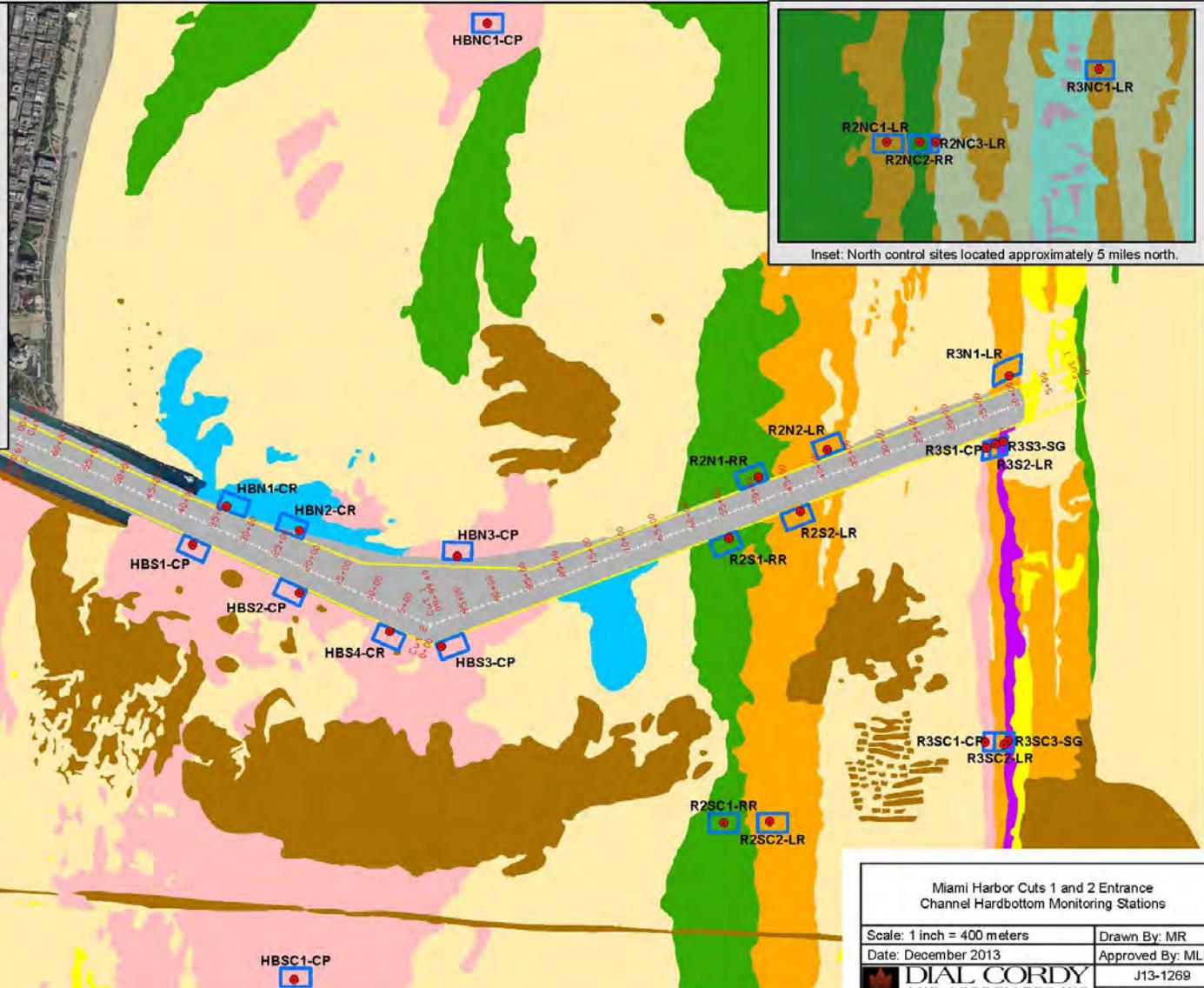
- Miami Harbor Monitoring Station Center (24-oct13)
- Miami Harbor Monitoring Station Location (Oct-2013)
- Existing Channel Limits

Dade County Habitats (Final SEPT09)**Type**

- Artificial
- Colonized Pavement
- Linear Reef
- Patch Reef
- Ridge
- Scattered Coral/Rock in Sand
- Spur and Groove
- Sand Borrow Area
- Sand
- Inlet Channel



0 200 400 800 1,200 Meters



Miami Harbor Cuts 1 and 2 Entrance
Channel Hardbottom Monitoring Stations

Scale: 1 inch = 400 meters	Drawn By: MR
Date: December 2013	Approved By: MLR
DIAL CORDY AND ASSOCIATES INC <small>Environmental Consultants</small>	J13-1269

Weekly Offshore Coral Stress and Sediment Block Compliance Report 33
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Week 33 07/02/14-07/08/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. During Compliance Week 33 (July 2, 2014 to July 8, 2014), the cutterhead dredge Texas and the Spider Barge worked in Cut 1 (STA 72+00 to 86+50 and STA 57+00 to 71+25 respectively); Dredge 55 loaded scows in Cut 2 (STA 63+00 to 64+00 and STA 53+00 to 57+00); and the hopper dredge Liberty Island loaded material for offshore disposal in Cut 1 (STA 5+00 to 25+00). Biological monitoring was required for sites within 750 m of an active dredge and included all hardbottom, middle, and outer reef monitoring sites, with the exception of hardbottom monitoring site HBS2 (Figure 1). Adverse environmental conditions (e.g., severe thunderstorms, excessive wind speeds, wave heights, and/or low visibility) during Week 33 of compliance monitoring made conditions unsafe for offshore dive operations during portions of 3/7 days. Biological monitoring was not conducted on July 4th, in order to avoid unsafe diving conditions associated with holiday boat traffic. Biological monitoring was conducted once at all hardbottom, middle, and outer reef sites within 750 m of dredge activity, with the exception of HBS1 and HBN2 which could not be monitored due to safety constraints. HBS2 was not triggered by dredging activity in Week 33 of compliance and was not monitored. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind, wave and traffic conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral stress surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral stress and sediment block survey methods.

Weekly Coral Stress Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)).

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;

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Week 33 07/02/14-07/08/14 Dredge Activity

- 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a "0" (normal or non-stressed) or "1" (stressed), and photographed. If a "1" is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Reference and channel-side site mean values were compared using a two sample t-test; results are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a "1" during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of all polyps on the colony.
Mucus	Sediment Stress	Excessive mucus production resulting in a mucus film and/or sediment balled up in mucus.
Paling	Stress	Live tissue with some loss of color.
Bleaching	Stress	Live tissue with complete loss of color.
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Moderate sediment accumulation on top of colony (more than dusting)
Partial Burial	Sedimentation	Portion(s) of the colony buried by sediment
Burial	Sedimentation	Entire colony buried by sediment

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Recent Partial Mortality	Sedimentation	Partial mortality of coral colony appears white with no live polyps visible. Generally, occurs around the margin of the colony. Visible when sediment recedes.
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Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design used in the Broward County Shore Protection Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibiotic growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

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Results

Coral Stress Surveys

Weekly compliance monitoring data were collected for all sites within 750 m of dredging operations in hardbottom, middle reef, and outer reef habitats, with the exception of HBS1 and HBN2 (see Background section; Table 2). Coral condition data for reference sites (e.g., R2SC1) and channel-side sites (e.g., R2S1) were compared using a two-sampled t-test ($p \leq 0.05$). Stress levels at reference sites ranged from 0.50 ± 0.51 (R2NC2 and R3NC1) to 0.92 ± 0.29 (HBNC1) whereas stress levels at channel-side sites ranged from 0.48 ± 0.51 (R3S3) to 1.0 ± 0.0 (HBN3; Table 2). Significantly elevated stress levels of permanently marked corals at channel-side sites were documented by scientific divers as being predominantly attributed to sediment accumulation of fine sediment on the colony, partial burial of the colony by fine sediment, excess mucus production, and/or extended polyps. Sediment accumulation was documented at all surveyed channel-side and reference sites. Partial mortality at the base of several corals was documented at HBN3, HBNC1, HBS3, HBS4, R2N1, R2N2, R2S1, R2S2, R3SC1, and R3N1. Notably, the hardbottom channel-side sites were not significantly different from their reference site comparisons. The last time HBS3 and HBS4 were not significantly different from HBSC1 were in Weeks 25 and 23 respectively. The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was present in permanently marked corals at HBN3, HBNC1, HBS4, HBSC1, R2N2, R2S1, R2SC1, R3N1, R3S3, R3SC1, R3SC2, and R3SC3.

Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 33. Permanently marked scleractinians at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators (e.g., sediment accumulation, extended polyps, etc.).

Survey Zone	Area	Site	Scleractinian Condition					
			First Survey			Second Survey		
			Mean	SD	N	Mean	SD	N
Hard-bottom	South	HBS1	NA	NA	NA	NA	NA	NA
		HBS2	NA	NA	NA	NA	NA	NA
		HBS3	0.71	0.46	28	NA	NA	NA
		HBS4	0.68	0.48	25	NA	NA	NA
		HBSC1	0.63	0.49	30	NA	NA	NA
	North	HBN2	NA	NA	NA	NA	NA	NA
		HBN3	0.96	0.20	26	1.00*	0.00	26
		HBNC1	0.92	0.29	12	0.58	0.51	12
Middle Reef	South	R2S1	0.81	0.40	27	NA	NA	NA
		R2SC1	0.90	0.31	30	NA	NA	NA
		R2S2	0.96*	0.20	24	NA	NA	NA
		R2SC2	0.56	0.51	25	NA	NA	NA
	North	R2N1	0.97*	0.18	30	NA	NA	NA
		R2NC2	0.50	0.51	30	NA	NA	NA
		R2N2	0.67	0.48	24	NA	NA	NA
		R2NC1	0.80	0.41	30	NA	NA	NA
Outer Reef	South	R3S1	0.78	0.43	18	0.74	0.45	19
		R3SC1	0.79	0.41	24	0.58	0.50	24

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Survey Zone	Area	Site	Scleractinian Condition					
			First Survey			Second Survey		
			Mean	SD	N	Mean	SD	N
		R3S2	0.64	0.49	25	0.54	0.51	24
		R3SC2	0.67	0.48	21	0.71	0.46	21
		R3S3	0.92*	0.28	25	0.48	0.51	25
		R3SC3	0.67	0.48	24	0.54	0.51	24
	North	R3N1	0.91	0.29	22	0.73	0.46	22
		R3NC1	0.67	0.48	24	0.50	0.51	24

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

NA: No data.

***: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test.

Sediment Block Survey

Little to no sediment accumulated on sediment blocks at any compliance monitoring sites in Week 33 (Table 4).

Table 4: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 33. All measurements are in mm. *N*represents the number of sediment blocks surveyed.

Survey Zone	Area	Site	Qualitative Sedimentation (mm)	N
Hardbottom	South	HBS1	0	1
		HBS2	NA	NA
		HBS3	<1	1
		HBS4	1	1
		HBSC1	<1	1
	North	HBN2	0	1
		HBN3	<1	1
		HBNC1	<1	1
Middle Reef	South	R2S1	<1	1
		R2SC1	0	1
		R2S2	<1	1
		R2SC2	0	1
	North	R2N1	<1	1
		R2NC2	0	1
		R2N2	1	1
		R2NC1	0	1
Outer Reef	South	R3S1	0	1
		R3SC1	<1	1
		R3S2	0	1
		R3SC2	<1	1
		R3S3	0	1
		R3SC3	<1	1

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Survey Zone	Area	Site	Qualitative Sedimentation (mm)	N
	North	R3N1	0	1
		R3NC1	0	1

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 5).

**Table 5: Sediment accumulation data collected from sediment traps since October 2013.
Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in grams per day.**

Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
HBN1-CR							
Sample Start Date	10/21/2013						
Sample End Date	11/18/2013						
Grain size > #230 Sieve (g/day)	6.98						
Grain Size < # 230 Sieve (g/day)	0.87						
SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.							
HBN2-CR							
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	3/5/2014	4/4/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	4/2/2014	5/3/2014	5/29/2014
Grain size > #230 Sieve (g/day)	2.51	3.65	1.87	1.15	4.91	2.74	2.14
Grain Size < # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.70	0.48	0.25
HBN3-CP							
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	3/6/2014	4/3/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	4/3/2014	5/3/2014	5/28/2014
Grain size > #230 Sieve (g/day)	4.13	3.38	3.23	1.83	3.28	1.2	3.02
Grain Size < # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	1.01	0.54	0.25
HBNC1-CP							
Sample Start Date	10/15/2013		11/12/2013	1/13/2014	3/6/2014	4/2/2014	5/3/2014
Sample End Date	11/12/2013		1/13/2014	2/7/2014	4/2/2014	5/3/2014	5/29/2014
Grain size > #230 Sieve (g/day)	0.37		0.40	0.02	0.08	0.02	0.09
Grain Size < # 230 Sieve (g/day)	0.76		0.99	0.16	1.09	0.19	0.04
HBS1-CP							
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	3/7/2014	4/4/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014
Grain size > #230 Sieve (g/day)	0.67	2.42	1.21	0.95	0.77	0.44	2.32
Grain Size < # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.74	0.26	0.21
HBS2-CP							
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	3/7/2014	4/4/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014
Grain size > #230 Sieve (g/day)	0.76	3.18	2.05	0.84	1.66	0.54	1.63
Grain Size < # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.50	0.32	0.42
HBS3-CP							
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.43	0.26	0.41
Grain Size < # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.72	0.36	0.36
HBS4-CR							
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.61	0.33	1.15
Grain Size < # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	1.09	0.50	0.27
HBSC1-CP							
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	3/6/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.03	0.01	0.04
Grain Size < # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.32	0.08	0.02
R2N1-RR							
Sample Start Date	10/23/2013		11/18/2013	1/18/2014	2/17/2014	3/20/2014	4/16/2014
Sample End Date	11/18/2013		1/18/2014	2/17/2014	3/20/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	1.81		2.01	0.61	0.59	1.13	0.82
Grain Size < # 230 Sieve (g/day)	0.58		0.96	0.55	0.40	0.58	0.79
R2N2-LR							
Sample Start Date	-	11/20/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014
Sample End Date	-	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-	1.77	1.73	0.19	0.43	0.01	0.33
Grain Size < # 230 Sieve (g/day)	-	0.71	0.85	0.32	0.39	0.14	0.74
R2NC1-LR							
Sample Start Date	10/27/2013		11/20/2013	1/18/2014	2/16/2014	3/20/2014	4/16/2014

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Week 33 07/02/14-07/08/14 Dredge Activity

Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
Sample End Date	11/24/2013		1/18/2014		2/16/2014	3/20/2014	4/16/2014
Grain size > #230 Sieve (g/day)	2.74		0.47		0.01	0.06	0.06
Grain Size < # 230 Sieve (g/day)	0.59		0.37		0.03	0.10	0.23
R2NC2-RR							
Sample Start Date	-		11/19/2013		2/16/2014	3/20/2014	4/16/2014
Sample End Date	-		2/16/2014		3/20/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-		0.07		0.00	0.00	0.01
Grain Size < # 230 Sieve (g/day)	-		0.22		0.00	0.06	0.13
R2S1-RR							
Sample Start Date	10/18/2013		11/18/2013		1/15/2014	2/16/2014	3/19/2014
Sample End Date	11/18/2013		1/15/2014		2/17/2014	3/19/2014	4/16/2014
Grain size > #230 Sieve (g/day)	0.51		0.87		0.22	0.22	0.50
Grain Size < # 230 Sieve (g/day)	0.52		0.93		0.35	0.33	0.52
R2S2-LR							
Sample Start Date	-	11/21/2013	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014
Sample End Date	-	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-	0.49	0.51	0.17	0.18	0.29	0.26
Grain Size < # 230 Sieve (g/day)	-	0.49	0.6	0.26	0.20	0.39	0.59
R2SC1-RR							
Sample Start Date	10/19/2013		11/18/2013		1/15/2014	2/26/2014	3/30/2014
Sample End Date	11/18/2013		1/15/2014		2/26/2014	3/30/2014	4/27/2014
Grain size > #230 Sieve (g/day)	0.62		0.57		0.02	0.02	0.13
Grain Size < # 230 Sieve (g/day)	0.42		0.72		0.13	0.12	0.10
R2SC2-LR							
Sample Start Date	-	11/21/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014
Sample End Date	-	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-	0.80	0.46	0.03	0.04	0.18	0.21
Grain Size < # 230 Sieve (g/day)	-	0.61	0.41	0.12	0.15	0.34	0.47
R3N1-LR							
Sample Start Date	-	12/4/2013		12/30/2013	2/16/2014		3/19/2014
Sample End Date	-	12/30/2013		2/16/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.09		0.17	0.03		TBD
Grain Size < # 230 Sieve (g/day)	-	0.08		0.16	0.00		TBD
R3NC1-LR							
Sample Start Date	-		12/5/2013		2/16/2014		3/20/2014
Sample End Date	-		2/16/2014		3/20/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.05		0.01			TBD
Grain Size < # 230 Sieve (g/day)	-	0.07		0.00			TBD
R3S1-CP							
Sample Start Date	-	12/3/2013		12/30/2013	2/16/2014		3/19/2014
Sample End Date	-	12/30/2013		2/16/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.06		0.13	0.02		
Grain Size < # 230 Sieve (g/day)	-	0.10		0.20	0.00		
R3S2-LR							
Sample Start Date	-	12/3/2013		12/30/2013	2/16/2014		3/19/2014
Sample End Date	-	12/30/2013		2/16/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.04		0.15	0.01		TBD
Grain Size < # 230 Sieve (g/day)	-	0.09		0.14	0.00		TBD
R3S3-SG							
Sample Start Date	-	12/3/2013		12/30/2013	2/16/2014		3/19/2014
Sample End Date	-	12/30/2013		2/16/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.04		0.13	0.02		TBD
Grain Size < # 230 Sieve (g/day)	-	0.07		0.13	0.00		TBD
R3SC1-CP							
Sample Start Date	-		12/5/2013		2/17/2014		3/19/2014
Sample End Date	-		2/17/2014		3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.08		0.00			TBD
Grain Size < # 230 Sieve (g/day)	-	0.17		0.00			TBD
R3SC2-LR							
Sample Start Date	-		12/4/2013		2/17/2014		3/19/2014
Sample End Date	-		2/17/2014		3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.05		0.10			TBD
Grain Size < # 230 Sieve (g/day)	-	0.07		0.00			TBD
R3SC3-SG							
Sample Start Date	-		12/4/2014		2/17/2014		3/19/2014
Sample End Date	-		2/17/2014		3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.08		0.10			TBD
Grain Size < # 230 Sieve (g/day)	-	0.11		0.00			TBD

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 33
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Week 33 07/02/14-07/08/14 Dredge Activity

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.
8. Liberty Island dredging with no overflow as of 6/19/14. Liberty Island departed the project site on July 3, 2014, and is not expected to return to service on this project in the foreseeable future.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.

Legend

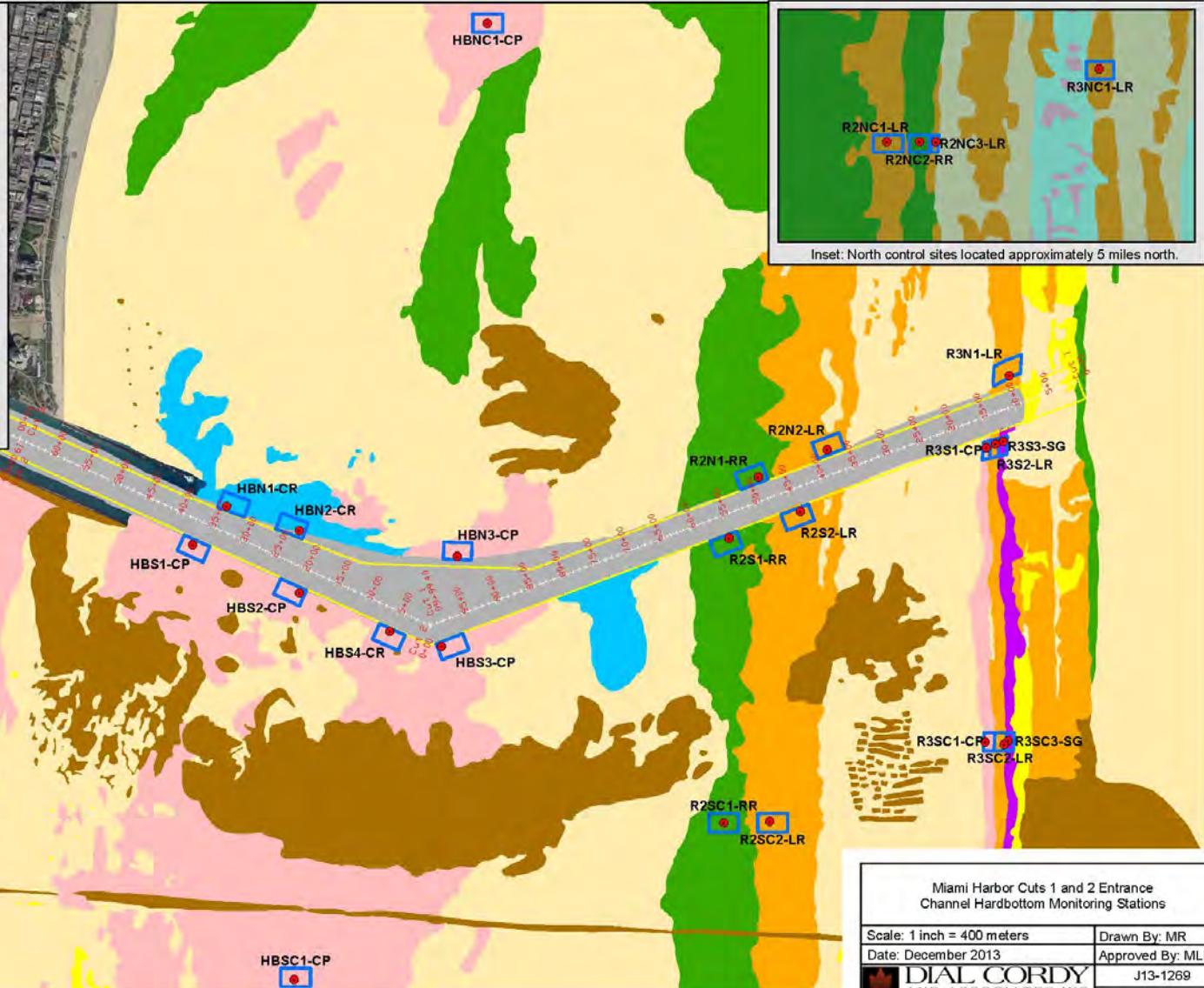
- Miami Harbor Monitoring Station Center (24-oct13)
- Miami Harbor Monitoring Station Location (Oct-2013)
- Existing Channel Limits

Dade County Habitats (Final SEPT09)**Type**

- Artificial
- Colonized Pavement
- Linear Reef
- Patch Reef
- Ridge
- Scattered Coral/Rock in Sand
- Spur and Groove
- Sand Borrow Area
- Sand
- Inlet Channel



0 200 400 800 1,200 Meters



Miami Harbor Cuts 1 and 2 Entrance
Channel Hardbottom Monitoring Stations

Scale: 1 inch = 400 meters	Drawn By: MR
Date: December 2013	Approved By: MLR
DIAL CORDY AND ASSOCIATES INC <small>Environmental Consultants</small>	J13-1269

Weekly Offshore Coral Stress and Sediment Block Compliance Report 34

FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening

Week 34 07/09/14-07/15/14 Dredge Activity REVISED

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. During Compliance Week 34 (July 9, 2014 to July 15, 2014), the cutterhead dredge Texas and the Spider Barge worked in Cut 1 (STA 16+50 to 22+50 and STA 68+00 to 92+00) and in Cut 2 (STA 11+00 to 17+00 and STA 53+00 to 57+00). The hopper dredge Liberty Island left the project area on July 3, 2014 and is not expected to return at this time.

Biological monitoring was required for sites within 750 m of an active dredge and included all hardbottom, middle, and outer reef monitoring sites (Figure 1). Biological monitoring was conducted once at all hardbottom and middle reef sites (i.e., HBN2, HBN3, HBS1, HBS3, HBS4, R2N1, R2S1, R2S2, and their respective controls), with the exception of HBS2 and R2N2 which could not be monitored due to safety constraints. Adverse environmental conditions (e.g., severe thunderstorms, excessive wind speeds, wave heights, and/or low visibility) during Week 34 of compliance monitoring made conditions unsafe for offshore dive operations during portions of 5/7 days. Beginning July 11th, a Super Moon event affected the study area, causing stronger than usual currents (>1 knot), therefore diving operations were suspended for July 12 and 13th. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind, wave, and traffic conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

THIS REPORT WAS REVISED TO REFLECT CHANGES IN APPENDIX A RAW DATA. CHANGES ARE DESCRIBED IN THE RESULTS SECTION OF THIS REPORT (PAGE 7).

Methods

Coral condition surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral condition, video transect and sediment block survey methods.

Weekly Coral Condition Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)):

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals,

Weekly Offshore Coral Stress and Sediment Block Compliance Report 34**FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening****Week 34 07/09/14-07/15/14 Dredge Activity REVISED**

sponges, etc.) for standing sediment that is not removed by normal currents or wave action;

- 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a "0" (normal or non-stressed) or "1" (stressed), and photographed. If a "1" is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Statistical comparisons for all condition data are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a "1" during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of all polyps on the colony.
Mucus	Sediment Stress	Excessive mucus production resulting in a mucus film and/or sediment balled up in mucus.
Paling	Stress	Live tissue with some loss of color.
Bleaching	Stress	Live tissue with complete loss of color.
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Moderate sediment accumulation on top of colony (more than dusting). Accumulation in grooves and/or between polyps
Partial Burial	Sedimentation	Portion(s) of the colony buried by sediment
Burial	Sedimentation	Entire colony buried by sediment
Recent Partial Mortality	Sedimentation	Partial mortality of coral colony appears white with no live polyps visible. Generally, occurs around the margin of the colony. Visible when sediment recedes.

Sediment Stress

Sediment stress data are qualitative estimations of sediment related stress that are observed on permanently marked hard corals. *In situ* data on sediment stress and other conditions are assigned in the field during data collection. QA/QC is conducted on photos for all coral conditions in the laboratory. Data are entered into an Excel spreadsheet for analysis each week. Sediment dusting (SED) is not considered a “stress” indicator and is given a score of zero. SED is a low amount, a “dusting”, of sediment ontop of the coral. Sediment accumulation (SA), is an accumulation of sediment ontop of the coral, between polyps, or within grooves and is qualitatively more than a dusting of sediment. Partial burial (PBUR) is the accumulation of sediment around the base of the coral, sometimes in the form of a berm, and burial (BUR) is the complete burial of the coral colony by sediment. SA, PBUR, and BUR are given scores of a “1”. A single coral may exhibit one or more conditions, including one or more sediment stress codes. For example, a coral may have sediment accumulation (SA) and partial burial (PBUR). The score for such a coral would be a “1”, code data are collected for all applicable conditions. Sediment stress data are reported in Table 3.

Weekly Functional Group Percent Cover Analysis

Functional groups in the vicinity of the project area (hardbottom, middle, and outer reef) include typical sub-tropical hardbottom and reef environment sessile invertebrates, including octocorals, sponges and hard corals among others. Of these biological constituents, the most abundant and highest in percent cover are the octocorals, which range in cover from 1-15% (Gilliam et al. 2007, Dial Cordy 2010 and 2012). Sponges range from 1-6% cover, while hard corals including Millepora range from 0.2 to 4.6% (Dial Cordy et al. 2010 and 2012). Since octocorals dominate the benthic habitat across habitat types, octocorals are used as the proxy indicator group because they are most abundant non-algal benthic component. Percent cover calculations are compared between monitoring events and among transects and sites.

Functional group analysis is conducted for available video transect data, which are collected as part of the weekly compliance monitoring and is used to satisfy FDEP permit Special Condition 32.(a).(ii).d:

Any change of 5% or more in cover by any functional group evaluated in quadrats in two or more adjacent transects, or on average for the zone of monitoring on one side of the channel, or stress expressed above normal by corals and/or octocorals within transects (stress scale used for Broward County Segment III project) will require an additional survey to outline the area(s) of impact. Impacted areas shall continue to be monitored monthly during the construction, one month post-construction, and two times during next year in order to document results of the impact. Final monitoring results shall document permanent impacts, if any, to be used for estimates of additional mitigation using UMAM.

Quantitative digital video data are collected along each transect with the camera positioned 40cm above the substrate, recording a plan-view of the benthic resources (Aronson et al. 1994). The video camera is equipped with a measuring device to ensure the camera remains at 40-cm above the bottom and a scale bar is visible at the bottom of the camera screen at all times with the site information in the lower right hand corner. The camera records video transect data at a speed of ~5 m per minute to insure quality still images may be extracted for analysis. These

data are collected each time a site is surveyed, however analysis is only conducted for a single monitoring survey within a given compliance week. Analysis is conducted for a total of 24m² per site (0.4m x 20m x 3 transects).

Transect video footage is broken down into 40 non-overlapping still images (repetitive quadrats) using GOM Video Player™. Stills are analyzed for selected functional groups (octocorals, sponge, hard corals, zoanthids, macroalgae, CTB (crustose turf and bare space)) using randomly overlaid points in CPCe® software. Percent cover for selected functional groups, and sand are compared over time and presented in Appendix A.

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design used in the Broward County Shore Protection Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibiotic growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters

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containing the sediments then shall be dried in an oven and weighed.

Results

Coral Condition Surveys

Biological monitoring was conducted once at most hardbottom and middle reef sites (i.e., HBN2, HBN3, HBS1, HBS3, HBS4, R2N1, R2S1, R2S2, and their respective controls), with the exception of HBS2 and R2N2 which could not be monitored due to safety constraints (see Background section). Coral condition data for reference sites (e.g., R2SC1) and channel-side sites (e.g., R2S1) were compared using a two-sampled t-test ($p \leq 0.05$). Stress levels at reference sites ranged from 0.80 ± 0.41 (HBSC1, R2SC2, and R2NC2) to 0.83 ± 0.39 (HBNC1 and R2SC1) whereas stress levels at channel-side sites ranged from 0.86 ± 0.36 (HBS3) to 1.00 ± 0.0 (HBN2, HBN3, HBS1, and R2N1; Table 2).

In Week 34 coral condition values were elevated across channel-side and reference sites (Table 2), due to an increase in paling and bleaching of corals in the project area. Seasonally warm water temperatures and elevated levels of irradiance are known to induce paling and/or bleaching (stress) in corals (Baker et al. 2008). Sedimentation stress including sediment accumulation (SA), partial burial (PBUR) and burial (BUR) were present at higher levels on channel-side v. reference sites (Table 3). Partial mortality at the base of several corals was documented at HBN2, HBN3, HBNC1, HBS1, HBS3, HBS4, R2N1, R2NC1, R2S1, R2S2, and R2SC1. The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was present in permanently marked corals at all sites surveyed in the current week except R2SC2.

Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 34. Permanently marked scleractinians at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators (e.g., sediment accumulation, extended polyps, excess mucus production, etc.).

Survey Zone	Area	Site	Scleractinian Condition		
			Mean	SD	N
Hardbottom	South	HBS1	1.00*	0.00	18
		HBS2	N/A	N/A	N/A
		HBS3	0.86	0.36	28
		HBS4	0.96*	0.20	24
		HBSC1	0.80	0.41	30
	North	HBN2	1.00	0.00	12
		HBN3	1.00	0.00	26
		HBNC1	0.83	0.39	12
Middle Reef	South	R2S1	0.93	0.27	27
		R2SC1	0.83	0.38	30
		R2S2	0.96	0.20	24
		R2SC2	0.80	0.41	25
	North	R2N1	1.00*	0.00	30
		R2NC2	0.80	0.41	30
		R2N2	N/A	N/A	N/A
		R2NC1	N/A	N/A	N/A
Outer Reef	South	R3S1	N/A	N/A	N/A

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		R3SC1	N/A	N/A	N/A
		R3S2	N/A	N/A	N/A
		R3SC2	N/A	N/A	N/A
		R3S3	N/A	N/A	N/A
		R3SC3	N/A	N/A	N/A
	North	R3N1	N/A	N/A	N/A
		R3NC1	N/A	N/A	N/A

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

N/A: No data.

*****: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test.

Sediment Stress

Sediment stress categories are qualitative estimations of sediment stress on permanently marked hard corals. Corals may exhibit one or more sediment stress categories, see Table 1 for definitions. Sediment dusting (SED) is not considered a “stress” indicator and is given a score of zero. SED is a low amount, a “dusting” of sediment on top of the coral. Sediment accumulation (SA), is an accumulation of sediment on top of the coral, between polyps, within grooves and is qualitatively more than a dusting of sediment. Partial burial (PBUR) is the accumulation of sediment around the base of the coral, and burial (BUR) is a complete burial of a coral colony by sediment. SA, PBUR, and BUR are scored as a “1”. A coral may exhibit one or more conditions, including one or more sediment stress codes. For example, a coral may exhibit sediment accumulation (SA) and partial burial (PBUR). The score for such a coral would be a “1”. Proportional sediment stress data reported in Table 3 may sum to more than 1.0 for a single site, since each coral may be assigned more than one category.

Table 3: Mean scleractinian sediment stress score as measured in Compliance Monitoring Week 34. Permanently marked scleractinians at channel and reference sites were assigned a “0” – SED (dusting) or a “1” depending on the presence/absence of sediment stress indicators (e.g., sediment accumulation (SA), partial burial (PBUR), and/or burial (BUR)).

Survey Zone	Area	Site	Sediment Stress Proportions				
			SED	SA	PBUR	BUR	N
Hardbottom	South	HBS1	0.00	0.89	0.44	0.00	18
		HBS2	N/A	N/A	N/A	N/A	N/A
		HBS3	0.21	0.43	0.18	0.00	28
		HBS4	0.04	0.63	0.54	0.04	24
		HBSC1	0.07	0.37	0.00	0.00	30
	North	HBN2	0.08	0.50	0.08	0.00	12
		HBN3	0.00	0.73	0.69	0.00	26
Middle Reef	South	HBNC1	0.17	0.33	0.25	0.00	12
		R2S1	0.11	0.59	0.37	0.00	27
		R2SC1	0.07	0.47	0.00	0.00	30

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Survey Zone	Area	Site	Sediment Stress Proportions				
			SED	SA	PBUR	BUR	N
		R2S2	0.00	0.58	0.58	0.00	24
Outer Reef	North	R2SC2	0.00	0.12	0.04	0.00	25
		R2N1	0.00	0.70	0.97	0.00	30
		R2NC2	0.27	0.37	0.07	0.00	30
		R2N2	N/A	N/A	N/A	N/A	NA
	South	R2NC1	N/A	N/A	N/A	N/A	NA
		R3S1	N/A	N/A	N/A	N/A	NA
		R3SC1	N/A	N/A	N/A	N/A	NA
		R3S2	N/A	N/A	N/A	N/A	NA
	North	R3SC2	N/A	N/A	N/A	N/A	NA
		R3S3	N/A	N/A	N/A	N/A	NA
		R3SC3	N/A	N/A	N/A	N/A	NA
		R3N1	N/A	N/A	N/A	N/A	NA
		R3NC1	N/A	N/A	N/A	N/A	NA

N: Number of corals sampled to calculate the mean.

N/A: No data.

Weekly Functional Group Percent Cover Analysis

Functional group percent cover analysis is conducted on video transect data collected during the weekly monitoring surveys. All data are presented in Appendix A. Appendix A was revised in order to correct transcription errors found after the initial submission of this report on July 28, 2014. Data for all transects at HBNC1 in the baseline row (B4) were revised and are correct in the attached Appendix A. Data for Transect 1 at HBS1 were revised and are correct in the attached Appendix A.

Sediment Block Survey

No sediment accumulated on sediment blocks at any compliance monitoring sites in Week 34 (Table 4).

Table 4: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 34. All measurements are in mm. N represents the number of sediment blocks surveyed.

Survey Zone	Area	Site	Qualitative Sedimentation (mm)	N
Hardbottom	South	HBS1	0	1
		HBS2	N/A	N/A
		HBS3	0	1
		HBS4	0	1
		HBSC1	0	1
	North	HBN2	0	1

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Survey Zone	Area	Site	Qualitative Sedimentation (mm)	N
		HBN3	0	1
		HBNC1	0	1
Middle Reef	South	R2S1	0	1
		R2SC1	0	1
		R2S2	0	1
		R2SC2	0	1
	North	R2N1	0	1
		R2NC2	0	1
		R2N2	N/A	N/A
		R2NC1	0	1
Outer Reef	South	R3S1	N/A	N/A
		R3SC1	N/A	N/A
		R3S2	N/A	N/A
		R3SC2	N/A	N/A
		R3S3	N/A	N/A
		R3SC3	N/A	N/A
	North	R3N1	N/A	N/A
		R3NC1	N/A	N/A

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 5).

Table 5: Sediment accumulation data collected from sediment traps since October 2013. Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in grams per day.

Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
HBN1-CR							
Sample Start Date	10/21/2013						
Sample End Date	11/18/2013						
Grain size >#230 Sieve (g/day)	6.98						
Grain Size < # 230 Sieve (g/day)	0.87						
HBN2-CR							
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	3/5/2014	4/4/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	4/2/2014	5/3/2014	5/29/2014
Grain size >#230 Sieve (g/day)	2.51	3.65	1.87	1.15	4.91	2.74	2.14
Grain Size < # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.70	0.48	0.25
HBN3-CP							
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	3/6/2014	4/3/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	4/3/2014	5/3/2014	5/28/2014
Grain size >#230 Sieve (g/day)	4.13	3.38	3.23	1.83	3.28	1.2	3.02
Grain Size < # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	1.01	0.54	0.25
HBNC1-CP							
Sample Start Date	10/15/2013		11/12/2013	1/13/2014	3/6/2014	4/2/2014	5/3/2014
Sample End Date	11/12/2013		1/13/2014	2/7/2014	4/2/2014	5/3/2014	5/29/2014
Grain size >#230 Sieve (g/day)	0.37		0.40	0.02	0.08	0.02	0.09
Grain Size < # 230 Sieve (g/day)	0.76		0.99	0.16	1.09	0.19	0.04
HBS1-CP							
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	3/7/2014	4/4/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014
Grain size >#230 Sieve (g/day)	0.67	2.42	1.21	0.95	0.77	0.44	2.32
Grain Size < # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.74	0.26	0.21

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Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
HBS2-CP							
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	3/7/2014	4/4/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014
Grain size > #230 Sieve (g/day)	0.76	3.18	2.05	0.84	1.66	0.54	1.63
Grain Size < # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.50	0.32	0.42
HBS3-CP							
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.43	0.26	0.41
Grain Size < # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.72	0.36	0.36
HBS4-CR							
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.61	0.33	1.15
Grain Size < # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	1.09	0.50	0.27
HBSC1-CP							
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	3/6/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.03	0.01	0.04
Grain Size < # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.32	0.08	0.02
R2N1-RR							
Sample Start Date	10/23/2013		11/18/2013	1/18/2014	2/17/2014	3/20/2014	4/16/2014
Sample End Date	11/18/2013		1/18/2014	2/17/2014	3/20/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	1.81		2.01	0.61	0.59	1.13	0.82
Grain Size < # 230 Sieve (g/day)	0.58		0.96	0.55	0.40	0.58	0.79
R2N2-LR							
Sample Start Date	-	11/20/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014
Sample End Date	-	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-	1.77	1.73	0.19	0.43	0.01	0.33
Grain Size < # 230 Sieve (g/day)	-	0.71	0.85	0.32	0.39	0.14	0.74
R2NC1-LR							
Sample Start Date	10/27/2013		11/20/2013	1/18/2014	2/16/2014	3/20/2014	4/16/2014
Sample End Date	11/24/2013		1/18/2014	2/16/2014	3/20/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	2.74		0.47	0.01	0.01	0.06	0.06
Grain Size < # 230 Sieve (g/day)	0.59		0.37	0.03	0.00	0.10	0.23
R2NC2-RR							
Sample Start Date	-		11/19/2013		2/16/2014	3/20/2014	4/16/2014
Sample End Date	-		2/16/2014		3/20/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-		0.07		0.00	0.00	0.01
Grain Size < # 230 Sieve (g/day)	-		0.22		0.00	0.06	0.13
R2S1-RR							
Sample Start Date	10/18/2013		11/18/2013	1/15/2014	2/16/2014	3/19/2014	4/16/2014
Sample End Date	11/18/2013		1/15/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	0.51		0.87	0.22	0.22	0.50	0.47
Grain Size < # 230 Sieve (g/day)	0.52		0.93	0.35	0.33	0.52	0.78
R2S2-LR							
Sample Start Date	-	11/21/2013	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014
Sample End Date	-	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-	0.49	0.51	0.17	0.18	0.29	0.26
Grain Size < # 230 Sieve (g/day)	-	0.49	0.6	0.26	0.20	0.39	0.59
R2SC1-RR							
Sample Start Date	10/19/2013		11/18/2013	1/15/2014	2/26/2014	3/30/2014	4/27/2014
Sample End Date	11/18/2013		1/15/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Grain size > #230 Sieve (g/day)	0.62		0.57	0.02	0.02	0.02	0.13
Grain Size < # 230 Sieve (g/day)	0.42		0.72	0.13	0.12	0.10	0.51
R2SC2-LR							
Sample Start Date	-	11/21/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014
Sample End Date	-	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-	0.80	0.46	0.03	0.04	0.18	0.21
Grain Size < # 230 Sieve (g/day)	-	0.61	0.41	0.12	0.15	0.34	0.47
R3N1-LR							
Sample Start Date	-	12/4/2013		12/30/2013	2/16/2014		3/19/2014
Sample End Date	-	12/30/2013		2/16/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.09		0.17	0.03		TBD
Grain Size < # 230 Sieve (g/day)	-	0.08		0.16	0.00		TBD
R3NC1-LR							
Sample Start Date	-		12/5/2013		2/16/2014		3/20/2014
Sample End Date	-		2/16/2014		3/20/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-		0.05		0.01		TBD

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Grain Size < # 230 Sieve (g/day)	-		0.07		0.00		TBD
R3S1-CP							
Sample Start Date	-	12/3/2013		12/30/2013	2/16/2014		3/19/2014
Sample End Date	-	12/30/2013		2/16/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.06		0.13	0.02		
Grain Size < # 230 Sieve (g/day)	-	0.10		0.20	0.00		
R3S2-LR							
Sample Start Date	-	12/3/2013		12/30/2013	2/16/2014		3/19/2014
Sample End Date	-	12/30/2013		2/16/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.04		0.15	0.01		TBD
Grain Size < # 230 Sieve (g/day)	-	0.09		0.14	0.00		TBD
R3S3-SG							
Sample Start Date	-	12/3/2013		12/30/2013	2/16/2014		3/19/2014
Sample End Date	-	12/30/2013		2/16/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.04		0.13	0.02		TBD
Grain Size < # 230 Sieve (g/day)	-	0.07		0.13	0.00		TBD
R3SC1-CP							
Sample Start Date	-		12/5/2013		2/17/2014		3/19/2014
Sample End Date	-		2/17/2014		3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-		0.08		0.00		TBD
Grain Size < # 230 Sieve (g/day)	-		0.17		0.00		TBD
R3SC2-LR							
Sample Start Date	-		12/4/2013		2/17/2014		3/19/2014
Sample End Date	-		2/17/2014		3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-		0.05		0.10		TBD
Grain Size < # 230 Sieve (g/day)	-		0.07		0.00		TBD
R3SC3-SG							
Sample Start Date	-		12/4/2014		2/17/2014		3/19/2014
Sample End Date	-		2/17/2014		3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-		0.08		0.10		TBD
Grain Size < # 230 Sieve (g/day)	-		0.11		0.00		TBD

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.
8. Liberty Island dredging with no overflow as of 6/19/14. Liberty Island departed the project site on July 3, 2014, and is not expected to return to service on this project in

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the foreseeable future.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.

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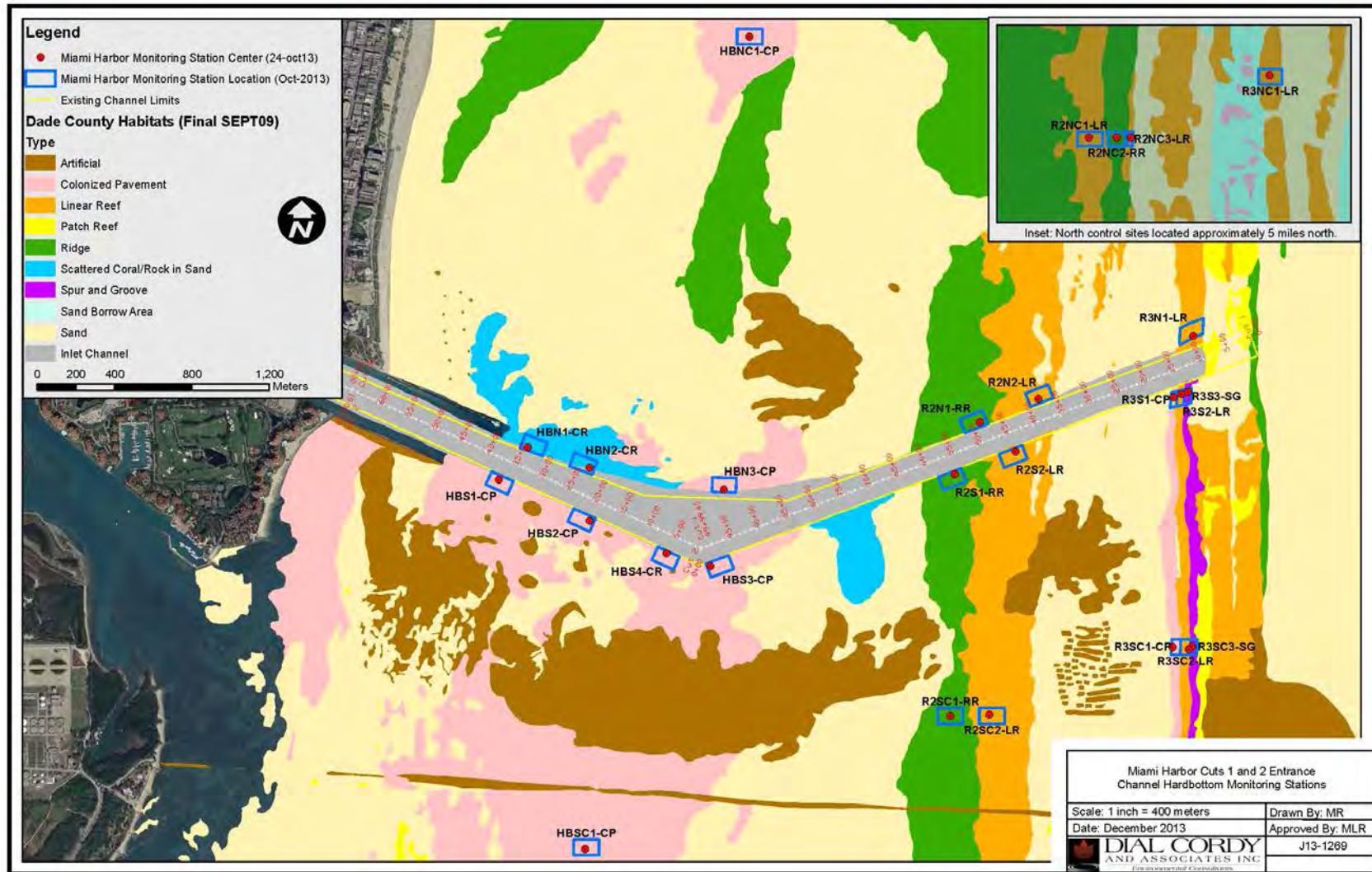


Figure 1: Miami Harbor Cuts 1 and 2 Entrance Channel Hardbottom and Reef monitoring stations.

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Week 34 07/09/14-07/15/14 Dredge Activity

Appendix A REVISED 8/1/14

Weekly functional group analysis results for HBN2-CR. Decreases in octocoral cover greater than or equal to 5% compared to baseline (B4) are presented in bold.

Transect		HBN2-CR																				
		Functional Group		T1			T2			T3												
CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND		
Week Number [†]	B4	0.2	0.0	4.8	0.0	0.0	93.8	1.2	0.2	0.0	5.5	0.0	0.0	89.8	4.3	0.0	0.8	4.0	0.0	0.0	90.2	5.0
	C1	0.3	0.7	5.7	0.0	0.0	42.6	49.5	0.0	0.0	4.8	0.0	0.0	33.8	59.7	0.0	0.9	3.8	0.0	1.5	6.8	86.4
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C4	0.0	0.0	2.6	0.0	0.0	9.9	87.3	0.0	0.0	0.5	0.0	0.0	14.4	85.1	0.0	0.6	1.3	0.0	1.5	11.7	84.9
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	0.0	0.6	1.5	0.0	0.0	9.9	88.1	0.0	0.0	1.8	0.0	0.0	15.9	82.3	0.0	0.8	0.6	0.6	0.0	8.5	89.5
	C8	0.7	0.6	0.9	0.0	0.0	6.6	90.9	0.0	0.0	1.0	0.0	0.0	8.8	90.2	0.0	0.5	1.2	0.0	0.0	11.1	87.2
	C9	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	
	C11	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C12	0.0	0.3	0.0	0.0	0.0	16.1	83.6	M	M	M	M	M	M	M	0.3	1.4	0.0	0.0	0.0	20.2	78.1
	C13	0.0	0.0	1.2	0.0	0.0	23.2	75.6	0.3	0.0	0.0	0.0	0.0	35.2	64.5	0.0	0.6	0.6	0.0	0.0	36.1	62.8
	C14	0.3	0.5	0.6	0.0	0.0	28.3	70.3	0.0	0.3	1.1	0.0	0.0	38.0	60.7	0.3	1.0	3.0	0.0	0.0	26.4	69.4
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	0.0	0.3	0.9	0.0	0.0	19.6	79.2	0.0	0.0	0.8	0.0	0.0	29.8	69.4	0.3	0.0	1.5	0.0	0.0	13.6	84.6
	C17	0.0	0.0	2.0	0.0	0.3	39.1	58.6	0.0	0.0	0.8	0.0	0.0	48.1	51.2	0.5	0.5	0.4	0.0	0.0	39.5	59.1
	C18	0.3	0.3	2.2	0.0	0.0	25.7	71.6	0.0	0.3	2.1	0.0	1.1	27.9	68.5	0.0	0.8	4.9	0.0	0.0	26.6	67.8
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	0.3	0.0	0.3	0.0	0.0	49.3	50.2	0.3	0.0	1.8	0.0	0.0	58.4	39.5	0.6	0.6	1.1	0.0	0.3	50.9	46.6
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C23	0.0	0.0	1.4	0.0	0.0	38.2	60.4	0.0	0.0	0.0	0.0	0.0	33.5	66.5	0.0	0.6	0.6	0.0	0.0	38.2	60.6
	C24	0.3	0.3	2.3	0.0	0.0	50.4	46.5	0.0	0.0	2.3	0.0	0.0	44.8	52.9	0.0	0.0	0.9	0.0	0.0	46.4	52.7
	C25	0.3	0.8	1.0	0.0	0.0	40.1	57.3	0.3	0.0	1.6	0.0	0.0	55.6	42.5	0.3	0.0	1.0	0.0	0.0	39.6	59.1
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	0.0	0.3	1.9	0.0	0.0	52.2	45.6	0.9	0.0	1.8	0.0	0.0	56.6	40.7	0.0	0.5	2.2	0.0	0.0	55.8	41.5

[†]: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 34

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Week 34 07/09/14-07/15/14 Dredge Activity

Appendix A REVISED 8/1/14

Weekly functional group analysis results for HBN3-CP. Decreases in octocoral cover greater than or equal to 5% compared to baseline (B4) are presented in bold.

Transect		HBN3-CP																				
Functional Group		T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number [†]	B4	3.7	5.8	5.5	1.0	0.0	77.1	5.7	13	3.8	12.5	2.9	0.0	75.9	3.4	1.1	4.3	13.1	0.8	0.0	74.9	5.5
	C1	1.1	5.7	9.4	2.4	0.0	71.2	10.2	0.6	3.9	10.3	4.0	0.0	64.0	17.2	1.2	6.4	13.6	0.6	0.0	69.7	7.8
	C2	1.3	4.7	4.9	2.0	0.0	61.0	26.1	1.1	5.5	6.7	4.3	0.0	66.7	15.6	2.3	6.5	7.2	1.6	0.0	61.4	21.0
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C4	1.3	5.1	3.5	0.6	0.0	54.1	35.5	3.4	12.9	1.9	0.0	0.0	25.5	56.4	1.4	13.1	1.4	0.5	1.0	15.9	66.8
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C10	1.1	7.4	3.1	1.5	0.0	63.4	23.1	1.4	3.1	10.5	2.1	0.0	68.3	14.6	0.6	5.5	7.7	2.8	0.0	66.9	16.5
	C11	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C12	1.9	3.5	4.4	0.9	0.0	24.8	64.4	1.6	5.0	9.1	3.1	0.0	51.2	30.0	1.3	2.4	9.0	1.6	0.0	54.5	31.2
	C13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	0.9	2.1	2.5	0.6	0.0	11.4	82.2	1.0	3.7	9.7	5.3	0.0	14.4	65.9	0.8	4.4	3.8	0.3	0.0	21.7	68.5
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	1.6	8.3	6.0	1.2	0.0	24.2	58.6	1.3	10.0	11.8	2.6	0.0	51.9	22.4	0.7	2.5	8.7	0.0	0.0	62.7	25.5
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	3.1	3.1	3.0	1.7	0.0	48.3	40.8	0.3	2.9	5.6	5.5	0.0	60.6	24.9	0.4	3.3	5.0	0.3	0.0	56.8	34.3
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	1.2	4.1	3.0	1.1	0.0	45.6	45.1	0.5	3.8	4.1	3.2	0.0	54.0	34.3	0.8	2.1	7.0	0.6	0.0	55.1	34.5
	C23	1.4	4.4	1.8	0.3	0.0	23.7	68.4	0.6	3.8	4.1	3.1	0.0	45.5	43.0	0.8	2.7	2.5	0.7	0.0	37.3	55.7
	C24	1.8	3.5	2.5	0.7	0.0	38.8	52.7	1.1	2.4	8.1	4.3	0.0	50.0	34.2	0.8	2.7	5.7	2.1	0.0	41.9	46.7
	C25	1.1	5.5	3.8	0.3	0.0	14.9	74.4	0.3	5.7	5.4	5.0	0.0	32.4	51.2	1.5	3.3	6.5	2.5	0.0	28.1	57.8
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	2.0	3.9	1.8	2.2	0.0	49.6	40.0	1.1	4.9	8.0	4.8	0.0	57.9	22.8	1.2	3.3	10.2	0.6	0.0	48.9	35.6
	C28	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D

[†]: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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Week 34 07/09/14-07/15/14 Dredge Activity

Appendix A REVISED 8/1/14

Weekly functional group analysis results for HBNC1-CP. Decreases in octocoral cover greater than or equal to 5% when compared to baseline (B4) are presented in bold.

Transect		HBNC1-CP																				
Functional Group		T1						T2						T3								
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number [†]	B4	1.4	17.8	4.5	0.0	0.3	73.7	1.0	0.0	24.3	11.4	0.0	0.4	63.0	0.5	0.4	22.7	7.4	0.0	0.0	68.5	0.8
	C1	1.0	24.8	3.8	0.0	0.3	45.0	24.6	0.3	25.0	6.8	0.0	0.5	40.2	26.6	0.0	28.3	1.8	0.0	0.3	45.6	23.7
	C2	1.6	26.3	1.7	0.0	0.0	47.1	22.4	0.7	35.5	2.3	0.0	0.3	31.8	29.3	0.4	29.7	4.2	0.0	0.3	33.3	32.1
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C4	0.7	12.6	3.1	0.0	0.7	50.0	32.9	0.0	15.8	2.4	0.0	0.0	55.5	26.4	0.3	21.8	2.8	0.0	0.5	46.7	27.9
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C8	1.2	25.0	2.9	0.0	0.6	42.5	27.8	0.0	25.6	2.5	0.0	0.4	50.0	21.5	0.3	23.4	4.1	0.0	0.4	41.9	29.9
	C9	0.3	20.8	5.1	0.0	0.3	51.0	22.3	0.6	25.6	5.4	0.0	1.4	41.1	25.6	0.3	20.7	2.9	0.0	0.3	41.9	33.6
	C10	0.3	13.3	1.3	0.0	0.3	59.4	24.8	0.3	19.0	1.4	0.0	0.0	53.6	25.5	0.3	17.5	2.3	0.0	0.0	57.4	22.5
	C11	2.7	20.7	2.3	0.0	0.0	41.8	32.5	0.0	19.3	5.0	0.0	0.3	43.9	31.6	0.6	16.2	1.9	0.0	0.3	51.4	29.6
	C12	1.6	24.8	1.4	0.0	0.0	32.3	39.9	0.5	14.9	0.8	0.0	0.0	33.8	50.0	0.3	17.9	2.1	0.0	0.0	31.8	47.6
	C13	0.6	18.3	1.5	0.0	0.0	55.9	23.6	0.3	19.8	1.6	0.0	0.0	38.8	39.5	0.0	17.1	2.6	0.0	0.0	37.2	42.3
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	0.5	18.8	2.1	0.0	0.0	49.8	28.6	1.2	18.5	1.6	0.0	0.3	29.3	46.7	0.2	19.7	0.5	0.0	0.0	30.7	48.6
	C17	0.5	14.2	1.7	0.0	0.8	68.4	12.8	0.3	15.4	2.6	0.0	0.0	72.0	9.4	0.0	19.5	1.1	0.0	0.0	71.1	7.8
	C18	1.1	20.0	1.1	0.0	0.0	60.2	16.6	0.9	12.3	1.9	0.0	0.3	56.5	27.5	1.2	19.7	1.4	0.0	0.6	65.9	10.1
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	1.9	15.7	3.7	0.0	0.0	60.4	18.3	0.3	17.6	4.8	0.0	0.0	56.3	20.5	0.0	19.2	2.1	0.0	0.0	61.8	16.6
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C23	1.1	14.8	2.0	0.0	0.0	47.2	34.7	0.0	13.0	1.7	0.0	0.6	30.8	53.6	0.6	17.5	2.5	0.0	0.3	34.6	44.6
	C24	0.3	17.1	2.8	0.0	0.0	54.6	24.9	0.3	19.7	4.1	0.0	1.6	55.2	18.1	0.6	17.3	4.4	0.0	0.6	55.6	21.3
	C25	1.3	25.5	2.4	0.0	0.5	42.2	27.0	0.3	24.1	3.5	0.0	0.3	32.1	37.2	0.3	27.8	1.9	0.0	1.0	39.0	28.3
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	0.6	23.0	4.7	0.0	0.6	27.3	42.8	0.3	22.5	4.7	0.3	0.3	30.2	40.8	0.6	25.5	3.1	0.0	0.5	34.6	35.2
	C28	0.0	20.2	3.2	0.0	1.2	47.1	28.3	0.3	26.5	1.6	0.0	1.0	40.6	30.0	0.6	23.4	3.8	0.0	0.6	45.1	26.6

[†]: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 34
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Appendix A REVISED 8/1/14

Weekly functional group analysis results for HBS1-CP. Decreases in octocoral cover greater than or equal to 5% compared to baseline (B4) are presented in bold.

Transect		HBS1-CP															T2					
		T1					T3					T3					T2					
Functional Group	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	
	B4	2.9	1.5	5.2	0.9	0.0	87.8	1.1	0.9	9.1	7.5	0.4	0.0	78.9	3.0	2.8	1.8	5.4	1.0	0.0	87.5	1.0
Week Number +	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C12	1.7	3.4	7.1	2.8	0.0	47.1	37.9	1.0	4.3	6.7	0.3	0.0	30.2	57.5	0.3	4.7	7.5	1.8	0.0	28.3	56.4
	C13	1.4	0.6	0.7	4.2	0.0	85.5	7.6	0.3	4.7	3.8	0.5	0.0	76.1	14.6	0.0	5.3	3.6	2.4	0.0	84.2	4.4
	C14	1.3	1.9	5.6	0.3	0.0	26.0	65.0	0.3	5.3	7.7	0.0	1.2	40.8	44.7	0.0	5.5	3.3	0.0	0.0	35.2	54.2
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	2.2	1.3	7.4	2.0	0.5	16.4	69.9	0.3	4.4	7.0	0.0	0.0	26.5	61.0	0.0	4.5	6.4	0.0	0.0	33.2	54.8
	C17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C18	0.6	0.9	8.7	3.2	0.3	75.7	10.7	1.8	5.7	6.1	0.0	0.0	75.2	11.4	1.8	3.5	8.7	0.3	0.0	77.5	7.9
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	1.7	2.2	6.6	4.8	0.9	69.4	14.4	0.3	2.7	7.3	0.0	0.5	66.6	22.6	0.3	3.0	7.6	0.3	0.4	65.7	22.8
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	1.1	0.6	5.9	4.6	0.3	68.5	19.0	0.5	3.5	4.5	0.0	0.0	77.3	13.6	0.4	2.7	5.5	0.0	0.3	75.9	14.9
	C23	0.0	5.1	10.7	2.6	0.3	60.2	20.8	0.4	4.1	5.2	0.0	0.0	64.4	25.8	0.0	3.3	7.5	0.0	0.3	65.9	23.0
	C24	0.6	2.0	10.1	4.6	0.9	68.2	12.9	0.7	1.4	6.3	0.6	0.3	73.2	17.0	0.7	4.7	7.3	0.5	0.0	71.6	15.3
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	2.3	1.2	6.1	2.2	1.4	57.9	27.2	1.3	3.6	12.3	0.5	0.0	53.1	27.9	0.3	3.4	9.6	0.0	0.3	60.6	25.0
	C28	0.3	2.0	5.9	1.5	0.0	73.0	17.1	0.9	7.1	4.7	0.0	0.9	62.0	24.5	0.3	7.5	6.0	0.0	2.2	62.5	21.4
	C29	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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Weekly functional group analysis results for HBS2-CP. Decreases in octocoral cover greater than or equal to 5% compared to baseline (B4) are presented in bold.

Transect	HBS2-CP																				
	Functional Group		T1			T2			T3												
CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	
B4	0.3	0.0	1.7	0.0	0.0	65.0	33.1	0.2	0.0	1.8	0.6	0.0	60.5	36.9	0.2	1.0	2.5	0.2	0.0	63.3	32.8
C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
C12	0.0	0.3	4.1	0.3	0.0	34.3	61.1	0.8	0.3	4.0	0.0	0.0	33.9	61.0	0.0	0.9	2.3	0.0	0.0	23.8	73.0
C13	0.0	0.4	3.2	0.7	0.3	57.0	38.5	0.0	0.0	2.6	0.0	0.0	57.3	40.2	0.0	0.6	3.7	0.6	0.0	52.3	42.8
C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
C16	0.3	0.0	4.3	0.0	0.0	18.9	76.6	0.3	0.3	6.3	0.0	0.0	19.4	73.5	0.0	0.8	3.6	1.1	0.0	18.3	76.2
C17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
C18	0.0	0.6	4.1	0.0	0.0	48.9	46.4	0.3	0.0	6.2	0.0	0.0	45.3	48.3	0.0	0.5	6.8	0.0	0.0	46.3	46.2
C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
C20	0.6	1.4	6.2	0.5	0.0	28.1	62.4	1.4	0.9	8.3	0.3	0.0	33.7	55.2	0.6	1.1	6.6	0.0	0.0	42.9	48.6
C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
C22	0.3	0.6	5.2	0.5	1.7	48.8	42.8	0.4	0.9	5.8	0.0	0.0	55.8	37.2	0.0	2.1	5.2	0.3	0.0	32.2	60.3
C23	0.0	0.3	4.8	0.4	0.0	41.2	52.5	0.9	1.4	4.7	0.0	0.0	47.1	45.2	0.0	1.9	4.6	0.0	0.0	43.8	49.6
C24	0.3	0.6	5.4	0.0	0.0	41.8	52.0	0.6	0.0	3.7	0.3	0.0	47.3	47.8	0.0	0.9	3.9	0.0	0.0	32.4	62.7
C25	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
C27	0.3	0.3	4.6	0.0	0.0	32.7	62.1	0.9	0.6	5.4	0.3	0.0	38.0	54.9	0.3	1.3	2.5	0.0	0.0	28.5	67.3
C28	0.9	0.0	2.7	0.4	0.0	36.2	59.6	0.9	1.2	4.7	0.4	0.3	31.1	61.5	0.0	1.1	4.0	0.4	0.0	25.0	69.6

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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Appendix A REVISED 8/1/14

Weekly functional group analysis results for HBS3-CP. Decreases in octocoral cover greater than or equal to 5% compared to baseline (B4) are presented in bold.

Transect	Functional Group	HBS3-CP																				
		T1					T2					T3										
CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND		
Week Number [†]	B4	0.6	11.2	2.3	0.0	0.0	70.1	15.8	0.6	14.9	3.6	2.5	0.0	74.2	4.0	1.5	18.1	3.0	0.5	0.0	63.9	11.9
	C1	1.3	16.3	7.5	1.8	0.0	45.8	27.0	0.9	13.2	4.7	0.7	0.0	50.4	30.0	1.0	12.5	4.5	3.4	0.0	53.4	24.9
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C3	1.0	14.8	4.4	0.3	0.0	39.2	40.3	1.2	15.5	2.3	0.0	0.0	36.5	44.2	0.7	15.7	4.4	1.9	0.0	37.5	39.6
	C4	1.4	13.3	6.7	0.3	0.0	16.7	61.5	0.0	10.7	7.1	0.6	0.0	10.9	70.7	0.3	14.8	2.2	0.0	0.0	15.1	67.3
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C11	0.7	12.7	3.1	0.0	0.0	19.5	64.0	1.7	12.7	1.9	0.3	0.0	12.0	71.4	1.4	12.8	0.7	1.8	0.0	11.9	71.3
	C12	1.2	12.4	0.8	0.0	0.0	14.1	71.5	1.0	16.2	0.5	0.0	0.0	10.2	72.1	1.1	9.6	1.6	1.1	0.0	9.9	76.8
	C13	0.0	13.7	0.3	0.0	0.0	28.6	57.4	0.0	7.7	0.0	0.3	0.0	28.6	63.4	0.0	5.3	0.6	2.0	0.0	30.5	61.5
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	0.6	10.5	3.5	0.0	0.0	9.5	75.7	1.5	8.3	4.9	0.6	0.0	9.3	75.5	0.5	10.6	2.0	0.6	0.0	5.9	80.5
	C17	0.3	11.8	3.7	0.0	0.0	33.3	50.7	1.7	12.1	1.5	0.3	0.0	36.6	47.9	1.3	11.5	3.3	0.6	0.0	31.6	51.5
	C18	1.4	15.9	2.3	0.0	0.0	56.7	23.8	0.0	14.0	1.8	0.5	0.0	37.4	46.4	0.0	20.7	1.9	0.3	0.0	32.1	45.0
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	0.9	13.3	4.0	0.0	0.0	39.8	42.0	0.9	8.2	4.9	0.0	0.0	53.2	32.8	0.5	11.1	4.9	1.4	0.0	43.8	38.1
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	1.1	9.3	3.2	0.0	0.0	49.7	36.7	0.8	8.9	2.1	0.8	0.0	56.4	30.7	0.5	11.8	3.1	0.3	0.0	43.9	40.3
	C23	0.8	4.7	3.6	0.0	0.0	39.6	51.3	1.5	9.1	1.9	0.6	0.0	36.8	50.2	0.3	13.6	1.5	0.0	0.0	38.1	46.0
	C24	0.9	11.3	2.5	0.0	0.0	28.6	56.8	1.4	12.5	2.7	0.6	0.0	34.7	48.1	0.7	11.7	1.7	0.3	0.0	30.2	54.7
	C25	0.5	13.8	1.9	0.0	0.0	26.6	57.2	1.8	15.1	3.0	0.3	0.0	15.3	64.2	0.3	17.6	1.5	0.5	0.0	23.2	56.9
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	1.9	12.4	2.3	0.4	0.0	34.1	49.0	1.0	11.7	4.0	0.8	0.0	38.8	43.6	0.0	14.8	3.2	0.0	0.3	34.3	47.2
	C28	0.0	12.6	5.6	0.4	0.0	39.1	42.4	2.7	11.7	2.3	0.0	0.3	45.3	37.4	0.0	13.5	2.4	2.4	0.0	50.8	30.9

[†]: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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Weekly functional group analysis results for HBS4-CR. Decreases in octocoral cover greater than or equal to 5% compared to baseline (B4) are presented in bold.

Transect	Functional Group	HBS4-CP																				
		T1						T2						T3								
CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND		
Week Number [†]	B4	0.2	9.2	3.2	0.2	0.4	65.8	21.2	0.4	11.6	7.0	0.3	0.3	57.5	22.9	0.4	9.7	4.3	0.9	0.0	56.1	28.5
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C9	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C12	0.0	3.4	2.4	0.0	0.0	14.1	80.1	0.0	9.7	3.6	0.0	0.0	6.0	80.7	0.0	5.9	1.3	0.0	0.0	7.7	85.2
	C13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	1.6	8.4	2.0	0.0	0.0	10.2	77.2	0.5	13.7	3.9	0.0	0.0	14.4	67.5	0.0	7.7	1.6	1.2	0.0	6.9	82.6
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C18	0.3	9.4	0.9	0.0	1.0	25.1	63.3	0.3	11.4	3.7	0.0	0.7	22.9	61.1	1.7	5.3	2.4	0.9	0.0	25.0	64.7
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	0.9	9.0	2.2	0.3	0.0	37.4	50.3	0.0	9.6	3.3	0.0	0.0	43.1	44.0	1.6	4.9	3.8	0.6	0.0	50.4	38.7
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	0.4	7.2	5.4	0.3	0.0	44.9	41.9	0.0	9.4	3.9	0.0	0.0	46.0	40.6	0.6	6.0	2.6	1.4	0.0	39.6	49.8
	C23	1.6	6.4	2.9	0.6	0.0	35.4	52.6	0.3	11.0	2.8	0.0	0.0	31.5	54.4	0.0	6.8	1.7	0.0	0.0	25.8	65.5
	C24	0.6	5.5	2.5	0.3	0.3	30.4	60.5	0.5	8.7	2.8	0.0	0.0	34.4	53.4	0.4	4.7	1.2	0.0	0.0	31.8	61.9
	C25	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	0.3	8.4	2.2	0.0	0.0	12.3	76.8	0.3	12.5	2.3	0.0	0.3	10.9	73.6	0.9	7.9	2.0	0.9	0.0	10.2	77.7
	C28	0.0	3.6	2.0	0.0	0.3	24.4	69.7	0.6	7.7	2.6	0.0	0.0	13.0	75.8	0.0	4.9	1.1	0.6	0.0	18.7	74.6

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 34
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 34 07/09/14-07/15/14 Dredge Activity
Appendix A REVISED 8/1/14

Weekly functional group analysis results for HBSC1-CP. Decreases in octocoral cover greater than or equal to 5% compared to baseline (B4) are presented in bold.

		HBSC1-CP																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
	B4	9.3	9.5	3.5	0.0	0.7	66.2	10.9	0.6	8.4	2.1	0.0	2.7	80.0	5.5	0.3	7.8	2.8	0.0	4.5	75.3	8.9
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C12	9.5	14.1	0.6	0.0	0.0	8.1	67.7	1.4	8.8	2.9	0.0	0.0	20.7	66.3	0.0	11.9	1.8	0.0	0.0	16.0	70.3
	C13	6.0	9.2	0.6	0.0	0.0	78.6	5.6	0.3	9.5	1.4	0.5	0.0	76.9	11.4	2.3	12.5	1.9	0.0	0.0	70.5	12.5
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	9.6	13.0	1.0	0.3	37.7	30.4	5.9	0.8	10.6	4.4	0.0	54.0	21.3	7.7	0.8	8.7	5.1	0.0	58.0	20.1	5.9
	C17	8.6	11.5	0.6	0.0	0.5	74.3	2.4	0.4	9.9	1.4	0.3	1.2	84.5	0.5	0.8	9.5	2.8	0.0	1.8	80.9	1.1
	C18	4.6	6.5	4.1	0.0	0.3	49.4	34.3	1.5	9.9	2.9	0.0	0.9	55.7	28.9	1.4	10.0	1.7	0.0	1.7	60.2	23.8
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	5.8	9.4	3.6	1.2	0.6	66.0	11.9	1.3	5.3	2.9	0.8	1.5	85.7	1.9	1.1	5.0	2.5	0.0	3.8	83.1	3.6
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	6.3	7.5	2.7	0.0	4.3	76.4	1.8	1.2	9.6	1.8	0.0	4.7	81.8	0.7	0.5	7.2	2.5	0.0	6.3	82.6	0.9
	C23	4.3	9.1	2.4	0.6	1.1	81.1	0.6	0.9	7.2	2.4	0.0	9.6	78.1	0.6	0.3	8.3	5.0	0.0	8.7	75.1	2.2
	C24	6.5	12.3	1.4	0.0	15.5	60.2	2.6	0.5	10.2	0.6	0.3	14.7	71.3	2.0	0.3	6.4	2.0	0.0	19.1	69.1	2.0
	C25	5.4	14.6	1.1	0.0	10.0	65.3	2.6	0.8	9.5	0.5	0.5	16.9	71.0	0.5	0.3	13.5	1.3	0.3	15.0	66.2	2.5
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	5.0	11.0	2.4	0.0	0.5	59.4	18.2	2.2	11.3	4.1	0.3	1.0	66.8	12.8	1.7	8.7	6.2	0.3	1.7	69.1	12.2
	C28	7.8	11.7	1.8	0.0	0.3	70.8	7.4	2.1	10.4	1.9	0.0	1.5	68.2	15.7	1.4	10.6	2.0	0.0	2.3	78.4	5.4

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 35

FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening

Week 35 07/16/14-07/22/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. The hopper dredge Liberty Island left the project area on July 3, 2014 and is not expected to return at this time. During Compliance Week 35 (July 16 to July 22, 2014), the cutterhead dredge Texas and Spider Barge worked in Cut 1 (STA 16+81 to 35+50), and Dredge 55 worked in Cut 2 (STA 58+00 to 65+00). The dredge Texas was struck by lightning on July 16, after one day of dredging in the compliance week. As of August 1 the dredge Texas is still under repair and has not resumed dredging.

Biological monitoring was required for sites within 750 m of an active dredge and included all middle and outer reef monitoring sites, and HBS1 (Figure 1). Biological monitoring was conducted twice at all sites within 750m of dredging activity, with the exception of HBS1 which could not be monitored due to safety constraints. Adverse environmental conditions (e.g., severe thunderstorms, excessive wind speeds, wave heights, and/or low visibility) during Week 35 of compliance monitoring made conditions unsafe for offshore dive operations during portions of 3/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind, wave, and traffic conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral condition surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral condition, video transect and sediment block survey methods.

Weekly Coral Condition Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)):

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications

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of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a "0" (normal or non-stressed) or "1" (stressed), and photographed. If a "1" is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Statistical comparisons for all condition data are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a "1" during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of all polyps on the colony.
Mucus	Sediment Stress	Excessive mucus production resulting in a mucus film and/or sediment balled up in mucus.
Paling	Stress	Live tissue with some loss of color.
Bleaching	Stress	Live tissue with complete loss of color.
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Moderate sediment accumulation on top of colony (more than dusting). Accumulation in grooves and/or between polyps
Partial Burial	Sedimentation	Portion(s) of the colony buried by sediment
Burial	Sedimentation	Entire colony buried by sediment
Recent Partial Mortality	Sedimentation	Partial mortality of coral colony appears white with no live polyps visible. Generally, occurs around the margin of the colony. Visible when sediment recedes.

Sediment Stress

Sediment stress data are qualitative estimations of sediment related stress that are observed on permanently marked hard corals. *In situ* data on sediment stress and other conditions are

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assigned in the field during data collection. QA/QC is conducted on photos for all coral conditions in the laboratory. Data are entered into an Excel spreadsheet for analysis each week. Sediment dusting (SED) is not considered a “stress” indicator and is given a score of zero. SED is a low amount, a “dusting”, of sediment ontop of the coral. Sediment accumulation (SA), is an accumulation of sediment ontop of the coral, between polyps, or within grooves and is qualitatively more than a dusting of sediment. Partial burial (PBUR) is the accumulation of sediment around the base of the coral, sometimes in the form of a berm, and burial (BUR) is the complete burial of the coral colony by sediment. SA, PBUR, and BUR are given scores of a “1”. A single coral may exhibit one or more conditions, including one or more sediment stress codes. For example, a coral may have sediment accumulation (SA) and partial burial (PBUR). The score for such a coral would be a “1”, code data are collected for all applicable conditions. Sediment stress data are reported in Table 3.

Weekly Functional Group Percent Cover Analysis

Functional groups in the vicinity of the project area (hardbottom, middle, and outer reef) include typical sub-tropical hardbottom and reef environment sessile invertebrates, including octocorals, sponges and hard corals among others. Of these biological constituents, the most abundant and highest in percent cover are the octocorals, which range in cover from 1-15% (Gilliam et al. 2007, Dial Cordy 2010 and 2012). Sponges range from 1-6% cover, while hard corals including Millepora range from 0.2 to 4.6% (Dial Cordy et al. 2010 and 2012). Since octocorals dominate the benthic habitat across habitat types, octocorals are used as the proxy indicator group because they are most abundant non-algal benthic component. Percent cover calculations are compared between monitoring events and among transects and sites.

Functional group analysis is conducted for available video transect data, which are collected as part of the weekly compliance monitoring and is used to satisfy FDEP permit Special Condition 32.(a).(ii).d:

Any change of 5% or more in cover by any functional group evaluated in quadrats in two or more adjacent transects, or on average for the zone of monitoring on one side of the channel, or stress expressed above normal by corals and/or octocorals within transects (stress scale used for Broward County Segment III project) will require an additional survey to outline the area(s) of impact. Impacted areas shall continue to be monitored monthly during the construction, one month post-construction, and two times during next year in order to document results of the impact. Final monitoring results shall document permanent impacts, if any, to be used for estimates of additional mitigation using UMAM.

Quantitative digital video data are collected along each transect with the camera positioned 40cm above the substrate, recording a plan-view of the benthic resources (Aronson et al. 1994). The video camera is equipped with a measuring device to ensure the camera remains at 40-cm above the bottom and a scale bar is visible at the bottom of the camera screen at all times with the site information in the lower right hand corner. The camera records video transect data at a speed of ~5 m per minute to insure quality still images may be extracted for analysis. These data are collected each time a site is surveyed, however analysis is only conducted for a single monitoring survey within a given compliance week. Analysis is conducted for a total of 24m² per site (0.4m x 20m x 3 transects).

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Transect video footage is broken down into 40 non-overlapping still images (repetitive quadrats) using GOM Video Player™. Stills are analyzed for selected functional groups (octocorals, sponge, hard corals, zoanthids, macroalgae, CTB (crustose turf and bare space)) using randomly overlaid points in CPCe® software. Percent cover for selected functional groups, and sand are compared over time and presented in Appendix A.

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design used in the Broward County Shore Protection Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibial growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

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Results

Coral Condition Surveys

Biological monitoring was conducted twice at all sites within 750m of dredging activity, with the exception of HBS1 which could not be monitored due to safety constraints (see Background section). Coral condition data for reference sites (e.g., HBSC1) and channel-side sites (e.g., HBS1) were compared using a two-sampled t-test ($p \leq 0.05$). Stress levels at reference sites ranged from 0.63 ± 0.49 (HBSC1) to 0.97 ± 0.19 (R2NC1) whereas stress levels at channel-side sites ranged from 0.46 ± 0.51 (R3S3) to 1.00 ± 0.0 (R2N1; Table 2).

In Week 35 coral condition values continued to be elevated across channel-side and reference sites (Table 2), due to an increase in paling and bleaching of corals in the project area. Seasonally warm water temperatures and elevated levels of irradiance are known to induce paling and/or bleaching (stress) in corals (e.g., Baker et al. 2008). Sedimentation stress including sediment accumulation (SA), partial burial (PBUR) and burial (BUR) were present at higher levels on channel-side v. reference sites (Table 3). Partial mortality at the base of several corals was documented at HBS1, R2N1, R2N2, R2NC1, R2S1, R2S2, R2SC1, R3N1, R3NC1, R3S1, and R3SC1. The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was present in permanently marked corals at all sites surveyed in the current week except R2NC2, R2SC2, R3S1, and R3SC3.

Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 35. Permanently marked scleractinians at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators (e.g., sediment accumulation, extended polyps, excess mucus production, etc.).

Survey Zone	Area	Site	Scleractinian Condition					
			First Survey			Second Survey		
			Mean	SD	N	Mean	SD	N
Hardbottom	South	HBS1	0.89*	0.32	18	N/A	N/A	N/A
		HBS2	N/A	N/A	N/A	N/A	N/A	N/A
		HBS3	N/A	N/A	N/A	N/A	N/A	N/A
		HBS4	N/A	N/A	N/A	N/A	N/A	N/A
		HBSC1	0.63	0.49	30	N/A	N/A	N/A
	North	HBN2	N/A	N/A	N/A	N/A	N/A	N/A
		HBN3	N/A	N/A	N/A	N/A	N/A	N/A
		HBNC1	N/A	N/A	N/A	N/A	N/A	N/A
Middle Reef	South	R2S1	0.93	0.27	27	0.96*	0.19	27
		R2SC1	0.83	0.38	30	0.70	0.47	30
		R2S2	0.88	0.34	24	0.96*	0.20	24
		R2SC2	0.80	0.41	25	0.56	0.51	25
	North	R2N1	1.00*	0.00	30	1.00*	0.00	30
		R2NC2	0.70	0.47	30	0.69	0.47	29
		R2N2	0.96	0.20	25	0.92	0.28	24
		R2NC1	0.97	0.19	29	0.90	0.31	29
Outer Reef	South	R3S1	0.84	0.37	19	0.74	0.45	19
		R3SC1	0.71	0.46	24	0.71	0.46	24
		R3S2	0.80	0.41	25	0.68	0.48	25

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Week 35 07/16/14-07/22/14 Dredge Activity

North	R3SC2	0.81	0.40	21	0.76	0.44	21
	R3S3	0.48*	0.51	25	0.46*	0.51	26
	R3SC3	0.88	0.34	24	0.88	0.34	24
	R3N1	0.86	0.35	22	0.77	0.43	22
	R3NC1	0.67	0.48	24	0.58	0.50	24

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

N/A: No data.

*: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test.

Sediment Stress

Sediment stress categories are qualitative estimations of sediment stress on permanently marked hard corals. Corals may exhibit one or more sediment stress categories, see Table 1 for definitions. Sediment dusting (SED) is not considered a “stress” indicator and is given a score of zero. SED is a low amount, a “dusting” of sediment on top of the coral. Sediment accumulation (SA), is an accumulation of sediment on top of the coral, between polyps, within grooves and is qualitatively more than a dusting of sediment. Partial burial (PBUR) is the accumulation of sediment around the base of the coral, and burial (BUR) is a complete burial of a coral colony by sediment. SA, PBUR, and BUR are scored as a “1”. A coral may exhibit one or more conditions, including one or more sediment stress codes. For example, a coral may exhibit sediment accumulation (SA) and partial burial (PBUR). The score for such a coral would be a “1”. Proportional sediment stress data reported in Table 3 may sum to more than 1.0 for a single site, since each coral may be assigned more than one category.

Table 3: Mean scleractinian sediment stress score as measured in Compliance Monitoring Week 34. Permanently marked scleractinians at channel and reference sites were assigned a “0” – SED (dusting) or a “1” depending on the presence/absence of sediment stress indicators (e.g., sediment accumulation (SA), partial burial (PBUR), and/or burial (BUR)).

Survey Zone	Area	Site	Sediment Stress Proportions									
			SED	SA	PBUR	BUR	N	SED	SA	PBUR	BUR	N
Hard-bottom	South	HBS1	0.22	0.44	0.50	0.00	18	N/A	N/A	N/A	N/A	N/A
		HBS2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBS3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBS4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBSC1	0.23	0.10	0.00	0.00	30	N/A	N/A	N/A	N/A	N/A
	North	HBN2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Middle Reef	South	HBN3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBNC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R2S1	0.04	0.37	0.67	0.00	27	0.11	0.74	0.15	0.00	27
		R2SC1	0.27	0.27	0.00	0.00	30	0.13	0.13	0.00	0.00	30
	North	R2S2	0.13	0.58	0.54	0.00	24	0.08	0.50	0.33	0.00	24
		R2SC2	0.28	0.12	0.00	0.00	25	0.12	0.16	0.00	0.00	25
		R2N1	0.03	0.93	0.80	0.00	30	0.00	0.63	0.73	0.00	30
		R2NC2	0.27	0.47	0.03	0.00	30	0.10	0.34	0.03	0.00	30
		R2N2	0.08	0.64	0.24	0.04	25	0.17	0.33	0.38	0.08	25
		R2NC1	0.00	0.28	0.03	0.00	29	0.07	0.34	0.07	0.00	29

Weekly Offshore Coral Stress and Sediment Block Compliance Report 35

FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening

Week 35 07/16/14-07/22/14 Dredge Activity

Survey Zone	Area	Site	Sediment Stress Proportions									
			SED	SA	PBUR	BUR	N	SED	SA	PBUR	BUR	N
Outer Reef	South	R3S1	0.16	0.37	0.05	0.00	19	0.16	0.21	0.05	0.00	19
		R3SC1	0.21	0.33	0.00	0.00	24	0.38	0.21	0.00	0.00	24
		R3S2	0.24	0.24	0.00	0.00	25	0.56	0.24	0.00	0.00	25
		R3SC2	0.14	0.43	0.00	0.00	21	0.38	0.14	0.00	0.00	21
		R3S3	0.32	0.28	0.00	0.00	25	0.46	0.19	0.00	0.00	25
		R3SC3	0.17	0.50	0.00	0.00	24	0.29	0.21	0.00	0.00	24
	North	R3N1	0.09	0.77	0.05	0.00	22	0.14	0.68	0.09	0.00	22
		R3NC1	0.21	0.25	0.00	0.00	24	0.04	0.29	0.13	0.00	24

N: Number of corals sampled to calculate the mean.

N/A: No data.

Weekly Functional Group Percent Cover Analysis

Functional group percent cover analysis is conducted on video transect data collected during the weekly monitoring surveys. All data are presented in Appendix A.

Sediment Block Survey

Little to no sediment accumulated on sediment blocks at any compliance monitoring sites in Week 35 (Table 4).

Table 4: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 35. All measurements are in mm. N represents the number of sediment blocks surveyed.

Survey Zone	Area	Site	Qualitative Sedimentation (mm)	N
Hardbottom	South	HBS1	0	1
		HBS2	N/A	N/A
		HBS3	N/A	N/A
		HBS4	N/A	N/A
		HBSC1	<1	1
	North	HBN2	N/A	N/A
		HBN3	N/A	N/A
		HBNC1	N/A	N/A
Middle Reef	South	R2S1	<1	1
		R2SC1	<1	1
		R2S2	1	1
		R2SC2	<1	1
	North	R2N1	0	1
		R2NC2	0	1
		R2N2	0	1
		R2NC1	0	1
Outer Reef	South	R3S1	<1	1
		R3SC1	0	1
		R3S2	<1	1
		R3SC2	0	1

Weekly Offshore Coral Stress and Sediment Block Compliance Report 35

FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening

Week 35 07/16/14-07/22/14 Dredge Activity

Survey Zone	Area	Site	Qualitative Sedimentation (mm)	N
North	R3S3	0	1	
		0	1	
	R3N1	0	1	
		0	1	

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 5).

Table 5: Sediment accumulation data collected from sediment traps since October 2013. Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in grams per day.

Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
HBN1-CR							
Sample Start Date	10/21/2013						
Sample End Date	11/18/2013						
Grain size > #230 Sieve (g/day)	6.98						
Grain Size < # 230 Sieve (g/day)	0.87						
HBN2-CR							
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	3/5/2014	4/4/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	4/2/2014	5/3/2014	5/29/2014
Grain size > #230 Sieve (g/day)	2.51	3.65	1.87	1.15	4.91	2.74	2.14
Grain Size < # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.70	0.48	0.25
HBN3-CP							
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	3/6/2014	4/3/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	4/3/2014	5/3/2014	5/28/2014
Grain size > #230 Sieve (g/day)	4.13	3.38	3.23	1.83	3.28	1.2	3.02
Grain Size < # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	1.01	0.54	0.25
HBNC1-CP							
Sample Start Date	10/15/2013		11/12/2013	1/13/2014	3/6/2014	4/2/2014	5/3/2014
Sample End Date	11/12/2013		1/13/2014	2/7/2014	4/2/2014	5/3/2014	5/29/2014
Grain size > #230 Sieve (g/day)	0.37		0.40	0.02	0.08	0.02	0.09
Grain Size < # 230 Sieve (g/day)	0.76		0.99	0.16	1.09	0.19	0.04
HBS1-CP							
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	3/7/2014	4/4/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014
Grain size > #230 Sieve (g/day)	0.67	2.42	1.21	0.95	0.77	0.44	2.32
Grain Size < # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.74	0.26	0.21
HBS2-CP							
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	3/7/2014	4/4/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014
Grain size > #230 Sieve (g/day)	0.76	3.18	2.05	0.84	1.66	0.54	1.63
Grain Size < # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.50	0.32	0.42
HBS3-CP							
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.43	0.26	0.41
Grain Size < # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.72	0.36	0.36
HBS4-CR							
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.61	0.33	1.15
Grain Size < # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	1.09	0.50	0.27
HBSC1-CP							
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	3/6/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.03	0.01	0.04
Grain Size < # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.32	0.08	0.02
R2N1-RR							

Weekly Offshore Coral Stress and Sediment Block Compliance Report 35

FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening

Week 35 07/16/14-07/22/14 Dredge Activity

Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
Sample Start Date	10/23/2013		11/18/2013	1/18/2014	2/17/2014	3/20/2014	4/16/2014
Sample End Date	11/18/2013		1/18/2014	2/17/2014	3/20/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	1.81		2.01	0.61	0.59	1.13	0.82
Grain Size < # 230 Sieve (g/day)	0.58		0.96	0.55	0.40	0.58	0.79
R2N2-LR							
Sample Start Date	-	11/20/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014
Sample End Date	-	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-	1.77	1.73	0.19	0.43	0.01	0.33
Grain Size < # 230 Sieve (g/day)	-	0.71	0.85	0.32	0.39	0.14	0.74
R2NC1-LR							
Sample Start Date	10/27/2013		11/20/2013	1/18/2014	2/16/2014	3/20/2014	4/16/2014
Sample End Date	11/24/2013		1/18/2014	2/16/2014	3/20/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	2.74		0.47	0.01	0.01	0.06	0.06
Grain Size < # 230 Sieve (g/day)	0.59		0.37	0.03	0.00	0.10	0.23
R2NC2-RR							
Sample Start Date	-		11/19/2013		2/16/2014	3/20/2014	4/16/2014
Sample End Date	-		2/16/2014		3/20/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-		0.07		0.00	0.00	0.01
Grain Size < # 230 Sieve (g/day)	-		0.22		0.00	0.06	0.13
R2S1-RR							
Sample Start Date	10/18/2013		11/18/2013	1/15/2014	2/16/2014	3/19/2014	4/16/2014
Sample End Date	11/18/2013		1/15/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	0.51		0.87	0.22	0.22	0.50	0.47
Grain Size < # 230 Sieve (g/day)	0.52		0.93	0.35	0.33	0.52	0.78
R2S2-LR							
Sample Start Date	-	11/21/2013	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014
Sample End Date	-	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-	0.49	0.51	0.17	0.18	0.29	0.26
Grain Size < # 230 Sieve (g/day)	-	0.49	0.6	0.26	0.20	0.39	0.59
R2SC1-RR							
Sample Start Date	10/19/2013		11/18/2013	1/15/2014	2/26/2014	3/30/2014	4/27/2014
Sample End Date	11/18/2013		1/15/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Grain size > #230 Sieve (g/day)	0.62		0.57	0.02	0.02	0.02	0.13
Grain Size < # 230 Sieve (g/day)	0.42		0.72	0.13	0.12	0.10	0.51
R2SC2-LR							
Sample Start Date	-	11/21/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014
Sample End Date	-	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-	0.80	0.46	0.03	0.04	0.18	0.21
Grain Size < # 230 Sieve (g/day)	-	0.61	0.41	0.12	0.15	0.34	0.47
R3N1-LR							
Sample Start Date	-	12/4/2013		12/30/2013	2/16/2014		3/19/2014
Sample End Date	-	12/30/2013		2/16/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.09		0.17	0.03		TBD
Grain Size < # 230 Sieve (g/day)	-	0.08		0.16	0.00		TBD
R3NC1-LR							
Sample Start Date	-		12/5/2013		2/16/2014		3/20/2014
Sample End Date	-		2/16/2014		3/20/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-		0.05		0.01		TBD
Grain Size < # 230 Sieve (g/day)	-		0.07		0.00		TBD
R3S1-CP							
Sample Start Date	-	12/3/2013		12/30/2013	2/16/2014		3/19/2014
Sample End Date	-	12/30/2013		2/16/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.06		0.13	0.02		
Grain Size < # 230 Sieve (g/day)	-	0.10		0.20	0.00		
R3S2-LR							
Sample Start Date	-	12/3/2013		12/30/2013	2/16/2014		3/19/2014
Sample End Date	-	12/30/2013		2/16/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.04		0.15	0.01		TBD
Grain Size < # 230 Sieve (g/day)	-	0.09		0.14	0.00		TBD
R3S3-SG							
Sample Start Date	-	12/3/2013		12/30/2013	2/16/2014		3/19/2014
Sample End Date	-	12/30/2013		2/16/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.04		0.13	0.02		TBD
Grain Size < # 230 Sieve (g/day)	-	0.07		0.13	0.00		TBD
R3SC1-CP							
Sample Start Date	-		12/5/2013		2/17/2014		3/19/2014
Sample End Date	-		2/17/2014		3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-		0.08		0.00		TBD
Grain Size < # 230 Sieve (g/day)	-		0.17		0.00		TBD

Weekly Offshore Coral Stress and Sediment Block Compliance Report 35
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Week 35 07/16/14-07/22/14 Dredge Activity

Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
R3SC2-LR							
Sample Start Date	-		12/4/2013		2/17/2014		3/19/2014
Sample End Date	-		2/17/2014		3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-		0.05		0.10		TBD
Grain Size < # 230 Sieve (g/day)	-		0.07		0.00		TBD
R3SC3-SG							
Sample Start Date	-		12/4/2014		2/17/2014		3/19/2014
Sample End Date	-		2/17/2014		3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-		0.08		0.10		TBD
Grain Size < # 230 Sieve (g/day)	-		0.11		0.00		TBD

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.
8. Liberty Island dredging with no overflow as of 6/19/14. Liberty Island departed the project site on July 3, 2014, and is not expected to return to service on this project in the foreseeable future.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.

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Weekly Offshore Coral Stress and Sediment Block Compliance Report 35

FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening

Week 35 07/16/14-07/22/14 Dredge Activity

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Weekly Offshore Coral Stress and Sediment Block Compliance Report 34
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 34 07/02/14-07/08/14 Dredge Activity

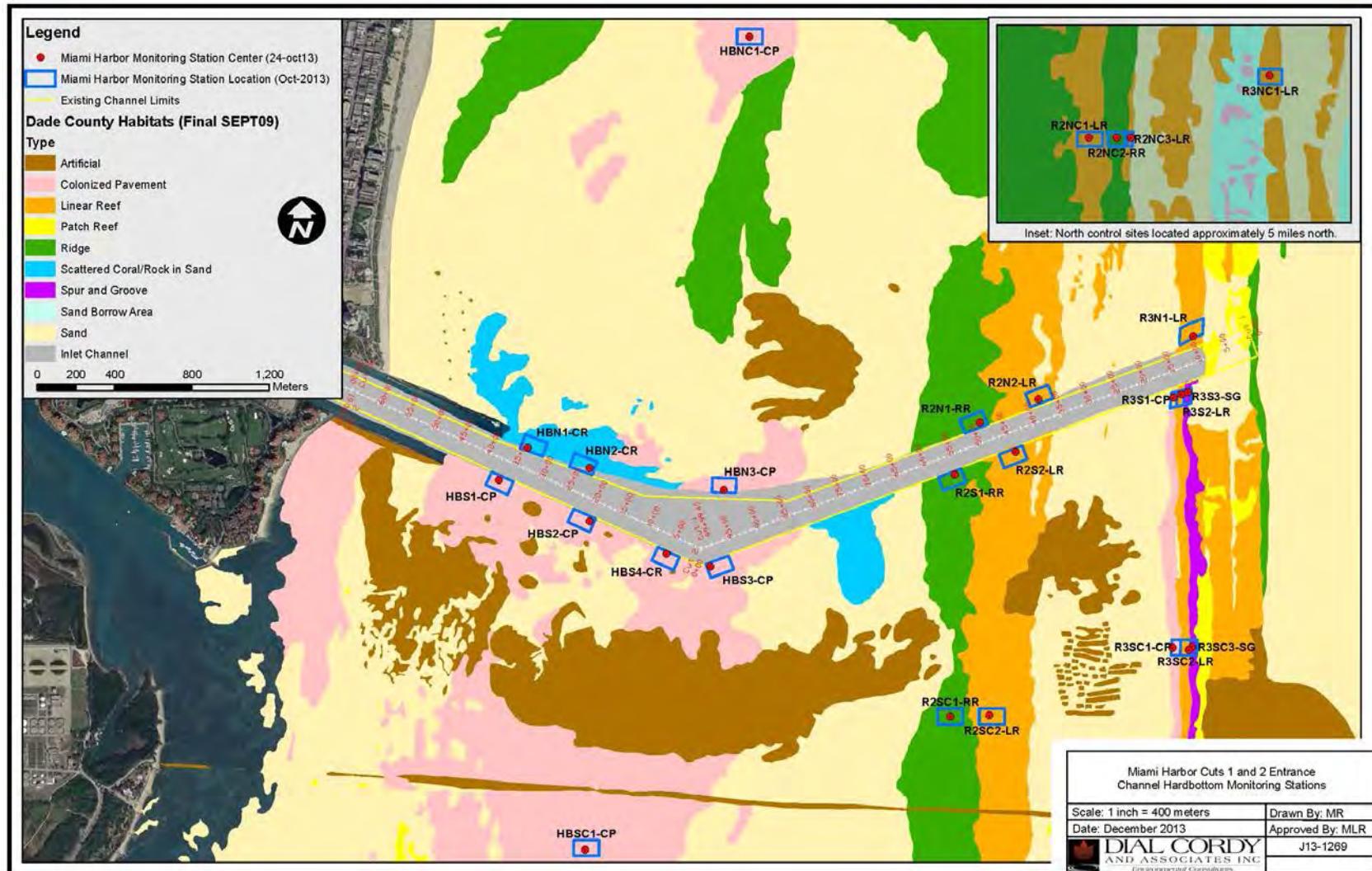


Figure 1: Miami Harbor Cuts 1 and 2 Entrance Channel Hardbottom and Reef monitoring stations.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 34

FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project

Week 34 07/09/14-07/15/14 Dredge Activity

Appendix A REVISED 8/1/14

Weekly functional group analysis results for HBN2-CR. Decreases in octocoral cover greater than or equal to 5% compared to baseline (B4) are presented in bold.

Transect		HBN2-CR																				
		Functional Group		T1			T2			T3												
CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND		
Week Number [†]	B4	0.2	0.0	4.8	0.0	0.0	93.8	1.2	0.2	0.0	5.5	0.0	0.0	89.8	4.3	0.0	0.8	4.0	0.0	0.0	90.2	5.0
	C1	0.3	0.7	5.7	0.0	0.0	42.6	49.5	0.0	0.0	4.8	0.0	0.0	33.8	59.7	0.0	0.9	3.8	0.0	1.5	6.8	86.4
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C4	0.0	0.0	2.6	0.0	0.0	9.9	87.3	0.0	0.0	0.5	0.0	0.0	14.4	85.1	0.0	0.6	1.3	0.0	1.5	11.7	84.9
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	0.0	0.6	1.5	0.0	0.0	9.9	88.1	0.0	0.0	1.8	0.0	0.0	15.9	82.3	0.0	0.8	0.6	0.6	0.0	8.5	89.5
	C8	0.7	0.6	0.9	0.0	0.0	6.6	90.9	0.0	0.0	1.0	0.0	0.0	8.8	90.2	0.0	0.5	1.2	0.0	0.0	11.1	87.2
	C9	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	
	C11	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C12	0.0	0.3	0.0	0.0	0.0	16.1	83.6	M	M	M	M	M	M	M	0.3	1.4	0.0	0.0	0.0	20.2	78.1
	C13	0.0	0.0	1.2	0.0	0.0	23.2	75.6	0.3	0.0	0.0	0.0	0.0	35.2	64.5	0.0	0.6	0.6	0.0	0.0	36.1	62.8
	C14	0.3	0.5	0.6	0.0	0.0	28.3	70.3	0.0	0.3	1.1	0.0	0.0	38.0	60.7	0.3	1.0	3.0	0.0	0.0	26.4	69.4
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	0.0	0.3	0.9	0.0	0.0	19.6	79.2	0.0	0.0	0.8	0.0	0.0	29.8	69.4	0.3	0.0	1.5	0.0	0.0	13.6	84.6
	C17	0.0	0.0	2.0	0.0	0.3	39.1	58.6	0.0	0.0	0.8	0.0	0.0	48.1	51.2	0.5	0.5	0.4	0.0	0.0	39.5	59.1
	C18	0.3	0.3	2.2	0.0	0.0	25.7	71.6	0.0	0.3	2.1	0.0	1.1	27.9	68.5	0.0	0.8	4.9	0.0	0.0	26.6	67.8
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	0.3	0.0	0.3	0.0	0.0	49.3	50.2	0.3	0.0	1.8	0.0	0.0	58.4	39.5	0.6	0.6	1.1	0.0	0.3	50.9	46.6
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C23	0.0	0.0	1.4	0.0	0.0	38.2	60.4	0.0	0.0	0.0	0.0	0.0	33.5	66.5	0.0	0.6	0.6	0.0	0.0	38.2	60.6
	C24	0.3	0.3	2.3	0.0	0.0	50.4	46.5	0.0	0.0	2.3	0.0	0.0	44.8	52.9	0.0	0.0	0.9	0.0	0.0	46.4	52.7
	C25	0.3	0.8	1.0	0.0	0.0	40.1	57.3	0.3	0.0	1.6	0.0	0.0	55.6	42.5	0.3	0.0	1.0	0.0	0.0	39.6	59.1
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	0.0	0.3	1.9	0.0	0.0	52.2	45.6	0.9	0.0	1.8	0.0	0.0	56.6	40.7	0.0	0.5	2.2	0.0	0.0	55.8	41.5

[†]: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 34

FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project

Week 34 07/09/14-07/15/14 Dredge Activity

Appendix A REVISED 8/1/14

Weekly functional group analysis results for HBN3-CP. Decreases in octocoral cover greater than or equal to 5% compared to baseline (B4) are presented in bold.

Transect		HBN3-CP																				
Functional Group		T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number [†]	B4	3.7	5.8	5.5	1.0	0.0	77.1	5.7	13	3.8	12.5	2.9	0.0	75.9	3.4	1.1	4.3	13.1	0.8	0.0	74.9	5.5
	C1	1.1	5.7	9.4	2.4	0.0	71.2	10.2	0.6	3.9	10.3	4.0	0.0	64.0	17.2	1.2	6.4	13.6	0.6	0.0	69.7	7.8
	C2	1.3	4.7	4.9	2.0	0.0	61.0	26.1	1.1	5.5	6.7	4.3	0.0	66.7	15.6	2.3	6.5	7.2	1.6	0.0	61.4	21.0
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C4	1.3	5.1	3.5	0.6	0.0	54.1	35.5	3.4	12.9	1.9	0.0	0.0	25.5	56.4	1.4	13.1	1.4	0.5	1.0	15.9	66.8
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C10	1.1	7.4	3.1	1.5	0.0	63.4	23.1	1.4	3.1	10.5	2.1	0.0	68.3	14.6	0.6	5.5	7.7	2.8	0.0	66.9	16.5
	C11	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C12	1.9	3.5	4.4	0.9	0.0	24.8	64.4	1.6	5.0	9.1	3.1	0.0	51.2	30.0	1.3	2.4	9.0	1.6	0.0	54.5	31.2
	C13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	0.9	2.1	2.5	0.6	0.0	11.4	82.2	1.0	3.7	9.7	5.3	0.0	14.4	65.9	0.8	4.4	3.8	0.3	0.0	21.7	68.5
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	1.6	8.3	6.0	1.2	0.0	24.2	58.6	1.3	10.0	11.8	2.6	0.0	51.9	22.4	0.7	2.5	8.7	0.0	0.0	62.7	25.5
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	3.1	3.1	3.0	1.7	0.0	48.3	40.8	0.3	2.9	5.6	5.5	0.0	60.6	24.9	0.4	3.3	5.0	0.3	0.0	56.8	34.3
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	1.2	4.1	3.0	1.1	0.0	45.6	45.1	0.5	3.8	4.1	3.2	0.0	54.0	34.3	0.8	2.1	7.0	0.6	0.0	55.1	34.5
	C23	1.4	4.4	1.8	0.3	0.0	23.7	68.4	0.6	3.8	4.1	3.1	0.0	45.5	43.0	0.8	2.7	2.5	0.7	0.0	37.3	55.7
	C24	1.8	3.5	2.5	0.7	0.0	38.8	52.7	1.1	2.4	8.1	4.3	0.0	50.0	34.2	0.8	2.7	5.7	2.1	0.0	41.9	46.7
	C25	1.1	5.5	3.8	0.3	0.0	14.9	74.4	0.3	5.7	5.4	5.0	0.0	32.4	51.2	1.5	3.3	6.5	2.5	0.0	28.1	57.8
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	2.0	3.9	1.8	2.2	0.0	49.6	40.0	1.1	4.9	8.0	4.8	0.0	57.9	22.8	1.2	3.3	10.2	0.6	0.0	48.9	35.6
	C28	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D

[†]: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 34

FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project

Week 34 07/09/14-07/15/14 Dredge Activity

Appendix A REVISED 8/1/14

Weekly functional group analysis results for HBNC1-CP. Decreases in octocoral cover greater than or equal to 5% when compared to baseline (B4) are presented in bold.

Transect		HBNC1-CP																				
Functional Group		T1						T2						T3								
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number [†]	B4	1.4	17.8	4.5	0.0	0.3	73.7	1.0	0.0	24.3	11.4	0.0	0.4	63.0	0.5	0.4	22.7	7.4	0.0	0.0	68.5	0.8
	C1	1.0	24.8	3.8	0.0	0.3	45.0	24.6	0.3	25.0	6.8	0.0	0.5	40.2	26.6	0.0	28.3	1.8	0.0	0.3	45.6	23.7
	C2	1.6	26.3	1.7	0.0	0.0	47.1	22.4	0.7	35.5	2.3	0.0	0.3	31.8	29.3	0.4	29.7	4.2	0.0	0.3	33.3	32.1
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C4	0.7	12.6	3.1	0.0	0.7	50.0	32.9	0.0	15.8	2.4	0.0	0.0	55.5	26.4	0.3	21.8	2.8	0.0	0.5	46.7	27.9
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C8	1.2	25.0	2.9	0.0	0.6	42.5	27.8	0.0	25.6	2.5	0.0	0.4	50.0	21.5	0.3	23.4	4.1	0.0	0.4	41.9	29.9
	C9	0.3	20.8	5.1	0.0	0.3	51.0	22.3	0.6	25.6	5.4	0.0	1.4	41.1	25.6	0.3	20.7	2.9	0.0	0.3	41.9	33.6
	C10	0.3	13.3	1.3	0.0	0.3	59.4	24.8	0.3	19.0	1.4	0.0	0.0	53.6	25.5	0.3	17.5	2.3	0.0	0.0	57.4	22.5
	C11	2.7	20.7	2.3	0.0	0.0	41.8	32.5	0.0	19.3	5.0	0.0	0.3	43.9	31.6	0.6	16.2	1.9	0.0	0.3	51.4	29.6
	C12	1.6	24.8	1.4	0.0	0.0	32.3	39.9	0.5	14.9	0.8	0.0	0.0	33.8	50.0	0.3	17.9	2.1	0.0	0.0	31.8	47.6
	C13	0.6	18.3	1.5	0.0	0.0	55.9	23.6	0.3	19.8	1.6	0.0	0.0	38.8	39.5	0.0	17.1	2.6	0.0	0.0	37.2	42.3
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	0.5	18.8	2.1	0.0	0.0	49.8	28.6	1.2	18.5	1.6	0.0	0.3	29.3	46.7	0.2	19.7	0.5	0.0	0.0	30.7	48.6
	C17	0.5	14.2	1.7	0.0	0.8	68.4	12.8	0.3	15.4	2.6	0.0	0.0	72.0	9.4	0.0	19.5	1.1	0.0	0.0	71.1	7.8
	C18	1.1	20.0	1.1	0.0	0.0	60.2	16.6	0.9	12.3	1.9	0.0	0.3	56.5	27.5	1.2	19.7	1.4	0.0	0.6	65.9	10.1
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	1.9	15.7	3.7	0.0	0.0	60.4	18.3	0.3	17.6	4.8	0.0	0.0	56.3	20.5	0.0	19.2	2.1	0.0	0.0	61.8	16.6
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C23	1.1	14.8	2.0	0.0	0.0	47.2	34.7	0.0	13.0	1.7	0.0	0.6	30.8	53.6	0.6	17.5	2.5	0.0	0.3	34.6	44.6
	C24	0.3	17.1	2.8	0.0	0.0	54.6	24.9	0.3	19.7	4.1	0.0	1.6	55.2	18.1	0.6	17.3	4.4	0.0	0.6	55.6	21.3
	C25	1.3	25.5	2.4	0.0	0.5	42.2	27.0	0.3	24.1	3.5	0.0	0.3	32.1	37.2	0.3	27.8	1.9	0.0	1.0	39.0	28.3
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	0.6	23.0	4.7	0.0	0.6	27.3	42.8	0.3	22.5	4.7	0.3	0.3	30.2	40.8	0.6	25.5	3.1	0.0	0.5	34.6	35.2
	C28	0.0	20.2	3.2	0.0	1.2	47.1	28.3	0.3	26.5	1.6	0.0	1.0	40.6	30.0	0.6	23.4	3.8	0.0	0.6	45.1	26.6

[†]: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 34
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 34 07/09/14-07/15/14 Dredge Activity
Appendix A REVISED 8/1/14

Weekly functional group analysis results for HBS1-CP. Decreases in octocoral cover greater than or equal to 5% compared to baseline (B4) are presented in bold.

Transect		HBS1-CP															T2					
		T1					T3					T3					T2					
Functional Group	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	
	B4	2.9	1.5	5.2	0.9	0.0	87.8	1.1	0.9	9.1	7.5	0.4	0.0	78.9	3.0	2.8	1.8	5.4	1.0	0.0	87.5	1.0
Week Number +	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C12	1.7	3.4	7.1	2.8	0.0	47.1	37.9	1.0	4.3	6.7	0.3	0.0	30.2	57.5	0.3	4.7	7.5	1.8	0.0	28.3	56.4
	C13	1.4	0.6	0.7	4.2	0.0	85.5	7.6	0.3	4.7	3.8	0.5	0.0	76.1	14.6	0.0	5.3	3.6	2.4	0.0	84.2	4.4
	C14	1.3	1.9	5.6	0.3	0.0	26.0	65.0	0.3	5.3	7.7	0.0	1.2	40.8	44.7	0.0	5.5	3.3	0.0	0.0	35.2	54.2
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	2.2	1.3	7.4	2.0	0.5	16.4	69.9	0.3	4.4	7.0	0.0	0.0	26.5	61.0	0.0	4.5	6.4	0.0	0.0	33.2	54.8
	C17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C18	0.6	0.9	8.7	3.2	0.3	75.7	10.7	1.8	5.7	6.1	0.0	0.0	75.2	11.4	1.8	3.5	8.7	0.3	0.0	77.5	7.9
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	1.7	2.2	6.6	4.8	0.9	69.4	14.4	0.3	2.7	7.3	0.0	0.5	66.6	22.6	0.3	3.0	7.6	0.3	0.4	65.7	22.8
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	1.1	0.6	5.9	4.6	0.3	68.5	19.0	0.5	3.5	4.5	0.0	0.0	77.3	13.6	0.4	2.7	5.5	0.0	0.3	75.9	14.9
	C23	0.0	5.1	10.7	2.6	0.3	60.2	20.8	0.4	4.1	5.2	0.0	0.0	64.4	25.8	0.0	3.3	7.5	0.0	0.3	65.9	23.0
	C24	0.6	2.0	10.1	4.6	0.9	68.2	12.9	0.7	1.4	6.3	0.6	0.3	73.2	17.0	0.7	4.7	7.3	0.5	0.0	71.6	15.3
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	2.3	1.2	6.1	2.2	1.4	57.9	27.2	1.3	3.6	12.3	0.5	0.0	53.1	27.9	0.3	3.4	9.6	0.0	0.3	60.6	25.0
	C28	0.3	2.0	5.9	1.5	0.0	73.0	17.1	0.9	7.1	4.7	0.0	0.9	62.0	24.5	0.3	7.5	6.0	0.0	2.2	62.5	21.4
	C29	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 34
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 34 07/09/14-07/15/14 Dredge Activity
Appendix A REVISED 8/1/14

Weekly functional group analysis results for HBS2-CP. Decreases in octocoral cover greater than or equal to 5% compared to baseline (B4) are presented in bold.

Transect	HBS2-CP																				
	Functional Group		T1			T2			T3												
CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	
B4	0.3	0.0	1.7	0.0	0.0	65.0	33.1	0.2	0.0	1.8	0.6	0.0	60.5	36.9	0.2	1.0	2.5	0.2	0.0	63.3	32.8
C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
C12	0.0	0.3	4.1	0.3	0.0	34.3	61.1	0.8	0.3	4.0	0.0	0.0	33.9	61.0	0.0	0.9	2.3	0.0	0.0	23.8	73.0
C13	0.0	0.4	3.2	0.7	0.3	57.0	38.5	0.0	0.0	2.6	0.0	0.0	57.3	40.2	0.0	0.6	3.7	0.6	0.0	52.3	42.8
C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
C16	0.3	0.0	4.3	0.0	0.0	18.9	76.6	0.3	0.3	6.3	0.0	0.0	19.4	73.5	0.0	0.8	3.6	1.1	0.0	18.3	76.2
C17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
C18	0.0	0.6	4.1	0.0	0.0	48.9	46.4	0.3	0.0	6.2	0.0	0.0	45.3	48.3	0.0	0.5	6.8	0.0	0.0	46.3	46.2
C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
C20	0.6	1.4	6.2	0.5	0.0	28.1	62.4	1.4	0.9	8.3	0.3	0.0	33.7	55.2	0.6	1.1	6.6	0.0	0.0	42.9	48.6
C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
C22	0.3	0.6	5.2	0.5	1.7	48.8	42.8	0.4	0.9	5.8	0.0	0.0	55.8	37.2	0.0	2.1	5.2	0.3	0.0	32.2	60.3
C23	0.0	0.3	4.8	0.4	0.0	41.2	52.5	0.9	1.4	4.7	0.0	0.0	47.1	45.2	0.0	1.9	4.6	0.0	0.0	43.8	49.6
C24	0.3	0.6	5.4	0.0	0.0	41.8	52.0	0.6	0.0	3.7	0.3	0.0	47.3	47.8	0.0	0.9	3.9	0.0	0.0	32.4	62.7
C25	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
C27	0.3	0.3	4.6	0.0	0.0	32.7	62.1	0.9	0.6	5.4	0.3	0.0	38.0	54.9	0.3	1.3	2.5	0.0	0.0	28.5	67.3
C28	0.9	0.0	2.7	0.4	0.0	36.2	59.6	0.9	1.2	4.7	0.4	0.3	31.1	61.5	0.0	1.1	4.0	0.4	0.0	25.0	69.6

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 34
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 34 07/09/14-07/15/14 Dredge Activity
Appendix A REVISED 8/1/14

Weekly functional group analysis results for HBS3-CP. Decreases in octocoral cover greater than or equal to 5% compared to baseline (B4) are presented in bold.

Transect	Functional Group	HBS3-CP																				
		T1					T2					T3										
CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND		
Week Number [†]	B4	0.6	11.2	2.3	0.0	0.0	70.1	15.8	0.6	14.9	3.6	2.5	0.0	74.2	4.0	1.5	18.1	3.0	0.5	0.0	63.9	11.9
	C1	1.3	16.3	7.5	1.8	0.0	45.8	27.0	0.9	13.2	4.7	0.7	0.0	50.4	30.0	1.0	12.5	4.5	3.4	0.0	53.4	24.9
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C3	1.0	14.8	4.4	0.3	0.0	39.2	40.3	1.2	15.5	2.3	0.0	0.0	36.5	44.2	0.7	15.7	4.4	1.9	0.0	37.5	39.6
	C4	1.4	13.3	6.7	0.3	0.0	16.7	61.5	0.0	10.7	7.1	0.6	0.0	10.9	70.7	0.3	14.8	2.2	0.0	0.0	15.1	67.3
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C11	0.7	12.7	3.1	0.0	0.0	19.5	64.0	1.7	12.7	1.9	0.3	0.0	12.0	71.4	1.4	12.8	0.7	1.8	0.0	11.9	71.3
	C12	1.2	12.4	0.8	0.0	0.0	14.1	71.5	1.0	16.2	0.5	0.0	0.0	10.2	72.1	1.1	9.6	1.6	1.1	0.0	9.9	76.8
	C13	0.0	13.7	0.3	0.0	0.0	28.6	57.4	0.0	7.7	0.0	0.3	0.0	28.6	63.4	0.0	5.3	0.6	2.0	0.0	30.5	61.5
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	0.6	10.5	3.5	0.0	0.0	9.5	75.7	1.5	8.3	4.9	0.6	0.0	9.3	75.5	0.5	10.6	2.0	0.6	0.0	5.9	80.5
	C17	0.3	11.8	3.7	0.0	0.0	33.3	50.7	1.7	12.1	1.5	0.3	0.0	36.6	47.9	1.3	11.5	3.3	0.6	0.0	31.6	51.5
	C18	1.4	15.9	2.3	0.0	0.0	56.7	23.8	0.0	14.0	1.8	0.5	0.0	37.4	46.4	0.0	20.7	1.9	0.3	0.0	32.1	45.0
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	0.9	13.3	4.0	0.0	0.0	39.8	42.0	0.9	8.2	4.9	0.0	0.0	53.2	32.8	0.5	11.1	4.9	1.4	0.0	43.8	38.1
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	1.1	9.3	3.2	0.0	0.0	49.7	36.7	0.8	8.9	2.1	0.8	0.0	56.4	30.7	0.5	11.8	3.1	0.3	0.0	43.9	40.3
	C23	0.8	4.7	3.6	0.0	0.0	39.6	51.3	1.5	9.1	1.9	0.6	0.0	36.8	50.2	0.3	13.6	1.5	0.0	0.0	38.1	46.0
	C24	0.9	11.3	2.5	0.0	0.0	28.6	56.8	1.4	12.5	2.7	0.6	0.0	34.7	48.1	0.7	11.7	1.7	0.3	0.0	30.2	54.7
	C25	0.5	13.8	1.9	0.0	0.0	26.6	57.2	1.8	15.1	3.0	0.3	0.0	15.3	64.2	0.3	17.6	1.5	0.5	0.0	23.2	56.9
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	1.9	12.4	2.3	0.4	0.0	34.1	49.0	1.0	11.7	4.0	0.8	0.0	38.8	43.6	0.0	14.8	3.2	0.0	0.3	34.3	47.2
	C28	0.0	12.6	5.6	0.4	0.0	39.1	42.4	2.7	11.7	2.3	0.0	0.3	45.3	37.4	0.0	13.5	2.4	2.4	0.0	50.8	30.9

[†]: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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Week 34 07/09/14-07/15/14 Dredge Activity
Appendix A REVISED 8/1/14

Weekly functional group analysis results for HBS4-CR. Decreases in octocoral cover greater than or equal to 5% compared to baseline (B4) are presented in bold.

Transect	Functional Group	HBS4-CP																				
		T1						T2						T3								
CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND		
Week Number [†]	B4	0.2	9.2	3.2	0.2	0.4	65.8	21.2	0.4	11.6	7.0	0.3	0.3	57.5	22.9	0.4	9.7	4.3	0.9	0.0	56.1	28.5
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C9	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C12	0.0	3.4	2.4	0.0	0.0	14.1	80.1	0.0	9.7	3.6	0.0	0.0	6.0	80.7	0.0	5.9	1.3	0.0	0.0	7.7	85.2
	C13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	1.6	8.4	2.0	0.0	0.0	10.2	77.2	0.5	13.7	3.9	0.0	0.0	14.4	67.5	0.0	7.7	1.6	1.2	0.0	6.9	82.6
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C18	0.3	9.4	0.9	0.0	1.0	25.1	63.3	0.3	11.4	3.7	0.0	0.7	22.9	61.1	1.7	5.3	2.4	0.9	0.0	25.0	64.7
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	0.9	9.0	2.2	0.3	0.0	37.4	50.3	0.0	9.6	3.3	0.0	0.0	43.1	44.0	1.6	4.9	3.8	0.6	0.0	50.4	38.7
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	0.4	7.2	5.4	0.3	0.0	44.9	41.9	0.0	9.4	3.9	0.0	0.0	46.0	40.6	0.6	6.0	2.6	1.4	0.0	39.6	49.8
	C23	1.6	6.4	2.9	0.6	0.0	35.4	52.6	0.3	11.0	2.8	0.0	0.0	31.5	54.4	0.0	6.8	1.7	0.0	0.0	25.8	65.5
	C24	0.6	5.5	2.5	0.3	0.3	30.4	60.5	0.5	8.7	2.8	0.0	0.0	34.4	53.4	0.4	4.7	1.2	0.0	0.0	31.8	61.9
	C25	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	0.3	8.4	2.2	0.0	0.0	12.3	76.8	0.3	12.5	2.3	0.0	0.3	10.9	73.6	0.9	7.9	2.0	0.9	0.0	10.2	77.7
	C28	0.0	3.6	2.0	0.0	0.3	24.4	69.7	0.6	7.7	2.6	0.0	0.0	13.0	75.8	0.0	4.9	1.1	0.6	0.0	18.7	74.6

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

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Appendix A REVISED 8/1/14

Weekly functional group analysis results for HBSC1-CP. Decreases in octocoral cover greater than or equal to 5% compared to baseline (B4) are presented in bold.

		HBSC1-CP																					
		T1						T2						T3									
Transect		Functional Group	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number [†]	B4	9.3	9.5	3.5	0.0	0.7	66.2	10.9	0.6	8.4	2.1	0.0	2.7	80.0	5.5	0.3	7.8	2.8	0.0	4.5	75.3	8.9	
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C12	9.5	14.1	0.6	0.0	0.0	8.1	67.7	1.4	8.8	2.9	0.0	0.0	20.7	66.3	0.0	11.9	1.8	0.0	0.0	16.0	70.3	
	C13	6.0	9.2	0.6	0.0	0.0	78.6	5.6	0.3	9.5	1.4	0.5	0.0	76.9	11.4	2.3	12.5	1.9	0.0	0.0	70.5	12.5	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	9.6	13.0	1.0	0.3	37.7	30.4	5.9	0.8	10.6	4.4	0.0	54.0	21.3	7.7	0.8	8.7	5.1	0.0	58.0	20.1	5.9	
	C17	8.6	11.5	0.6	0.0	0.5	74.3	2.4	0.4	9.9	1.4	0.3	1.2	84.5	0.5	0.8	9.5	2.8	0.0	1.8	80.9	1.1	
	C18	4.6	6.5	4.1	0.0	0.3	49.4	34.3	1.5	9.9	2.9	0.0	0.9	55.7	28.9	1.4	10.0	1.7	0.0	1.7	60.2	23.8	
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	5.8	9.4	3.6	1.2	0.6	66.0	11.9	1.3	5.3	2.9	0.8	1.5	85.7	1.9	1.1	5.0	2.5	0.0	3.8	83.1	3.6	
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	6.3	7.5	2.7	0.0	4.3	76.4	1.8	1.2	9.6	1.8	0.0	4.7	81.8	0.7	0.5	7.2	2.5	0.0	6.3	82.6	0.9	
	C23	4.3	9.1	2.4	0.6	1.1	81.1	0.6	0.9	7.2	2.4	0.0	9.6	78.1	0.6	0.3	8.3	5.0	0.0	8.7	75.1	2.2	
	C24	6.5	12.3	1.4	0.0	15.5	60.2	2.6	0.5	10.2	0.6	0.3	14.7	71.3	2.0	0.3	6.4	2.0	0.0	19.1	69.1	2.0	
	C25	5.4	14.6	1.1	0.0	10.0	65.3	2.6	0.8	9.5	0.5	0.5	16.9	71.0	0.5	0.3	13.5	1.3	0.3	15.0	66.2	2.5	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	5.0	11.0	2.4	0.0	0.5	59.4	18.2	2.2	11.3	4.1	0.3	1.0	66.8	12.8	1.7	8.7	6.2	0.3	1.7	69.1	12.2	
	C28	7.8	11.7	1.8	0.0	0.3	70.8	7.4	2.1	10.4	1.9	0.0	1.5	68.2	15.7	1.4	10.6	2.0	0.0	2.3	78.4	5.4	

[†]: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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Week 36 07/23/14-07/29/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. The hopper dredge Liberty Island left the project area on July 3, 2014 and is not expected to return at this time. During Compliance Week 36 (July 23 to July 29, 2014), the cutterhead dredge Texas and Spider Barge were down for repairs after being struck by lightning on July 16, and Dredge 55 worked in Cut 2 (STA 47+00 to 65+00).

Biological monitoring was required for sites within 750 m of an active dredge and included HBS1, HBS2, and HBN2 (Figure 1). Biological monitoring was conducted once at all sites within 750m of dredging activity. Adverse environmental conditions (e.g., severe thunderstorms, excessive wind speeds, wave heights, and/or low visibility) during Week 36 of compliance monitoring made conditions unsafe for offshore dive operations during portions of 2/7 days. HBS2 and HBN2 were not triggered until late in the week, therefore data collection was only possible once. HBS1 data were collected twice, however only one sampling event took place at the reference (HBSC1), therefore HBS2's second visit data are not reported. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind, wave, and traffic conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral condition surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral condition, video transect and sediment block survey methods.

Weekly Coral Condition Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)):

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications

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of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a "0" (normal or non-stressed) or "1" (stressed), and photographed. If a "1" is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Statistical comparisons for all condition data are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a "1" during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of all polyps on the colony.
Mucus	Sediment Stress	Excessive mucus production resulting in a mucus film and/or sediment balled up in mucus.
Paling	Stress	Live tissue with some loss of color.
Bleaching	Stress	Live tissue with complete loss of color.
Black band disease	Stress	Black band surrounds dead patch
Yellow Band	Stress	Yellow band surrounds dead patch
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed
Sediment Accumulation	Sedimentation	Moderate sediment accumulation on top of colony (more than dusting). Accumulation in grooves and/or between polyps
Partial Burial	Sedimentation	Portion(s) of the colony buried by sediment
Burial	Sedimentation	Entire colony buried by sediment
Recent Partial Mortality	Sedimentation	Partial mortality of coral colony appears white with no live polyps visible. Generally, occurs around the margin of the colony. Visible when sediment recedes.

Sediment Stress

Sedimentation stress data are qualitative estimations of sediment related stress that are observed on permanently marked hard corals. *In situ* data on sediment stress and other

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conditions are assigned in the field during data collection. QA/QC is conducted on photos for all coral conditions in the laboratory. Data are entered into an Excel spreadsheet for analysis each week. Sediment dusting (SED) is not considered a “stress” indicator and is given a score of zero. SED is a low amount, a “dusting”, of sediment ontop of the coral. Sediment accumulation (SA), is an accumulation of sediment ontop of the coral, between polyps, or within grooves and is qualitatively more than a dusting of sediment. Partial burial (PBUR) is the accumulation of sediment around the base of the coral, sometimes in the form of a berm, and burial (BUR) is the complete burial of the coral colony by sediment. SA, PBUR, and BUR are given scores of a “1”. A single coral may exhibit one or more conditions, including one or more sediment stress codes. For example, a coral may have sediment accumulation (SA) and partial burial (PBUR). The score for such a coral would be a “1”, code data are collected for all applicable conditions. Sediment stress data are reported in Table 3.

Weekly Functional Group Percent Cover Analysis

Functional groups in the vicinity of the project area (hardbottom, middle, and outer reef) include typical sub-tropical hardbottom and reef environment sessile invertebrates, including octocorals, sponges and hard corals among others. Of these biological constituents, the most abundant and highest in percent cover are the octocorals, which range in cover from 1-15% (Gilliam et al. 2007, Dial Cordy 2010 and 2012). Sponges range from 1-6% cover, while hard corals including Millepora range from 0.2 to 4.6% (Dial Cordy et al. 2010 and 2012). Since octocorals dominate the benthic habitat across habitat types, octocorals are used as the proxy indicator group because they are most abundant non-algal benthic component. Percent cover calculations are compared between monitoring events and among transects and sites.

Functional group analysis is conducted for available video transect data, which are collected as part of the weekly compliance monitoring and is used to satisfy FDEP permit Special Condition 32.(a).(ii).d:

Any change of 5% or more in cover by any functional group evaluated in quadrats in two or more adjacent transects, or on average for the zone of monitoring on one side of the channel, or stress expressed above normal by corals and/or octocorals within transects (stress scale used for Broward County Segment III project) will require an additional survey to outline the area(s) of impact. Impacted areas shall continue to be monitored monthly during the construction, one month post-construction, and two times during next year in order to document results of the impact. Final monitoring results shall document permanent impacts, if any, to be used for estimates of additional mitigation using UMAM.

Quantitative digital video data are collected along each transect with the camera positioned 40cm above the substrate, recording a plan-view of the benthic resources (Aronson et al. 1994). The video camera is equipped with a measuring device to ensure the camera remains at 40-cm above the bottom and a scale bar is visible at the bottom of the camera screen at all times with the site information in the lower right hand corner. The camera records video transect data at a speed of ~5 m per minute to insure quality still images may be extracted for analysis. These data are collected each time a site is surveyed, however analysis is only conducted for a single monitoring survey within a given compliance week. Analysis is conducted for a total of 24m² per site (0.4m x 20m x 3 transects).

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Transect video footage is broken down into 40 non-overlapping still images (repetitive quadrats) using GOM Video Player™. Stills are analyzed for selected functional groups (octocorals, sponge, hard corals, zoanthids, macroalgae, CTB (crustose, turf, and bare substrate) using randomly overlaid points in CPCe® software. Percent cover for selected functional groups, and sand are compared over time and presented in Appendix A.

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design used in the Broward County Shore Protection Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibial growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

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Results

Coral Condition Surveys

Biological monitoring was conducted once at all sites within 750m of dredging activity. Coral condition data for reference sites (e.g., HBSC1) and channel-side sites (e.g., HBS1) were compared using a two-sampled t-test ($p \leq 0.05$). Stress levels at reference sites ranged from 0.83 ± 0.39 (HBNC1) to 0.83 ± 0.38 (HBSC1) whereas stress levels at channel-side sites ranged from 0.89 ± 0.32 (HBS1) to 0.92 ± 0.0 (HBN2; Table 2).

In Week 36 coral condition values continued to be elevated across channel-side and reference sites (Table 2), due to an increase in paling and bleaching of corals in the project area. Seasonally warm water temperatures and elevated levels of irradiance are known to induce paling and/or bleaching (stress) in corals (e.g., Baker et al. 2008). No statistical differences between channel-side and reference sites was measured in Week 36.

Partial mortality at the base of several corals was documented at all sites surveyed in the current week except HBN2. The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was also present in permanently marked corals at all sites surveyed in the current week except HBN2.

Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 36. Permanently marked scleractinians at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators (e.g., sediment accumulation, extended polyps, excess mucus production, etc.).

Survey Zone	Area	Site	Scleractinian Condition		
			Mean	SD	N
Hardbottom	South	HBS1	0.89	0.32	18
		HBS2	0.90	0.30	21
		HBS3	N/A	N/A	N/A
		HBS4	N/A	N/A	N/A
		HBSC1	0.83	0.38	30
	North	HBN2	0.92	0.28	13
		HBN3	N/A	N/A	N/A
		HBNC1	0.83	0.39	12
Middle Reef	South	R2S1	N/A	N/A	N/A
		R2SC1	N/A	N/A	N/A
		R2S2	N/A	N/A	N/A
		R2SC2	N/A	N/A	N/A
	North	R2N1	N/A	N/A	N/A
		R2NC2	N/A	N/A	N/A
		R2N2	N/A	N/A	N/A
		R2NC1	N/A	N/A	N/A
Outer Reef	South	R3S1	N/A	N/A	N/A
		R3SC1	N/A	N/A	N/A
		R3S2	N/A	N/A	N/A
		R3SC2	N/A	N/A	N/A
		R3S3	N/A	N/A	N/A
		R3SC3	N/A	N/A	N/A
	North	R3N1	N/A	N/A	N/A

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	R3NC1	N/A	N/A	N/A
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N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

N/A: No data.

*****: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test.

Sediment Stress

Sedimentation stress including sediment accumulation (SA), partial burial (PBUR) and burial (BUR) were present at higher levels on channel-side v. reference sites, with one exception (Table 3). Notably, the proportion of corals exhibiting PBUR was higher at HBNC1 when compared to HBN2 (Table 3).

Table 3: Mean scleractinian sediment stress score as measured in Compliance Monitoring Week 36. Permanently marked scleractinians at channel and reference sites were assigned a “0” – SED (dusting) or a “1” depending on the presence/absence of sediment stress indicators (e.g., sediment accumulation (SA), partial burial (PBUR), and/or burial (BUR)).

Survey Zone	Area	Site	Sediment Stress Proportions				
			SED	SA	PBUR	BUR	N
Hard- bottom	South	HBS1	0.11	0.44	0.61	0.00	18
		HBS2	0.00	0.14	0.48	0.05	21
		HBS3	N/A	N/A	N/A	N/A	N/A
		HBS4	N/A	N/A	N/A	N/A	N/A
		HBSC1	0.07	0.28	0.00	0.00	30
	North	HBN2	0.00	0.33	0.33	0.08	13
		HBN3	N/A	N/A	N/A	N/A	N/A
		HBNC1	0.00	0.08	0.50	0.00	12
Middle Reef	South	R2S1	N/A	N/A	N/A	N/A	N/A
		R2SC1	N/A	N/A	N/A	N/A	N/A
		R2S2	N/A	N/A	N/A	N/A	N/A
		R2SC2	N/A	N/A	N/A	N/A	N/A
	North	R2N1	N/A	N/A	N/A	N/A	N/A
		R2NC2	N/A	N/A	N/A	N/A	N/A
		R2N2	N/A	N/A	N/A	N/A	N/A
		R2NC1	N/A	N/A	N/A	N/A	N/A
Outer Reef	South	R3S1	N/A	N/A	N/A	N/A	N/A
		R3SC1	N/A	N/A	N/A	N/A	N/A
		R3S2	N/A	N/A	N/A	N/A	N/A
		R3SC2	N/A	N/A	N/A	N/A	N/A
		R3S3	N/A	N/A	N/A	N/A	N/A
	North	R3SC3	N/A	N/A	N/A	N/A	N/A
		R3N1	N/A	N/A	N/A	N/A	N/A
		R3NC1	N/A	N/A	N/A	N/A	N/A

N: Number of corals sampled to calculate the mean.

N/A: No data.

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Weekly Functional Group Percent Cover Analysis

Functional group percent cover analysis is conducted on video transect data collected during the weekly monitoring surveys. All data are presented in Appendix A.

Sediment Block Survey

Less than one mm of sediment accumulated on sediment blocks at any compliance monitoring sites in Week 36 (Table 4).

Table 4: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 36. All measurements are in mm. N represents the number of sediment blocks surveyed. N/A designated sites that were not surveyed in the current week.

Survey Zone	Area	Site	Qualitative Sedimentation (mm)	N
Hardbottom	South	HBS1	<1	1
		HBS2	<1	1
		HBS3	N/A	N/A
		HBS4	N/A	N/A
		HBSC1	<1	1
	North	HBN2	<1	1
		HBN3	N/A	N/A
		HBNC1	<1	1
Middle Reef	South	R2S1	N/A	N/A
		R2SC1	N/A	N/A
		R2S2	N/A	N/A
		R2SC2	N/A	N/A
	North	R2N1	N/A	N/A
		R2NC2	N/A	N/A
		R2N2	N/A	N/A
		R2NC1	N/A	N/A
Outer Reef	South	R3S1	N/A	N/A
		R3SC1	N/A	N/A
		R3S2	N/A	N/A
		R3SC2	N/A	N/A
		R3S3	N/A	N/A
		R3SC3	N/A	N/A
	North	R3N1	N/A	N/A
		R3NC1	N/A	N/A

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 5).

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Table 5: Sediment accumulation data collected from sediment traps since October 2013. Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in grams per day.

Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
HBN1-CR							
Sample Start Date	10/21/2013						
Sample End Date	11/18/2013						
Grain size > #230 Sieve (g/day)	6.98						
Grain Size < # 230 Sieve (g/day)	0.87						
HBN2-CR							
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	3/5/2014	4/4/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	4/2/2014	5/3/2014	5/29/2014
Grain size > #230 Sieve (g/day)	2.51	3.65	1.87	1.15	4.91	2.74	2.14
Grain Size < # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.70	0.48	0.25
HBN3-CP							
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	3/6/2014	4/3/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	4/3/2014	5/3/2014	5/28/2014
Grain size > #230 Sieve (g/day)	4.13	3.38	3.23	1.83	3.28	1.2	3.02
Grain Size < # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	1.01	0.54	0.25
HBNC1-CP							
Sample Start Date	10/15/2013		11/12/2013	1/13/2014	3/6/2014	4/2/2014	5/3/2014
Sample End Date	11/12/2013		1/13/2014	2/7/2014	4/2/2014	5/3/2014	5/29/2014
Grain size > #230 Sieve (g/day)	0.37		0.40	0.02	0.08	0.02	0.09
Grain Size < # 230 Sieve (g/day)	0.76		0.99	0.16	1.09	0.19	0.04
HBS1-CP							
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	3/7/2014	4/4/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014
Grain size > #230 Sieve (g/day)	0.67	2.42	1.21	0.95	0.77	0.44	2.32
Grain Size < # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.74	0.26	0.21
HBS2-CP							
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	3/7/2014	4/4/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014
Grain size > #230 Sieve (g/day)	0.76	3.18	2.05	0.84	1.66	0.54	1.63
Grain Size < # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.50	0.32	0.42
HBS3-CP							
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.43	0.26	0.41
Grain Size < # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.72	0.36	0.36
HBS4-CP							
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.61	0.33	1.15
Grain Size < # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	1.09	0.50	0.27
HBSC1-CP							
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	3/6/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.03	0.01	0.04
Grain Size < # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.32	0.08	0.02
R2N1-RR							
Sample Start Date	10/23/2013		11/18/2013	1/18/2014	2/17/2014	3/20/2014	4/16/2014
Sample End Date	11/18/2013		1/18/2014	2/17/2014	3/20/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	1.81		2.01		0.61	0.59	1.13
Grain Size < # 230 Sieve (g/day)	0.58		0.96		0.55	0.40	0.58
R2N2-LR							
Sample Start Date	-	11/20/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014
Sample End Date	-	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-	1.77	1.73	0.19	0.43	0.01	0.33
Grain Size < # 230 Sieve (g/day)	-	0.71	0.85	0.32	0.39	0.14	0.74
R2NC1-LR							
Sample Start Date	10/27/2013		11/20/2013	1/18/2014	2/16/2014	3/20/2014	4/16/2014
Sample End Date	11/24/2013		1/18/2014	2/16/2014	3/20/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	2.74		0.47		0.01	0.01	0.06
Grain Size < # 230 Sieve (g/day)	0.59		0.37		0.03	0.00	0.10
R2NC2-RR							
Sample Start Date	-		11/19/2013		2/16/2014	3/20/2014	4/16/2014
Sample End Date	-		2/16/2014		3/20/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-		0.07		0.00	0.00	0.01

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FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening

Week 36 07/23/14-07/29/14 Dredge Activity

Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
Grain Size < # 230 Sieve (g/day)	-		0.22		0.00	0.06	0.13
R2S1-RR							
Sample Start Date	10/18/2013	11/18/2013	1/15/2014	2/16/2014	3/19/2014	4/16/2014	
Sample End Date	11/18/2013	1/15/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014	
Grain size > #230 Sieve (g/day)	0.51	0.87	0.22	0.22	0.50	0.47	
Grain Size < # 230 Sieve (g/day)	0.52	0.93	0.35	0.33	0.52	0.78	
R2S2-LR							
Sample Start Date	-	11/21/2013	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014
Sample End Date	-	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-	0.49	0.51	0.17	0.18	0.29	0.26
Grain Size < # 230 Sieve (g/day)	-	0.49	0.6	0.26	0.20	0.39	0.59
R2SC1-RR							
Sample Start Date	10/19/2013	11/18/2013	1/15/2014	2/26/2014	3/30/2014	4/27/2014	
Sample End Date	11/18/2013	1/15/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014	
Grain size > #230 Sieve (g/day)	0.62	0.57	0.02	0.02	0.02	0.13	
Grain Size < # 230 Sieve (g/day)	0.42	0.72	0.13	0.12	0.10	0.51	
R2SC2-LR							
Sample Start Date	-	11/21/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014
Sample End Date	-	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-	0.80	0.46	0.03	0.04	0.18	0.21
Grain Size < # 230 Sieve (g/day)	-	0.61	0.41	0.12	0.15	0.34	0.47
R3N1-LR							
Sample Start Date	-	12/4/2013	12/30/2013	2/16/2014		3/19/2014	
Sample End Date	-	12/30/2013	2/16/2014		3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.09	0.17		0.03		TBD
Grain Size < # 230 Sieve (g/day)	-	0.08	0.16		0.00		TBD
R3NC1-LR							
Sample Start Date	-		12/5/2013		2/16/2014		3/20/2014
Sample End Date	-		2/16/2014		3/20/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-		0.05		0.01		TBD
Grain Size < # 230 Sieve (g/day)	-		0.07		0.00		TBD
R3S1-CP							
Sample Start Date	-	12/3/2013	12/30/2013		2/16/2014		3/19/2014
Sample End Date	-	12/30/2013	2/16/2014		3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.06	0.13		0.02		
Grain Size < # 230 Sieve (g/day)	-	0.10	0.20		0.00		
R3S2-LR							
Sample Start Date	-	12/3/2013	12/30/2013		2/16/2014		3/19/2014
Sample End Date	-	12/30/2013	2/16/2014		3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.04	0.15		0.01		TBD
Grain Size < # 230 Sieve (g/day)	-	0.09	0.14		0.00		TBD
R3S3-SG							
Sample Start Date	-	12/3/2013	12/30/2013		2/16/2014		3/19/2014
Sample End Date	-	12/30/2013	2/16/2014		3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.04	0.13		0.02		TBD
Grain Size < # 230 Sieve (g/day)	-	0.07	0.13		0.00		TBD
R3SC1-CP							
Sample Start Date	-		12/5/2013		2/17/2014		3/19/2014
Sample End Date	-		2/17/2014		3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-		0.08		0.00		TBD
Grain Size < # 230 Sieve (g/day)	-		0.17		0.00		TBD
R3SC2-LR							
Sample Start Date	-		12/4/2013		2/17/2014		3/19/2014
Sample End Date	-		2/17/2014		3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-		0.05		0.10		TBD
Grain Size < # 230 Sieve (g/day)	-		0.07		0.00		TBD
R3SC3-SG							
Sample Start Date	-		12/4/2014		2/17/2014		3/19/2014
Sample End Date	-		2/17/2014		3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-		0.08		0.10		TBD
Grain Size < # 230 Sieve (g/day)	-		0.11		0.00		TBD

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

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FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening

Week 36 07/23/14-07/29/14 Dredge Activity

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.
8. Liberty Island dredging with no overflow as of 6/19/14. Liberty Island departed the project site on July 3, 2014, and is not expected to return to service on this project in the foreseeable future.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.

References

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Week 36 07/23/14-07/29/14 Dredge Activity

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Weekly Offshore Coral Stress and Sediment Block Compliance Report 34
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 34 07/02/14-07/08/14 Dredge Activity

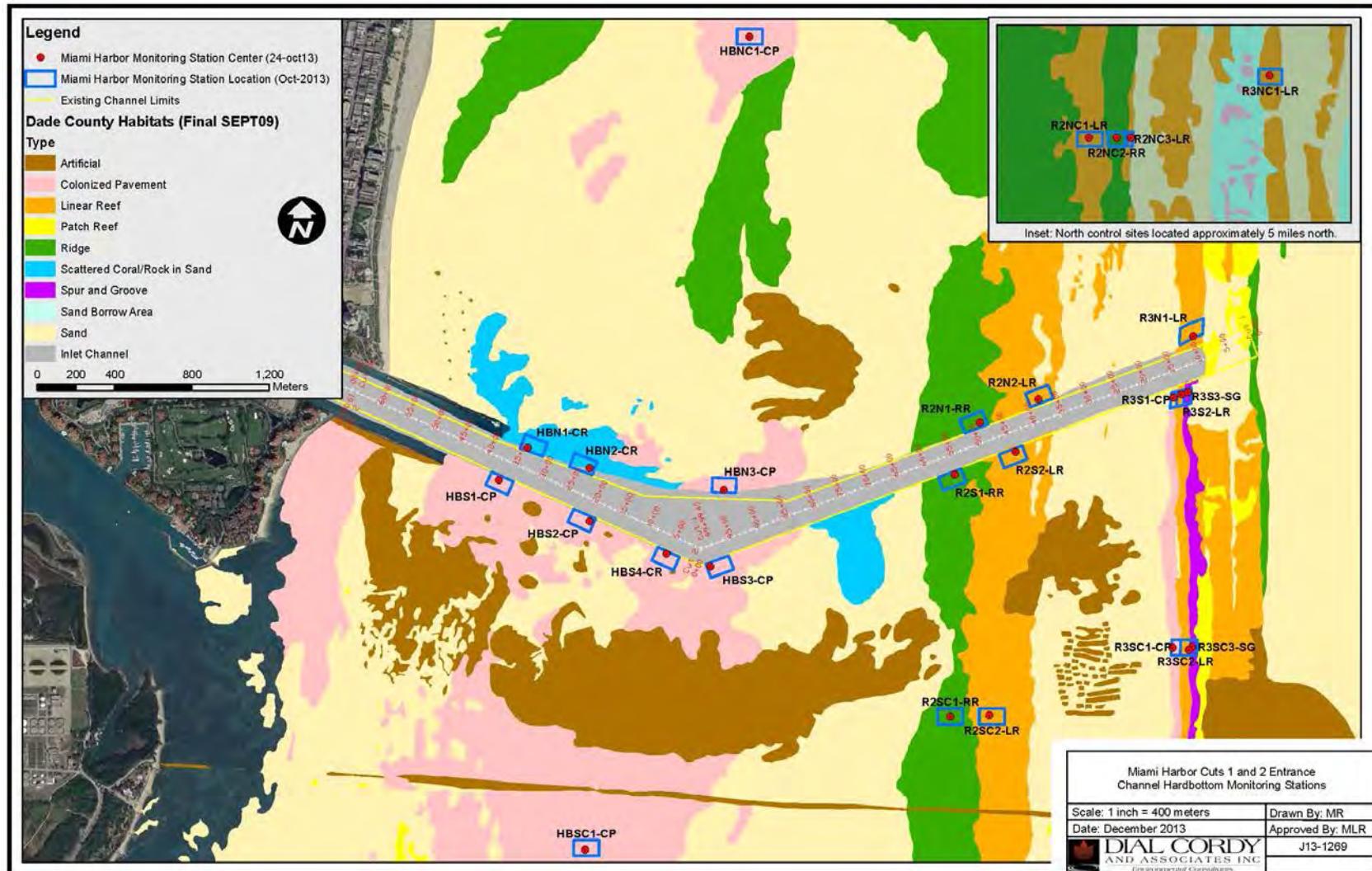


Figure 1: Miami Harbor Cuts 1 and 2 Entrance Channel Hardbottom and Reef monitoring stations.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 36
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Week 34 07/09/14-07/15/14 Dredge Activity
Appendix A Updated and Revised August 6, 2014

Weekly functional group analysis results for HBN2-CR.

HBN2-CR																						
Transect	T1						T2						T3									
Functional Group	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	
Week Number [†]	B4	0.19	0.00	4.82	0.00	0.00	93.83	1.16	0.17	0.00	5.50	0.00	0.00	89.83	4.29	0.00	0.82	4.02	0.00	0.00	90.17	4.98
	C1	0.31	0.67	5.72	0.00	0.00	42.56	49.55	0.00	0.00	4.79	0.00	0.00	33.81	59.73	0.00	0.94	3.76	0.00	1.49	6.80	86.41
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C4	0.00	0.00	2.56	0.00	0.00	9.90	87.26	0.00	0.00	0.53	0.00	0.00	14.39	85.08	0.00	0.56	1.30	0.00	1.50	11.72	84.92
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	0.00	0.56	1.46	0.00	0.00	9.90	88.08	0.00	0.00	1.79	0.00	0.00	15.86	82.35	0.00	0.75	0.59	0.63	0.00	8.55	89.49
	C8	0.73	0.56	0.88	0.00	0.00	6.63	90.90	0.00	0.00	0.97	0.00	0.00	8.79	90.24	0.00	0.53	1.21	0.00	0.00	11.07	87.19
	C9	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	
	C11	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C12	0.00	0.25	0.00	0.00	0.00	16.12	83.63	M	M	M	M	M	M	0.31	1.44	0.00	0.00	0.00	20.18	78.07	
	C13	0.00	0.00	1.17	0.00	0.00	23.22	75.61	0.28	0.00	0.00	0.00	0.00	35.25	64.47	0.00	0.63	0.56	0.00	0.00	36.06	62.75
	C14	0.31	0.50	0.63	0.00	0.00	28.30	70.27	0.00	0.25	1.09	0.00	0.00	38.01	60.65	0.28	1.03	2.98	0.00	0.00	26.36	69.35
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	0.00	0.28	0.94	0.00	0.00	19.60	79.17	0.00	0.00	0.80	0.00	0.00	29.85	69.36	0.31	0.00	1.49	0.00	0.00	13.57	84.63
	C17	0.00	0.00	1.99	0.00	0.25	39.12	58.65	0.00	0.00	0.78	0.00	0.00	48.06	51.16	0.50	0.53	0.36	0.00	0.00	39.49	59.13
	C18	0.25	0.28	2.22	0.00	0.00	25.67	71.58	0.00	0.28	2.07	0.00	1.07	27.85	68.48	0.00	0.75	4.87	0.00	0.00	26.61	67.78
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	0.28	0.00	0.28	0.00	0.00	49.27	50.17	0.25	0.00	1.83	0.00	0.00	58.42	39.50	0.56	0.56	1.06	0.00	0.31	50.88	46.64
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C23	0.00	0.00	1.42	0.00	0.00	38.16	60.42	0.00	0.00	0.00	0.00	0.00	33.51	66.49	0.00	0.56	0.63	0.00	0.00	38.19	60.63
	C24	0.25	0.25	2.32	0.00	0.00	50.39	46.54	0.00	0.00	2.31	0.00	0.00	44.77	52.92	0.00	0.00	0.91	0.00	0.00	46.39	52.70
	C25	0.25	0.75	1.00	0.00	0.00	40.10	57.35	0.25	0.00	1.56	0.00	0.00	55.65	42.54	0.28	0.00	1.00	0.00	0.00	39.61	59.11
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	0.00	0.31	1.90	0.00	0.00	52.22	45.57	0.94	0.00	1.75	0.00	0.00	56.62	40.69	0.00	0.50	2.22	0.00	0.00	55.81	41.47

[†]: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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Week 34 07/09/14-07/15/14 Dredge Activity
Appendix A Updated and Revised August 6, 2014

Weekly functional group analysis results for HBN3-CP.

		HBN3-CP																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number [†]	B4	3.66	5.82	5.55	1.00	0.00	77.10	5.67	1.29	3.78	12.50	2.92	0.00	75.89	3.43	1.15	4.33	13.13	0.77	0.00	74.88	5.53
	C1	1.06	5.68	9.43	2.38	0.00	71.22	10.24	0.59	3.91	10.27	4.00	0.00	64.05	17.18	1.19	6.36	13.57	0.56	0.00	69.69	7.81
	C2	1.29	4.72	4.91	1.96	0.00	61.01	26.10	1.06	5.52	6.73	4.34	0.00	66.73	15.63	2.29	6.50	7.21	1.61	0.00	61.39	20.99
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C4	1.29	5.08	3.49	0.56	0.00	54.12	35.46	3.42	12.88	1.86	0.00	0.00	25.47	56.37	1.39	13.11	1.42	0.50	1.00	15.90	66.78
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C10	1.11	7.40	3.14	1.50	0.00	63.35	23.13	1.38	3.06	10.51	2.12	0.00	68.30	14.63	0.59	5.52	7.74	2.78	0.00	66.87	16.50
	C11	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C12	1.88	3.53	4.38	0.94	0.00	24.82	64.45	1.63	5.01	9.11	3.09	0.00	51.16	30.00	1.34	2.43	8.99	1.57	0.00	54.49	31.18
	C13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	0.90	2.13	2.48	0.56	0.00	11.42	82.24	0.98	3.68	9.66	5.28	0.00	14.45	65.95	0.81	4.36	3.78	0.25	0.00	21.69	68.48
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	1.58	8.32	5.99	1.23	0.00	24.22	58.65	1.32	9.96	11.83	2.60	0.00	51.89	22.39	0.69	2.46	8.66	0.00	0.00	62.72	25.46
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	3.09	3.08	3.01	1.69	0.00	48.29	40.84	0.31	2.95	5.61	5.53	0.00	60.65	24.94	0.36	3.28	4.96	0.31	0.00	56.79	34.30
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	1.16	4.06	3.02	1.12	0.00	45.56	45.08	0.53	3.80	4.15	3.17	0.00	54.00	34.35	0.75	2.09	6.98	0.56	0.00	55.14	34.49
	C23	1.42	4.38	1.77	0.31	0.00	23.70	68.41	0.59	3.78	4.09	3.06	0.00	45.47	43.01	0.81	2.69	2.53	0.71	0.00	37.26	55.75
	C24	1.77	3.52	2.47	0.69	0.00	38.84	52.70	1.06	2.43	8.09	4.29	0.00	49.97	34.16	0.81	2.68	5.71	2.14	0.00	41.92	46.73
	C25	1.06	5.50	3.83	0.25	0.00	14.92	74.44	0.25	5.67	5.44	5.00	0.00	32.42	51.23	1.50	3.33	6.50	2.50	0.00	28.15	57.77
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	2.03	3.89	1.79	2.19	0.00	49.58	40.03	1.11	4.86	8.00	4.76	0.00	57.87	22.81	1.18	3.31	10.16	0.56	0.00	48.89	35.60
	C28	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D

[†]: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 36
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 34 07/09/14-07/15/14 Dredge Activity
Appendix A Updated and Revised August 6, 2014

Weekly functional group analysis results for HBNC1-CP.

		HBNC1-CP																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
Week Number [†]	B4	1.43	17.85	4.53	0.00	0.33	73.68	0.95	0.00	24.28	11.45	0.00	0.41	63.05	0.48	0.38	22.69	7.39	0.00	0.00	68.46	0.79
	C1	0.98	24.75	3.81	0.00	0.31	44.97	24.58	0.28	25.03	6.80	0.00	0.50	40.22	26.62	0.00	28.32	1.81	0.00	0.28	45.61	23.67
	C2	1.56	26.34	1.67	0.00	0.00	47.14	22.35	0.67	35.54	2.33	0.00	0.31	31.81	29.34	0.42	29.69	4.19	0.00	0.25	33.32	32.14
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C4	0.71	12.56	3.13	0.00	0.69	50.00	32.91	0.00	15.76	2.38	0.00	0.00	55.47	26.40	0.28	21.80	2.85	0.00	0.50	46.66	27.92
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C8	1.22	24.95	2.88	0.00	0.63	42.50	27.83	0.00	25.61	2.53	0.00	0.36	49.99	21.52	0.28	23.40	4.12	0.00	0.36	41.92	29.92
	C9	0.28	20.80	5.13	0.00	0.28	50.96	22.28	0.59	25.56	5.38	0.00	1.44	41.12	25.60	0.31	20.73	2.90	0.00	0.31	41.88	33.55
	C10	0.25	13.34	1.28	0.00	0.28	59.36	24.78	0.31	19.00	1.37	0.00	0.00	53.62	25.45	0.25	17.48	2.28	0.00	0.00	57.44	22.55
	C11	2.67	20.71	2.29	0.00	0.00	41.79	32.54	0.00	19.26	5.01	0.00	0.25	43.88	31.60	0.59	16.25	1.87	0.00	0.31	51.38	29.60
	C12	1.59	24.81	1.40	0.00	0.00	32.31	39.89	0.53	14.92	0.78	0.00	0.00	33.78	49.99	0.31	17.95	2.12	0.00	0.00	31.76	47.59
	C13	0.59	18.31	1.55	0.00	0.00	55.93	23.63	0.31	19.76	1.57	0.00	0.00	38.84	39.51	0.00	17.10	2.56	0.00	0.00	37.23	42.33
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	0.50	18.77	2.06	0.00	0.00	49.78	28.63	1.15	18.48	1.59	0.00	0.28	29.33	46.67	0.24	19.67	0.55	0.00	0.00	30.65	48.64
	C17	0.50	14.16	1.68	0.00	0.81	68.39	12.79	0.28	15.38	2.63	0.00	0.00	72.04	9.42	0.00	19.49	1.09	0.00	0.00	71.15	7.80
	C18	1.07	19.96	1.12	0.00	0.00	60.15	16.60	0.87	12.33	1.92	0.00	0.25	56.53	27.54	1.18	19.70	1.42	0.00	0.59	65.93	10.11
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	1.94	15.70	3.72	0.00	0.00	60.37	18.33	0.28	17.60	4.77	0.00	0.00	56.31	20.49	0.00	19.23	2.10	0.00	0.00	61.78	16.62
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C23	1.07	14.77	1.96	0.00	0.00	47.18	34.74	0.00	13.02	1.71	0.00	0.63	30.76	53.60	0.56	17.53	2.47	0.00	0.25	34.58	44.61
	C24	0.26	17.14	2.81	0.00	0.00	54.56	24.91	0.31	19.74	4.06	0.00	1.61	55.16	18.10	0.56	17.30	4.40	0.00	0.59	55.61	21.34
	C25	1.33	25.49	2.39	0.00	0.50	42.20	27.03	0.25	24.11	3.45	0.00	0.28	32.14	37.19	0.28	27.83	1.86	0.00	1.00	39.04	28.35
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	0.59	22.98	4.66	0.00	0.56	27.28	42.82	0.25	22.52	4.74	0.31	0.31	30.16	40.81	0.56	25.49	3.09	0.00	0.50	34.60	35.20
	C28	0.00	20.18	3.21	0.00	1.23	47.08	28.30	0.25	26.54	1.64	0.00	1.00	40.64	29.98	0.59	23.39	3.75	0.00	0.56	45.09	26.61

[†]: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 36
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 34 07/09/14-07/15/14 Dredge Activity
Appendix A Updated and Revised August 6, 2014

Weekly functional group analysis results for HBS1-CP.

		HBS1-CP																				
Transect		T1						T2						T3								
Functional Group	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	
Week Number ^t	B4	2.90	1.50	5.20	0.90	0.00	87.80	1.10	0.88	9.10	7.50	0.40	0.00	78.90	3.00	2.80	1.80	5.40	1.00	0.00	87.50	1.00
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C12	1.71	3.45	7.13	2.78	0.00	47.05	37.88	0.99	4.32	6.74	0.25	0.00	30.17	57.53	0.28	4.72	7.51	1.84	0.00	28.29	56.36
	C13	1.38	0.59	0.73	4.17	0.00	85.50	7.63	0.32	4.69	3.78	0.51	0.00	76.13	14.57	0.00	5.33	3.64	2.42	0.00	84.20	4.40
	C14	1.25	1.87	5.61	0.25	0.00	26.00	65.02	0.28	5.30	7.69	0.00	1.17	40.82	44.75	0.00	5.53	3.29	0.00	0.00	35.20	54.17
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	2.19	1.28	7.39	2.00	0.50	16.41	69.92	0.31	4.44	7.00	0.00	0.00	26.53	61.00	0.00	4.45	6.40	0.00	0.00	33.15	54.81
	C17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C18	0.58	0.91	8.70	3.19	0.26	75.69	10.68	1.75	5.66	6.05	0.00	0.00	75.16	11.37	1.79	3.51	8.72	0.31	0.00	77.45	7.90
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	1.70	2.19	6.64	4.82	0.91	69.39	14.35	0.28	2.73	7.28	0.00	0.53	66.55	22.64	0.28	2.98	7.58	0.25	0.42	65.74	22.76
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	1.11	0.59	5.88	4.64	0.28	68.50	19.04	0.50	3.54	4.47	0.00	0.00	77.34	13.59	0.36	2.73	5.51	0.00	0.28	75.91	14.90
	C23	0.00	5.13	10.68	2.56	0.31	60.21	20.84	0.36	4.10	5.20	0.00	0.00	64.40	25.80	0.00	3.32	7.51	0.00	0.28	65.86	23.04
	C24	0.59	1.98	10.07	4.60	0.86	68.20	12.90	0.67	1.44	6.30	0.59	0.28	73.19	17.04	0.67	4.67	7.31	0.50	0.00	71.59	15.26
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	2.30	1.20	6.10	2.20	1.40	57.89	27.22	1.25	3.59	12.34	0.50	0.00	53.14	27.92	0.28	3.40	9.56	0.00	0.25	60.61	24.99
	C28	0.28	2.02	5.87	1.49	0.00	73.00	17.06	0.88	7.12	4.68	0.00	0.88	61.96	24.48	0.31	7.52	6.03	0.00	2.15	62.54	21.44
	C29	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	

^t: Omitted weeks have yet to be analyzed.

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N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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Week 34 07/09/14-07/15/14 Dredge Activity
Appendix A Updated and Revised August 6, 2014

Weekly functional group analysis results for HBS2-CP.

Transect		HBS2-CP																				
Functional Group		T1						T2						T3								
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
	B4	0.31	0.00	1.67	0.00	0.00	65.00	33.06	0.18	0.00	1.84	0.60	0.00	60.46	36.93	0.19	1.01	2.50	0.19	0.00	63.30	32.80
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
	C12	0.00	0.31	4.06	0.25	0.00	34.32	61.06	0.84	0.28	3.97	0.00	0.00	33.92	61.00	0.00	0.90	2.30	0.00	0.00	23.81	73.04
	C13	0.00	0.36	3.21	0.69	0.28	56.99	38.47	0.00	0.00	2.57	0.00	0.00	57.26	40.17	0.00	0.63	3.66	0.63	0.00	52.31	42.78
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	0.31	0.00	4.27	0.00	0.00	18.85	76.57	0.28	0.28	6.33	0.00	0.00	19.36	73.48	0.00	0.83	3.58	1.11	0.00	18.32	76.16
	C17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C18	0.00	0.63	4.10	0.00	0.00	48.90	46.42	0.25	0.00	6.16	0.00	0.00	45.33	48.26	0.00	0.50	6.81	0.00	0.00	46.25	46.16
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	0.56	1.41	6.20	0.50	0.00	28.10	62.44	1.38	0.91	8.32	0.31	0.00	33.66	55.16	0.56	1.12	6.63	0.00	0.00	42.86	48.59
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	0.31	0.61	5.22	0.50	1.74	48.83	42.79	0.42	0.88	5.76	0.00	0.00	55.78	37.16	0.00	2.10	5.24	0.31	0.00	32.15	60.30
	C23	0.00	0.28	4.82	0.36	0.00	41.16	52.50	0.91	1.40	4.71	0.00	0.00	47.14	45.16	0.00	1.92	4.64	0.00	0.00	43.83	49.61
	C24	0.28	0.56	5.40	0.00	0.00	41.79	52.03	0.56	0.00	3.70	0.31	0.00	47.34	47.83	0.00	0.90	3.93	0.00	0.00	32.43	62.74
	C25	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	0.31	0.31	4.57	0.00	0.00	32.72	62.08	0.90	0.56	5.36	0.31	0.00	38.00	54.87	0.28	1.31	2.53	0.00	0.00	28.54	67.34
	C28	0.87	0.00	2.73	0.36	0.00	36.16	59.58	0.86	1.23	4.72	0.36	0.28	31.10	61.46	0.00	1.12	3.97	0.36	0.00	24.98	69.58

^T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 36
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 34 07/09/14-07/15/14 Dredge Activity
Appendix A Updated and Revised August 6, 2014

Weekly functional group analysis results for HBS3-CP.

		HBS3-CP																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
Week Number [†]	B4	0.56	11.23	2.32	0.00	0.00	70.10	15.79	0.61	14.88	3.58	2.53	0.00	74.16	4.03	1.48	18.08	3.03	0.53	0.00	63.85	11.93
	C1	1.34	16.29	7.49	1.79	0.00	45.80	26.99	0.90	13.21	4.73	0.69	0.00	50.43	30.04	1.00	12.47	4.46	3.44	0.00	53.44	24.88
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C3	0.98	14.81	4.42	0.31	0.00	39.18	40.31	1.20	15.53	2.34	0.00	0.00	36.48	44.19	0.73	15.66	4.40	1.88	0.00	37.48	39.59
	C4	1.43	13.32	6.73	0.31	0.00	16.74	61.47	0.00	10.69	7.10	0.59	0.00	10.94	70.67	0.31	14.75	2.21	0.00	0.00	15.14	67.28
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C9	0.95	12.86	3.97	0.25	0.00	28.77	53.21	0.28	16.70	2.56	0.00	0.00	24.27	56.20	0.90	13.46	5.31	0.63	0.00	30.63	49.08
	C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C11	0.73	12.70	3.11	0.00	0.00	19.45	64.01	1.74	12.73	1.90	0.28	0.00	12.01	71.39	1.35	12.83	0.73	1.83	0.00	11.94	71.31
	C12	1.19	12.35	0.84	0.00	0.00	14.09	71.53	0.98	16.20	0.53	0.00	0.00	10.17	72.13	1.12	9.56	1.56	1.08	0.00	9.93	76.76
	C13	0.00	13.67	0.30	0.00	0.00	28.64	57.39	0.00	7.73	0.00	0.28	0.00	28.59	63.41	0.00	5.33	0.63	1.98	0.00	30.54	61.51
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	0.56	10.45	3.52	0.00	0.00	9.48	75.73	1.49	8.30	4.90	0.56	0.00	9.27	75.47	0.50	10.59	2.00	0.61	0.00	5.88	80.47
	C17	0.31	11.80	3.70	0.00	0.00	33.26	50.72	1.67	12.10	1.46	0.25	0.00	36.61	47.91	1.28	11.50	3.29	0.63	0.00	31.56	51.49
	C18	1.44	15.85	2.27	0.00	0.00	56.65	23.78	0.00	13.97	1.78	0.50	0.00	37.40	46.36	0.00	20.73	1.90	0.25	0.00	32.08	45.04
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	0.88	13.34	4.00	0.00	0.00	39.80	41.98	0.90	8.21	4.92	0.00	0.00	53.16	32.81	0.50	11.07	4.91	1.40	0.00	43.80	38.07
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	1.11	9.34	3.18	0.00	0.00	49.69	36.67	0.84	8.86	2.08	0.83	0.00	56.37	30.71	0.53	11.84	3.13	0.28	0.00	43.92	40.30
	C23	0.81	4.70	3.59	0.00	0.00	39.57	51.33	1.52	9.13	1.86	0.56	0.00	36.75	50.18	0.28	13.62	1.47	0.00	0.00	38.06	46.01
	C24	0.91	11.26	2.48	0.00	0.00	28.56	56.79	1.43	12.51	2.74	0.63	0.00	34.70	48.05	0.65	11.66	1.65	0.28	0.00	30.23	54.70
	C25	0.53	13.81	1.86	0.00	0.00	26.62	57.18	1.78	15.13	3.02	0.25	0.00	15.34	64.17	0.26	17.61	1.48	0.54	0.00	23.21	56.90
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	1.86	12.39	2.31	0.36	0.00	34.09	49.00	1.00	11.73	4.02	0.81	0.00	38.83	43.61	0.00	14.84	3.20	0.00	0.25	34.29	47.16
	C28	0.00	12.61	5.57	0.36	0.00	39.08	42.38	2.67	11.69	2.27	0.00	0.31	45.34	37.41	0.00	13.46	2.40	0.00	0.00	50.83	30.91

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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Appendix A Updated and Revised August 6, 2014

Weekly functional group analysis results for HBS4-CR.

		HBS4-CP																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
Week Number +	B4	0.17	9.16	3.15	0.17	0.38	65.81	21.17	0.36	11.60	7.00	0.32	0.34	57.52	22.86	0.44	9.73	4.31	0.92	0.00	56.05	28.54
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C9	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C12	0.00	3.38	2.42	0.00	0.00	14.06	80.14	0.00	9.66	3.62	0.00	0.00	5.99	80.73	0.00	5.88	1.26	0.00	0.00	7.68	85.18
	C13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	1.63	8.40	1.96	0.00	0.00	10.19	77.23	0.50	13.72	3.87	0.00	0.00	14.41	67.51	0.00	7.66	1.61	1.15	0.00	6.93	82.64
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C18	0.33	9.36	0.93	0.00	0.99	25.12	63.27	0.31	11.40	3.73	0.00	0.69	22.86	61.06	1.69	5.29	2.39	0.94	0.00	25.00	64.70
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	0.94	8.98	2.17	0.25	0.00	37.39	50.27	0.00	9.61	3.33	0.00	0.00	43.09	43.97	1.56	4.93	3.84	0.56	0.00	50.43	38.67
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	0.36	7.23	5.38	0.28	0.00	44.87	41.88	0.00	9.44	3.88	0.00	0.00	46.05	40.63	0.63	6.00	2.62	1.40	0.00	39.58	49.83
	C23	1.57	6.40	2.90	0.64	0.00	35.36	52.56	0.28	11.04	2.80	0.00	0.00	31.51	54.37	0.00	6.77	1.69	0.00	0.00	25.82	65.45
	C24	0.63	5.48	2.45	0.31	0.31	30.36	60.45	0.50	8.66	2.75	0.00	0.00	34.40	53.41	0.42	4.71	1.20	0.00	0.00	31.80	61.93
	C25	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	0.31	8.39	2.24	0.00	0.00	12.30	76.76	0.31	12.52	2.33	0.00	0.28	10.94	73.62	0.94	7.94	1.98	0.94	0.00	10.24	77.69
	C28	0.00	3.61	2.03	0.00	0.31	24.37	69.68	0.59	7.71	2.59	0.00	0.00	12.99	75.84	0.00	4.92	1.15	0.63	0.00	18.68	74.63

[†]: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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Appendix A Updated and Revised August 6, 2014

Weekly functional group analysis results for HBSC1-CP.

Transect		HBSC1-CP																				
Functional Group		T1						T2						T3								
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number [†]	B4	9.28	9.52	3.51	0.00	0.66	66.17	10.86	0.64	8.44	2.09	0.00	2.73	79.96	5.46	0.33	7.85	2.77	0.00	4.47	75.27	8.95
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C12	9.49	14.08	0.56	0.00	0.00	8.13	67.74	1.38	8.76	2.89	0.00	0.00	20.70	66.32	0.00	11.92	1.77	0.00	0.00	15.98	70.33
	C13	6.00	9.23	0.57	0.00	0.00	78.62	5.58	0.31	9.50	1.42	0.50	0.00	76.90	11.37	2.25	12.46	1.92	0.00	0.00	70.48	12.53
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	9.60	13.01	0.98	0.28	37.73	30.38	5.94	0.83	10.64	4.36	0.00	53.95	21.33	7.66	0.81	8.69	5.10	0.00	58.01	20.14	5.93
	C17	8.63	11.51	0.56	0.00	0.53	74.25	2.42	0.36	9.88	1.35	0.25	1.23	84.54	0.53	0.81	9.50	2.80	0.00	1.84	80.89	1.13
	C18	4.64	6.48	4.12	0.00	0.28	49.35	34.27	1.46	9.92	2.85	0.00	0.90	55.70	28.94	1.39	9.98	1.74	0.00	1.65	60.16	23.77
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	5.75	9.37	3.60	1.18	0.56	65.95	11.93	1.27	5.33	2.92	0.83	1.50	85.67	1.87	1.11	5.01	2.49	0.00	3.84	83.14	3.63
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	6.28	7.46	2.65	0.00	4.28	76.42	1.75	1.16	9.63	1.80	0.00	4.69	81.79	0.67	0.50	7.15	2.54	0.00	6.32	82.55	0.94
	C23	4.31	9.08	2.35	0.56	1.13	81.12	0.56	0.90	7.21	2.36	0.00	9.60	78.13	0.63	0.31	8.29	5.00	0.00	8.73	75.14	2.21
	C24	6.54	12.28	1.43	0.00	15.49	60.22	2.62	0.53	10.20	0.56	0.31	14.73	71.33	2.03	0.31	6.38	1.99	0.00	19.08	69.10	1.96
	C25	5.40	14.59	1.12	0.00	10.00	65.25	2.59	0.75	9.48	0.53	0.50	16.93	71.04	0.53	0.25	13.51	1.25	0.25	15.01	66.17	2.53
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	4.96	11.01	2.39	0.00	0.53	59.43	18.21	2.20	11.31	4.11	0.31	0.98	66.77	12.82	1.68	8.69	6.20	0.25	1.65	69.10	12.20
	C28	7.79	11.70	1.75	0.00	0.28	70.82	7.40	2.09	10.40	1.89	0.00	1.51	68.17	15.65	1.40	10.60	1.99	0.00	2.25	78.37	5.38

[†]: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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Weekly functional group analysis results for R2N1-RR.

Transect		R2N1-RR																							
Functional Group		T1				T2				T3															
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND			
Week Number [†]	B4	0.18	15.67	3.76	0.00	0.00	77.88	0.76	0.85	15.29	2.12	0.00	0.00	79.01	2.06	2.91	16.67	1.52	0.00	0.00	77.92	0.77			
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C9	0.90	13.96	0.94	0.00	0.00	33.12	51.09	1.69	15.01	4.43	0.28	0.00	50.13	27.96	3.84	14.39	2.13	0.00	0.28	43.90	35.47			
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C21	0.25	16.45	1.37	0.00	0.00	24.99	56.95	1.50	14.36	1.06	0.00	0.00	25.61	57.48	1.95	13.99	2.18	0.00	0.00	19.09	62.80			

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 36
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 34 07/09/14-07/15/14 Dredge Activity
Appendix A Updated and Revised August 6, 2014

Weekly functional group analysis results for R2N2-LR.

Transect		R2N2-LR																											
Functional Group		T1				T2				T3																			
Transect	Functional Group	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND							
Week Number [†]	B4	0.62	1.22	2.94	0.23	0.00	79.57	15.21	0.56	2.17	4.00	0.60	0.19	64.04	28.23	0.43	1.07	4.93	1.33	0.00	74.28	17.97							
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C21	0.31	1.62	1.46	0.00	0.00	49.61	47.00	0.25	1.03	2.10	0.00	0.00	40.95	55.67	0.28	0.75	2.55	0.28	0.00	47.30	48.84							

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 36
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 34 07/09/14-07/15/14 Dredge Activity
Appendix A Updated and Revised August 6, 2014

Weekly functional group analysis results for R2NC1-LR.

Transect		R2NC1-LR																											
Functional Group		T1				T2				T3																			
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND							
Week Number [†]	B4	1.56	2.89	2.02	5.25	0.17	63.92	23.86	0.61	6.92	2.81	0.00	0.00	70.41	17.97	4.50	8.38	1.63	3.04	0.18	54.12	25.38							
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C9	1.42	1.73	1.40	5.25	0.00	43.09	47.11	0.00	2.23	1.15	0.00	0.00	57.86	38.45	0.84	3.38	0.59	0.90	0.00	55.91	38.38							
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C21	2.03	2.50	0.56	7.30	0.00	43.17	44.45	1.58	3.72	0.28	0.00	0.00	47.14	47.28	1.48	3.76	3.03	2.85	0.00	51.20	37.44							

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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Week 34 07/09/14-07/15/14 Dredge Activity
Appendix A Updated and Revised August 6, 2014

Weekly functional group analysis results for R2NC2-RR.

Transect		R2NC2-RR																											
Functional Group		T1				T2				T3																			
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND							
Week Number [†]	B4	1.56	19.68	0.85	0.00	0.38	77.07	0.46	2.49	19.45	2.82	0.00	0.00	75.24	0.00	6.97	17.56	1.29	0.00	0.00	74.18	0.00							
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C21	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E				

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 36
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 34 07/09/14-07/15/14 Dredge Activity
Appendix A Updated and Revised August 6, 2014

Weekly functional group analysis results for R2S1-RR.

Transect		R2S1-RR																							
Functional Group		T1				T2				T3															
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND			
Week Number [†]	B4	0.94	5.89	3.15	0.00	0.00	88.49	0.21	0.57	3.77	3.45	0.00	0.00	92.20	0.00	0.33	5.25	3.40	0.49	0.00	89.94	0.41			
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C9	0.99	5.89	1.06	0.00	0.00	11.03	81.02	1.39	2.58	0.59	0.00	0.00	5.74	89.70	0.28	3.00	1.53	0.63	0.00	10.84	83.73			
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C21	1.48	5.19	1.31	0.00	0.00	18.92	73.12	1.47	2.15	1.18	0.00	0.00	13.29	81.92	0.59	3.40	1.04	0.00	0.00	20.48	74.48			

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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Week 34 07/09/14-07/15/14 Dredge Activity
Appendix A Updated and Revised August 6, 2014

Weekly functional group analysis results for R2S2-LR.

Transect		R2S2-LR																							
Functional Group		T1				T2				T3															
Transect	Functional Group	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND			
Week Number [†]	B4	1.44	8.32	3.39	0.00	0.00	86.69	0.00	1.04	9.11	3.40	0.00	0.00	86.27	0.00	2.04	18.81	8.13	0.00	0.00	70.64	0.00			
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

[†]: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

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Week 34 07/09/14-07/15/14 Dredge Activity
Appendix A Updated and Revised August 6, 2014

Weekly functional group analysis results for R2SC1-RR.

Transect		R2SC1-RR																				
Functional Group		T1				T2				T3												
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number [†]	B4	0.95	19.40	3.97	7.52	0.00	64.32	3.85	0.76	31.88	3.45	12.51	0.00	50.63	0.37	1.11	16.14	5.33	10.66	0.00	63.97	2.80
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	3.06	10.51	1.98	0.00	0.00	13.68	70.76	5.14	11.86	1.73	0.25	0.00	15.88	65.15	1.71	10.78	2.32	0.00	0.00	14.37	70.82
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C21	3.62	5.53	1.70	0.00	0.00	65.26	23.89	2.69	4.03	0.84	0.25	0.00	72.08	20.10	1.84	7.15	1.08	1.46	0.00	71.46	17.01

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

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Weekly functional group analysis results for R2SC2-LR.

Transect		R2SC2-LR																				
Functional Group		T1				T2				T3												
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
Week Number [†]	B4	1.17	19.28	3.56	8.12	0.00	64.86	3.02	0.19	32.52	4.54	13.95	0.19	47.75	0.87	0.33	13.81	4.90	12.00	0.00	65.91	3.06
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C21	0.88	16.90	4.06	5.12	0.00	69.83	2.65	0.31	26.16	5.55	10.02	0.00	57.12	0.53	1.06	17.29	6.20	7.83	0.00	66.03	0.28

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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Subject: Miami Harbor Phase III Federal Channel Expansion, FDEP Permit No. 0305721-001-BI - Week 37 Coral Stress & Sediment Block Monitoring Report Submittal
Date: Thursday, August 14, 2014 9:06:02 AM

No hardbottom monitoring was performed during Week 37 (July 30, 2014 to August 05, 2014) because the Dredge Texas was not operating during the reporting period. This notification is submitted in compliance with the referenced FDEP permit for the period between July 30, 2014 to August 05, 2014, inclusive.

A copy of this email will be saved to the 4Projects site in the 10.Agency/Agency/6 Hardbottom Monitoring/6.2 Construction folder.

If you have any questions in regards to this submittal, please contact Terri Jordan-Sellers (Terri.Jordan-Sellers@usace.army.mil).

Thanks.

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Weekly Offshore Coral Stress and Sediment Block Compliance Report 38

FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening

Week 38 08/06/14-08/12/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. The hopper dredge Liberty Island left the project area on July 3, 2014 and is not expected to return at this time. During Compliance Week 38 (August 6 to August 12, 2014), the cutterhead dredge Texas and Spider Barge worked in Cut 1 (STA 7+05 to 20+77 and STA 22+05 to 35+77 respectively), and Dredge 55 worked in Cut 3 (STA 0+00 to 12+00) and Fisher Island Turning Basin (STA 31+50 to 37+00).

Biological monitoring was required for sites within 750 m of an active dredge and included all middle and outer reef sites (Figure 1). Biological monitoring was conducted twice at all sites within 750m of dredging activity, with the exception of R3S1, R3S2, and R3S3 which could not be safely monitored due to the proximity of the Texas, strong currents, and chop. Adverse environmental conditions (e.g., severe thunderstorms, excessive wind speeds, wave heights, and/or low visibility) during Week 38 of compliance monitoring made conditions unsafe for offshore dive operations during portions of 3/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind, wave, and traffic conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral condition surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral condition, video transect and sediment block survey methods.

Weekly Scleractinian Condition Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)):

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications

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of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a "0" (normal or non-stressed) or "1" (stressed), and photographed. If a "1" is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Statistical comparisons for all condition data are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a "1" during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of all polyps on the colony.
Mucus	Sediment stress	Excessive mucus production resulting in a mucus film and/or sediment balled up in mucus.
Paling	Stress/Elevated irradiance/Elevated water temperature	Live tissue with some loss of color.
Bleaching	Stress/Elevated irradiance/Elevated water temperature	Live tissue with complete loss of color.
Black band disease	Stress	Black band surrounds dead patch.
Yellow Band	Stress	Yellow band surrounds dead patch.
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed.
Physical Disturbance	Abrasion	Abrasion or physical disturbance such as a gauge or a nick, not in a discernable pattern like fish bites.
Sediment Accumulation	Sedimentation	Moderate sediment accumulation on top of colony (more than dusting). Accumulation in grooves and/or between polyps
Partial Burial	Sedimentation	Portion(s) of the colony buried by sediment.
Burial	Sedimentation	Entire colony buried by sediment
	Sedimentation	Partial mortality of coral colony appears white with no

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Condition	Cause	Appearance
Recent Partial Mortality		live polyps visible. Generally, occurs around the margin of the colony. Visible when sediment recedes.
Complete Mortality	Any	Death of the entire colony; no live tissue remaining on the skeleton

Sediment Stress

Sedimentation stress data are qualitative estimations of sediment related stress that are observed on permanently marked hard corals. *In situ* data on sediment stress and other conditions are assigned in the field during data collection. QA/QC is conducted on photos for all coral conditions in the laboratory. Data are entered into an Excel spreadsheet for analysis each week. Sediment dusting (SED) is not considered a “stress” indicator and is given a score of zero. SED is a low amount, a “dusting”, of sediment ontop of the coral. Sediment accumulation (SA), is an accumulation of sediment ontop of the coral, between polyps, or within grooves and is qualitatively more than a dusting of sediment. Partial burial (PBUR) is the accumulation of sediment around the base of the coral, sometimes in the form of a berm, and burial (BUR) is the complete burial of the coral colony by sediment. SA, PBUR, and BUR are given scores of a “1”. A single coral may exhibit one or more conditions, including one or more sediment stress codes. For example, a coral may have sediment accumulation (SA) and partial burial (PBUR). The score for such a coral would be a “1”, code data are collected for all applicable conditions. Sediment stress data are reported in Table 3.

Weekly Functional Group Percent Cover Analysis

Functional groups in the vicinity of the project area (hardbottom, middle, and outer reef) include typical sub-tropical hardbottom and reef environment sessile invertebrates, including octocorals, sponges and hard corals among others. Of these biological constituents, the most abundant and highest in percent cover are the octocorals, which range in cover from 1-15% (Gilliam et al. 2007, Dial Cordy 2010 and 2012). Sponges range from 1-6% cover, while hard corals including Millepora range from 0.2 to 4.6% (Dial Cordy et al. 2010 and 2012). Since octocorals dominate the benthic habitat across habitat types, octocorals are used as the proxy indicator group because they are most abundant non-algal benthic component. Percent cover calculations are compared between monitoring events and among transects and sites.

Functional group analysis is conducted for available video transect data, which are collected as part of the weekly compliance monitoring and is used to satisfy FDEP permit Special Condition 32.(a).(ii).d:

Any change of 5% or more in cover by any functional group evaluated in quadrats in two or more adjacent transects, or on average for the zone of monitoring on one side of the channel, or stress expressed above normal by corals and/or octocorals within transects (stress scale used for Broward County Segment III project) will require an additional survey to outline the area(s) of impact. Impacted areas shall continue to be monitored monthly during the construction, one month post-construction, and two times during next year in order to document results of the impact. Final monitoring results shall document permanent impacts, if any, to be used for estimates of additional mitigation using UMAM.

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Quantitative digital video data are collected along each transect with the camera positioned 40cm above the substrate, recording a plan-view of the benthic resources (Aronson et al. 1994). The video camera is equipped with a measuring device to ensure the camera remains at 40-cm above the bottom and a scale bar is visible at the bottom of the camera screen at all times with the site information in the lower right hand corner. The camera records video transect data at a speed of ~5 m per minute to insure quality still images may be extracted for analysis. These data are collected each time a site is surveyed, however analysis is only conducted for a single monitoring survey within a given compliance week. Analysis is conducted for a total of 24m² per site (0.4m x 20m x 3 transects).

Transect video footage is broken down into 40 non-overlapping still images (repetitive quadrats) using GOM Video Player™ Stills are analyzed for selected functional groups (octocorals, sponge, hard corals, zoanthids, macroalgae, CTB (crustose, turf, and bare substrate) using randomly overlaid points in CPCe® software. Percent cover for selected functional groups, and sand are compared over time and presented in Appendix A.

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design used in the Broward County Shore Protection Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibial growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.

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- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

Results

Scleractinian Condition

Biological monitoring was conducted twice at all sites within 750m of dredging activity, with the exception of southern outer reef channel-side sites (see Background section). Coral condition data for reference sites (e.g., R2SC1) and channel-side sites (e.g., R2S1) were compared using a two-sampled t-test ($p \leq 0.05$). Stress levels at reference sites ranged from 0.54 ± 0.51 (R3NC1) to 0.83 ± 0.38 (R2NC1) whereas stress levels at channel-side sites ranged from 0.82 ± 0.39 (R3N1) to 1.00 ± 0.0 (R2N1; Table 2).

In Week 38 of compliance monitoring, all channel-side sites exhibited significantly higher stress levels than their respective controls, with the exception of R2N2. Increased stress levels at R2N2 were predominantly attributed to sediment stress (see Scleractinian Sediment Stress section), whereas increased stress levels at R2NC1 were predominantly attributed to bleaching and paling. Coral condition values continue to be elevated across channel-side and reference sites (Table 2), due to an increase in paling and bleaching of corals in the region. Seasonally warm water temperatures and elevated levels of irradiance are known to induce paling and/or bleaching (stress) in corals (e.g., Baker et al. 2008). The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was also present in permanently marked corals at R2S1, R2S2, R2SC1, R2N1, and R2NC1.

Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 38. Permanently marked scleractinians at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators. See Table 1 for a complete list of stress indicators.

Survey Zone	Area	Site	Scleractinian Condition					
			First Survey			Second Survey		
			Mean	SD	N	Mean	SD	N
Hardbottom	South	HBS1	N/A	N/A	N/A	N/A	N/A	N/A
		HBS2	N/A	N/A	N/A	N/A	N/A	N/A
		HBS3	N/A	N/A	N/A	N/A	N/A	N/A
		HBS4	N/A	N/A	N/A	N/A	N/A	N/A
		HBSC1	N/A	N/A	N/A	N/A	N/A	N/A
	North	HBN2	N/A	N/A	N/A	N/A	N/A	N/A
		HBN3	N/A	N/A	N/A	N/A	N/A	N/A
		HBNC1	N/A	N/A	N/A	N/A	N/A	N/A
Middle Reef	South	R2S1	0.96*	0.19	27	0.96*	0.19	27
		R2SC1	0.70	0.47	30	0.73	0.45	30
		R2S2	0.96*	0.20	24	0.88	0.34	24

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		R2SC2	0.72	0.46	25	0.76	0.44	25
North	Outer Reef	R2N1	0.97*	0.18	30	1.00*	0.00	30
		R2NC2	0.73	0.45	30	0.73	0.45	30
		R2N2	0.92	0.28	25	0.88	0.34	24
		R2NC1	0.83	0.38	29	0.76	0.44	29
		R3S1	N/A	N/A	N/A	N/A	N/A	N/A
Outer Reef	South	R3SC1	N/A	N/A	N/A	N/A	N/A	N/A
		R3S2	N/A	N/A	N/A	N/A	N/A	N/A
		R3SC2	N/A	N/A	N/A	N/A	N/A	N/A
		R3S3	N/A	N/A	N/A	N/A	N/A	N/A
		R3SC3	N/A	N/A	N/A	N/A	N/A	N/A
		R3N1	0.82*	0.39	22	0.82	0.39	22
Outer Reef	North	R3NC1	0.54	0.51	24	0.79	0.41	24

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

N/A: No data.

*****: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test.

Sediment Stress

Sedimentation stress including sediment accumulation (SA), partial burial (PBUR) and burial (BUR) were present at higher levels on channel-side v. reference sites (Table 3). The proportion of permanently marked corals exhibiting sediment accumulation was much lower at reference sites when compared to channel-side sites, ranging from 0 to 27% versus 28 to 73% respectively. As much as 3% of permanently marked corals were documented by scientific divers as being partially buried by sediment at reference sites, whereas 25 to 90% of corals were partially buried by sediment at channel-side sites. Complete burial was rare and only occurred at R2N2. Recent partial mortality due to partial burial at the base of several corals was present at all channel-side sites.

Table 3: Mean scleractinian sediment stress score as measured in Week 38 of compliance monitoring. Permanently marked scleractinians at channel and reference sites were assigned a “0” “1” depending on the presence/absence of sediment stress indicators. Corals with sediment dusting (SED) or no sediment accumulation were assigned a “0”, while corals exhibiting sediment accumulation (SA), partial burial (PBUR), and/or burial (BUR) were assigned a “1”.

Survey Zone	Area	Site	Sediment Stress Proportions								
			First Survey					Second Survey			
			SED	SA	PBUR	BUR	N	SED	SA	PBUR	BUR
Hard-bottom	South	HBS1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBS2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBS3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBS4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBSC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	North	HBN2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBN3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Middle	South	R2S1	0.04	0.37	0.85	0.00	27	0.04	0.37	0.59	0.00

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Survey Zone	Area	Site	Sediment Stress Proportions								
			First Survey					Second Survey			
			SED	SA	PBUR	BUR	N	SED	SA	PBUR	BUR
Reef	R2SC1	R2SC1	0.17	0.20	0.00	0.00	30	0.13	0.07	0.00	0.00
		R2S2	0.13	0.71	0.42	0.00	24	0.08	0.38	0.25	0.00
		R2SC2	0.08	0.04	0.00	0.00	25	0.00	0.00	0.04	0.00
	North	R2N1	0.17	0.73	0.77	0.00	30	0.00	0.50	0.90	0.00
		R2NC2	0.30	0.27	0.03	0.00	30	0.31	0.07	0.03	0.00
		R2N2	0.20	0.44	0.32	0.08	25	0.04	0.28	0.40	0.04
		R2NC1	0.29	0.13	0.04	0.00	29	0.14	0.14	0.00	0.00
Outer Reef	South	R3S1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R3SC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R3S2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R3SC2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R3S3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R3SC3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	North	R3N1	0.14	0.64	0.50	0.00	22	0.05	0.41	0.36	0.00
		R3NC1	0.10	0.10	0.00	0.00	24	0.17	0.13	0.00	0.00

N: Number of corals sampled to calculate the mean.

N/A: No data.

Weekly Functional Group Percent Cover Analysis

Functional group percent cover analysis is conducted on video transect data collected during the weekly monitoring surveys. Results are presented in Appendix A.

Sediment Block Survey

Less than one mm of sediment accumulated on sediment blocks at any compliance monitoring sites in Week 38 (Table 4).

Table 4: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 38. All measurements are in mm. N represents the number of sediment blocks surveyed. N/A designated sites that were not surveyed in the current week.

Survey Zone	Area	Site	Quanitative Sedimentation (mm)	N
Hardbottom	South	HBS1	N/A	N/A
		HBS2	N/A	N/A
		HBS3	N/A	N/A
		HBS4	N/A	N/A
		HBSC1	N/A	N/A
	North	HBN2	N/A	N/A
		HBN3	N/A	N/A
		HBNC1	N/A	N/A
Middle Reef	South	R2S1	<1	1
		R2SC1	<1	1
		R2S2	<1	1
		R2SC2	<1	1

Weekly Offshore Coral Stress and Sediment Block Compliance Report 38

FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening

Week 38 08/06/14-08/12/14 Dredge Activity

Survey Zone	Area	Site	Quanitative Sedimentation (mm)	N
	North	R2N1	0	1
		R2NC2	1	1
		R2N2	0	1
		R2NC1	<1	1
Outer Reef	South	R3S1	N/A	N/A
		R3SC1	N/A	N/A
		R3S2	N/A	N/A
		R3SC2	N/A	N/A
		R3S3	N/A	N/A
		R3SC3	N/A	N/A
	North	R3N1	<1	1
		R3NC1	<1	1

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 5).

Table 5: Sediment accumulation data collected from sediment traps since October 2013. Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in grams per day.

Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
HBN1-CR							
Sample Start Date	10/21/2013						
Sample End Date	11/18/2013						
Grain size > #230 Sieve (g/day)	6.98						
Grain Size < # 230 Sieve (g/day)	0.87						
HBN2-CR							
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	3/5/2014	4/4/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	4/2/2014	5/3/2014	5/29/2014
Grain size > #230 Sieve (g/day)	2.51	3.65	1.87	1.15	4.91	2.74	2.14
Grain Size < # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.70	0.48	0.25
HBN3-CP							
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	3/6/2014	4/3/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	4/3/2014	5/3/2014	5/28/2014
Grain size > #230 Sieve (g/day)	4.13	3.38	3.23	1.83	3.28	1.2	3.02
Grain Size < # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	1.01	0.54	0.25
HBNC1-CP							
Sample Start Date	10/15/2013		11/12/2013	1/13/2014	3/6/2014	4/2/2014	5/3/2014
Sample End Date	11/12/2013		1/13/2014	2/7/2014	4/2/2014	5/3/2014	5/29/2014
Grain size > #230 Sieve (g/day)	0.37		0.40	0.02	0.08	0.02	0.09
Grain Size < # 230 Sieve (g/day)	0.76		0.99	0.16	1.09	0.19	0.04
HBS1-CP							
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	3/7/2014	4/4/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014
Grain size > #230 Sieve (g/day)	0.67	2.42	1.21	0.95	0.77	0.44	2.32
Grain Size < # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.74	0.26	0.21
HBS2-CP							
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	3/7/2014	4/4/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014
Grain size > #230 Sieve (g/day)	0.76	3.18	2.05	0.84	1.66	0.54	1.63
Grain Size < # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.50	0.32	0.42
HBS3-CP							
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.43	0.26	0.41

Weekly Offshore Coral Stress and Sediment Block Compliance Report 38

FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening

Week 38 08/06/14-08/12/14 Dredge Activity

Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
Grain Size < # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.72	0.36	0.36
HBS4-CR							
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.61	0.33	1.15
Grain Size < # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	1.09	0.50	0.27
HBSC1-CP							
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	3/6/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.03	0.01	0.04
Grain Size < # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.32	0.08	0.02
R2N1-RR							
Sample Start Date	10/23/2013		11/18/2013	1/18/2014	2/17/2014	3/20/2014	4/16/2014
Sample End Date	11/18/2013		1/18/2014	2/17/2014	3/20/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	1.81		2.01	0.61	0.59	1.13	0.82
Grain Size < # 230 Sieve (g/day)	0.58		0.96	0.55	0.40	0.58	0.79
R2N2-LR							
Sample Start Date	-	11/20/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014
Sample End Date	-	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-	1.77	1.73	0.19	0.43	0.01	0.33
Grain Size < # 230 Sieve (g/day)	-	0.71	0.85	0.32	0.39	0.14	0.74
R2NC1-LR							
Sample Start Date	10/27/2013		11/20/2013	1/18/2014	2/16/2014	3/20/2014	4/16/2014
Sample End Date	11/24/2013		1/18/2014	2/16/2014	3/20/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	2.74		0.47	0.01	0.01	0.06	0.06
Grain Size < # 230 Sieve (g/day)	0.59		0.37	0.03	0.00	0.10	0.23
R2NC2-RR							
Sample Start Date	-		11/19/2013		2/16/2014	3/20/2014	4/16/2014
Sample End Date	-		2/16/2014		3/20/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-		0.07		0.00	0.00	0.01
Grain Size < # 230 Sieve (g/day)	-		0.22		0.00	0.06	0.13
R2S1-RR							
Sample Start Date	10/18/2013		11/18/2013	1/15/2014	2/16/2014	3/19/2014	4/16/2014
Sample End Date	11/18/2013		1/15/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	0.51		0.87	0.22	0.22	0.50	0.47
Grain Size < # 230 Sieve (g/day)	0.52		0.93	0.35	0.33	0.52	0.78
R2S2-LR							
Sample Start Date	-	11/21/2013	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014
Sample End Date	-	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-	0.49	0.51	0.17	0.18	0.29	0.26
Grain Size < # 230 Sieve (g/day)	-	0.49	0.6	0.26	0.20	0.39	0.59
R2SC1-RR							
Sample Start Date	10/19/2013		11/18/2013	1/15/2014	2/26/2014	3/30/2014	4/27/2014
Sample End Date	11/18/2013		1/15/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Grain size > #230 Sieve (g/day)	0.62		0.57	0.02	0.02	0.02	0.13
Grain Size < # 230 Sieve (g/day)	0.42		0.72	0.13	0.12	0.10	0.51
R2SC2-LR							
Sample Start Date	-	11/21/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014
Sample End Date	-	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Grain size > #230 Sieve (g/day)	-	0.80	0.46	0.03	0.04	0.18	0.21
Grain Size < # 230 Sieve (g/day)	-	0.61	0.41	0.12	0.15	0.34	0.47
R3N1-LR							
Sample Start Date	-	12/4/2013		12/30/2013	2/16/2014		3/19/2014
Sample End Date	-	12/30/2013		2/16/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.09		0.17	0.03		TBD
Grain Size < # 230 Sieve (g/day)	-	0.08		0.16	0.00		TBD
R3NC1-LR							
Sample Start Date	-		12/5/2013		2/16/2014		3/20/2014
Sample End Date	-		2/16/2014		3/20/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-		0.05		0.01		TBD
Grain Size < # 230 Sieve (g/day)	-		0.07		0.00		TBD
R3S1-CP							
Sample Start Date	-	12/3/2013		12/30/2013	2/16/2014		3/19/2014
Sample End Date	-	12/30/2013		2/16/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.06		0.13	0.02		
Grain Size < # 230 Sieve (g/day)	-	0.10		0.20	0.00		
R3S2-LR							
Sample Start Date	-	12/3/2013		12/30/2013	2/16/2014		3/19/2014
Sample End Date	-	12/30/2013		2/16/2014	3/19/2014		6/5/2014

Weekly Offshore Coral Stress and Sediment Block Compliance Report 38**FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening****Week 38 08/06/14-08/12/14 Dredge Activity**

Site	Baseline	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
Grain size > #230 Sieve (g/day)	-	0.04		0.15	0.01		TBD
Grain Size < # 230 Sieve (g/day)	-	0.09		0.14	0.00		TBD
R3S3-SG							
Sample Start Date	-	12/3/2013		12/30/2013	2/16/2014		3/19/2014
Sample End Date	-		12/30/2013	2/16/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-	0.04		0.13	0.02		TBD
Grain Size < # 230 Sieve (g/day)	-	0.07		0.13	0.00		TBD
R3SC1-CP							
Sample Start Date	-		12/5/2013		2/17/2014		3/19/2014
Sample End Date	-			2/17/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-		0.08		0.00		TBD
Grain Size < # 230 Sieve (g/day)	-		0.17		0.00		TBD
R3SC2-LR							
Sample Start Date	-		12/4/2013		2/17/2014		3/19/2014
Sample End Date	-			2/17/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-		0.05		0.10		TBD
Grain Size < # 230 Sieve (g/day)	-		0.07		0.00		TBD
R3SC3-SG							
Sample Start Date	-		12/4/2014		2/17/2014		3/19/2014
Sample End Date	-			2/17/2014	3/19/2014		6/5/2014
Grain size > #230 Sieve (g/day)	-		0.08		0.10		TBD
Grain Size < # 230 Sieve (g/day)	-		0.11		0.00		TBD

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from of 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.
8. Liberty Island dredging with no overflow as of 6/19/14. Liberty Island departed the project site on July 3, 2014, and is not expected to return to service on this project in the foreseeable future.
9. An additional tug and scow were added to the scow package to allow the Spider Barge to load scows with minimal to no overflow to help reduce possible sedimentation and turbidity as of Compliance Week 39.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 38

FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening

Week 38 08/06/14-08/12/14 Dredge Activity

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.

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Weekly Offshore Coral Stress and Sediment Block Compliance Report 34
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 34 07/02/14-07/08/14 Dredge Activity

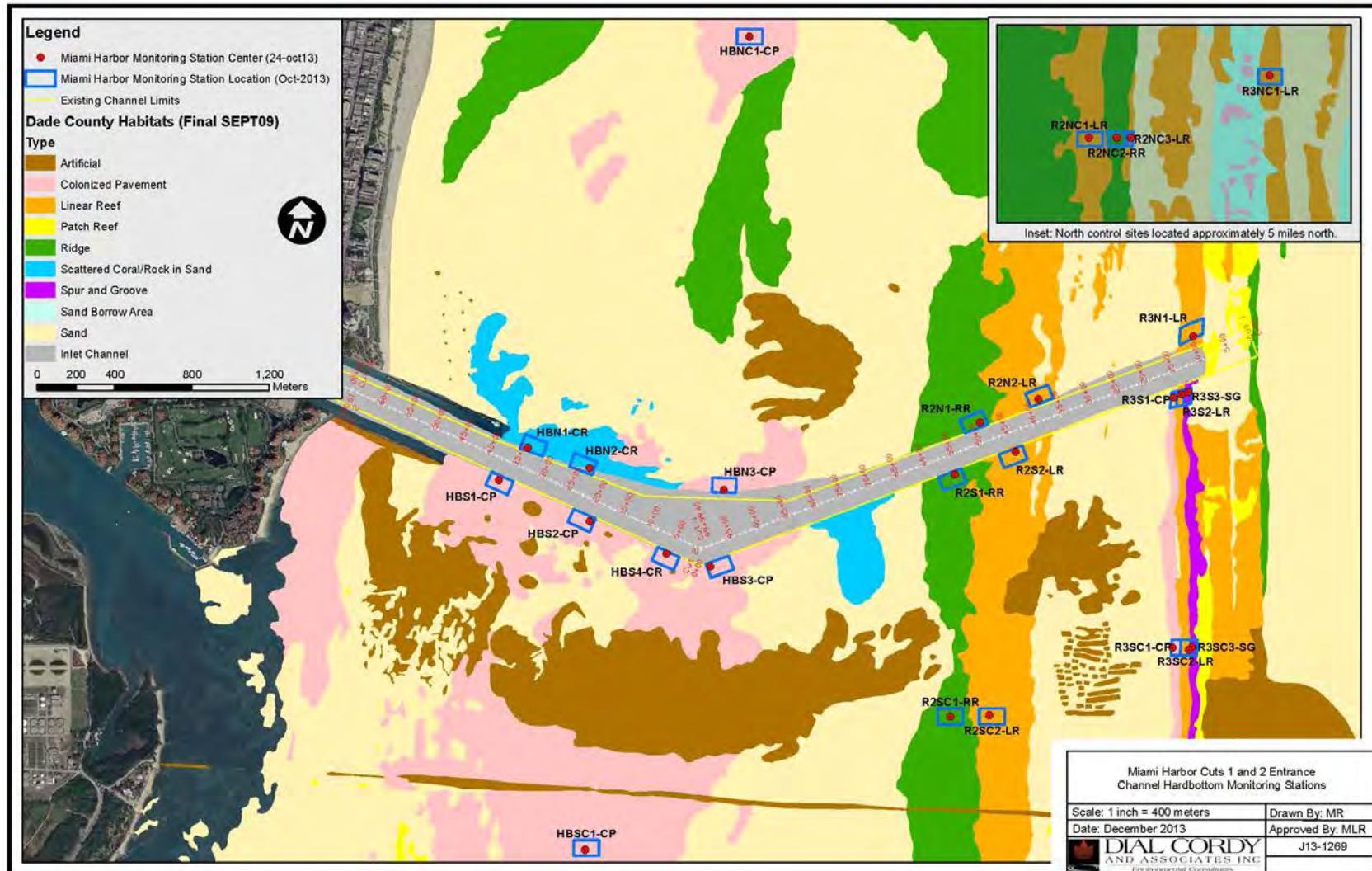


Figure 1: Miami Harbor Cuts 1 and 2 Entrance Channel Hardbottom and Reef monitoring stations.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 38
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 38 08/06/14-08/12/14 Dredge Activity
Appendix A Updated August 20, 2014

Weekly functional group analysis results for HBN2-CR last updated August 20, 2014.

Transect		HBN2-CR																				
Functional Group	TRANSECT	T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	0.19	0.00	4.82	0.00	0.00	93.83	1.16	0.17	0.00	5.50	0.00	0.00	89.83	4.29	0.00	0.82	4.02	0.00	0.00	90.17	4.98
	C1	0.31	0.67	5.72	0.00	0.00	42.56	49.55	0.00	0.00	4.79	0.00	0.00	33.81	59.73	0.00	0.94	3.76	0.00	1.49	6.80	86.41
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C4	0.00	0.00	2.56	0.00	0.00	9.90	87.26	0.00	0.00	0.53	0.00	0.00	14.39	85.08	0.00	0.56	1.30	0.00	1.50	11.72	84.92
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	0.00	0.56	1.46	0.00	0.00	9.90	88.08	0.00	0.00	1.79	0.00	0.00	15.86	82.35	0.00	0.75	0.59	0.63	0.00	8.55	89.49
	C8	0.73	0.56	0.88	0.00	0.00	6.63	90.90	0.00	0.00	0.97	0.00	0.00	8.79	90.24	0.00	0.53	1.21	0.00	0.00	11.07	87.19
	C9	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	C11	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C12	0.00	0.25	0.00	0.00	0.00	16.12	83.63	M	M	M	M	M	M	M	0.31	1.44	0.00	0.00	0.00	20.18	78.07
	C13	0.00	0.00	1.17	0.00	0.00	23.22	75.61	0.28	0.00	0.00	0.00	0.00	35.25	64.47	0.00	0.63	0.56	0.00	0.00	36.06	62.75
	C14	0.31	0.50	0.63	0.00	0.00	28.30	70.27	0.00	0.25	1.09	0.00	0.00	38.01	60.65	0.28	1.03	2.98	0.00	0.00	26.36	69.35
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	0.00	0.28	0.94	0.00	0.00	19.60	79.17	0.00	0.00	0.80	0.00	0.00	29.85	69.36	0.31	0.00	1.49	0.00	0.00	13.57	84.63
	C17	0.00	0.00	1.99	0.00	0.25	39.12	58.65	0.00	0.00	0.78	0.00	0.00	48.06	51.16	0.50	0.53	0.36	0.00	0.00	39.49	59.13
	C18	0.25	0.28	2.22	0.00	0.00	25.67	71.58	0.00	0.28	2.07	0.00	1.07	27.85	68.48	0.00	0.75	4.87	0.00	0.00	26.61	67.78
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	0.28	0.00	0.28	0.00	0.00	49.27	50.17	0.25	0.00	1.83	0.00	0.00	58.42	39.50	0.56	0.56	1.06	0.00	0.31	50.88	46.64
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E

Weekly Offshore Coral Stress and Sediment Block Compliance Report 38
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 38 08/06/14-08/12/14 Dredge Activity
Appendix A Updated August 20, 2014

HBN2-CR																						
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOALGAE	CORALLINE, TURF, BARE	SAND
	C23	0.00	0.00	1.42	0.00	0.00	38.16	60.42	0.00	0.00	0.00	0.00	0.00	33.51	66.49	0.00	0.56	0.63	0.00	0.00	38.19	60.63
	C24	0.25	0.25	2.32	0.00	0.00	50.39	46.54	0.00	0.00	2.31	0.00	0.00	44.77	52.92	0.00	0.00	0.91	0.00	0.00	46.39	52.70
	C25	0.25	0.75	1.00	0.00	0.00	40.10	57.35	0.25	0.00	1.56	0.00	0.00	55.65	42.54	0.28	0.00	1.00	0.00	0.00	39.61	59.11
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	0.00	0.31	1.90	0.00	0.00	52.22	45.57	0.94	0.00	1.75	0.00	0.00	56.62	40.69	0.00	0.50	2.22	0.00	0.00	55.81	41.47
	C28	0.00	1.11	1.27	0.00	0.00	57.65	39.61	0.00	0.00	1.60	0.00	0.00	64.81	33.59	0.00	0.75	1.22	0.00	0.00	57.32	40.71
	C29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C39	0.00	0.31	1.90	0.00	0.00	52.22	45.57	0.94	0.00	1.75	0.00	0.00	56.62	40.69	0.00	0.50	2.22	0.00	0.00	55.81	41.47

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 38
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 38 08/06/14-08/12/14 Dredge Activity
Appendix A Updated August 20, 2014

Weekly functional group analysis results for HBN3-CP last updated August 20, 2014.

Transect		HBN3-CP																				
Functional Group		T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	3.66	5.82	5.55	1.00	0.00	77.10	5.67	1.29	3.78	12.50	2.92	0.00	75.89	3.43	1.15	4.33	13.13	0.77	0.00	74.88	5.53
	C1	1.06	5.68	9.43	2.38	0.00	71.22	10.24	0.59	3.91	10.27	4.00	0.00	64.05	17.18	1.19	6.36	13.57	0.56	0.00	69.69	7.81
	C2	1.29	4.72	4.91	1.96	0.00	61.01	26.10	1.06	5.52	6.73	4.34	0.00	66.73	15.63	2.29	6.50	7.21	1.61	0.00	61.39	20.99
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C4	1.29	5.08	3.49	0.56	0.00	54.12	35.46	3.42	12.88	1.86	0.00	0.00	25.47	56.37	1.39	13.11	1.42	0.50	1.00	15.90	66.78
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C10	1.11	7.40	3.14	1.50	0.00	63.35	23.13	1.38	3.06	10.51	2.12	0.00	68.30	14.63	0.59	5.52	7.74	2.78	0.00	66.87	16.50
	C11	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C12	1.88	3.53	4.38	0.94	0.00	24.82	64.45	1.63	5.01	9.11	3.09	0.00	51.16	30.00	1.34	2.43	8.99	1.57	0.00	54.49	31.18
	C13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	0.90	2.13	2.48	0.56	0.00	11.42	82.24	0.98	3.68	9.66	5.28	0.00	14.45	65.95	0.81	4.36	3.78	0.25	0.00	21.69	68.48
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	1.58	8.32	5.99	1.23	0.00	24.22	58.65	1.32	9.96	11.83	2.60	0.00	51.89	22.39	0.69	2.46	8.66	0.00	0.00	62.72	25.46
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	3.09	3.08	3.01	1.69	0.00	48.29	40.84	0.31	2.95	5.61	5.53	0.00	60.65	24.94	0.36	3.28	4.96	0.31	0.00	56.79	34.30

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FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 38 08/06/14-08/12/14 Dredge Activity
Appendix A Updated August 20, 2014

HBN3-CP																						
Transect	T1							T2							T3							
Functional Group	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	
C	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C22	1.16	4.06	3.02	1.12	0.00	45.56	45.08	0.53	3.80	4.15	3.17	0.00	54.00	34.35	0.75	2.09	6.98	0.56	0.00	55.14	34.49
	C23	1.42	4.38	1.77	0.31	0.00	23.70	68.41	0.59	3.78	4.09	3.06	0.00	45.47	43.01	0.81	2.69	2.53	0.71	0.00	37.26	55.75
	C24	1.77	3.52	2.47	0.69	0.00	38.84	52.70	1.06	2.43	8.09	4.29	0.00	49.97	34.16	0.81	2.68	5.71	2.14	0.00	41.92	46.73
	C25	1.06	5.50	3.83	0.25	0.00	14.92	74.44	0.25	5.67	5.44	5.00	0.00	32.42	51.23	1.50	3.33	6.50	2.50	0.00	28.15	57.77
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	2.03	3.89	1.79	2.19	0.00	49.58	40.03	1.11	4.86	8.00	4.76	0.00	57.87	22.81	1.18	3.31	10.16	0.56	0.00	48.89	35.60
	C28	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D		
	C30	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D		
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 38
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 38 08/06/14-08/12/14 Dredge Activity
Appendix A Updated August 20, 2014

Weekly functional group analysis results for HBNC1-CP last updated August 20, 2014.

		HBNC1-CP																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
Week Number +	B4	1.43	17.85	4.53	0.00	0.33	73.68	0.95	0.00	24.28	11.45	0.00	0.41	63.05	0.48	0.38	22.69	7.39	0.00	0.00	68.46	0.79
	C1	0.98	24.75	3.81	0.00	0.31	44.97	24.58	0.28	25.03	6.80	0.00	0.50	40.22	26.62	0.00	28.32	1.81	0.00	0.28	45.61	23.67
	C2	1.56	26.34	1.67	0.00	0.00	47.14	22.35	0.67	35.54	2.33	0.00	0.31	31.81	29.34	0.42	29.69	4.19	0.00	0.25	33.32	32.14
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C4	0.71	12.56	3.13	0.00	0.69	50.00	32.91	0.00	15.76	2.38	0.00	0.00	55.47	26.40	0.28	21.80	2.85	0.00	0.50	46.66	27.92
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C8	1.22	24.95	2.88	0.00	0.63	42.50	27.83	0.00	25.61	2.53	0.00	0.36	49.99	21.52	0.28	23.40	4.12	0.00	0.36	41.92	29.92
	C9	0.28	20.80	5.13	0.00	0.28	50.96	22.28	0.59	25.56	5.38	0.00	1.44	41.12	25.60	0.31	20.73	2.90	0.00	0.31	41.88	33.55
	C10	0.25	13.34	1.28	0.00	0.28	59.36	24.78	0.31	19.00	1.37	0.00	0.00	53.62	25.45	0.25	17.48	2.28	0.00	0.00	57.44	22.55
	C11	2.67	20.71	2.29	0.00	0.00	41.79	32.54	0.00	19.26	5.01	0.00	0.25	43.88	31.60	0.59	16.25	1.87	0.00	0.31	51.38	29.60
	C12	1.59	24.81	1.40	0.00	0.00	32.31	39.89	0.53	14.92	0.78	0.00	0.00	33.78	49.99	0.31	17.95	2.12	0.00	0.00	31.76	47.59
	C13	0.59	18.31	1.55	0.00	0.00	55.93	23.63	0.31	19.76	1.57	0.00	0.00	38.84	39.51	0.00	17.10	2.56	0.00	0.00	37.23	42.33
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	0.50	18.77	2.06	0.00	0.00	49.78	28.63	1.15	18.48	1.59	0.00	0.28	29.33	46.67	0.24	19.67	0.55	0.00	0.00	30.65	48.64
	C17	0.50	14.16	1.68	0.00	0.81	68.39	12.79	0.28	15.38	2.63	0.00	0.00	72.04	9.42	0.00	19.49	1.09	0.00	0.00	71.15	7.80
	C18	1.07	19.96	1.12	0.00	0.00	60.15	16.60	0.87	12.33	1.92	0.00	0.25	56.53	27.54	1.18	19.70	1.42	0.00	0.59	65.93	10.11
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	1.94	15.70	3.72	0.00	0.00	60.37	18.33	0.28	17.60	4.77	0.00	0.00	56.31	20.49	0.00	19.23	2.10	0.00	0.00	61.78	16.62
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

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		HBNC1-CP																				
Transect		T1						T2						T3								
Functional Group	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	
C	C22	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E		
	C23	1.07	14.77	1.96	0.00	0.00	47.18	34.74	0.00	13.02	1.71	0.00	0.63	30.76	53.60	0.56	17.53	2.47	0.00	0.25	34.58	44.61
	C24	0.26	17.14	2.81	0.00	0.00	54.56	24.91	0.31	19.74	4.06	0.00	1.61	55.16	18.10	0.56	17.30	4.40	0.00	0.59	55.61	21.34
	C25	1.33	25.49	2.39	0.00	0.50	42.20	27.03	0.25	24.11	3.45	0.00	0.28	32.14	37.19	0.28	27.83	1.86	0.00	1.00	39.04	28.35
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	0.59	22.98	4.66	0.00	0.56	27.28	42.82	0.25	22.52	4.74	0.31	0.31	30.16	40.81	0.56	25.49	3.09	0.00	0.50	34.60	35.20
	C28	0.00	20.18	3.21	0.00	1.23	47.08	28.30	0.25	26.54	1.64	0.00	1.00	40.64	29.98	0.59	23.39	3.75	0.00	0.56	45.09	26.61
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 38
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 38 08/06/14-08/12/14 Dredge Activity
Appendix A Updated August 20, 2014

Weekly functional group analysis results for HBS1-CP last updated August 20, 2014.

Transect		HBS1-CP																				
Functional Group		T1						T2						T3								
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	2.90	1.50	5.20	0.90	0.00	87.80	1.10	0.88	9.10	7.50	0.40	0.00	78.90	3.00	2.80	1.80	5.40	1.00	0.00	87.50	1.00
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C12	1.71	3.45	7.13	2.78	0.00	47.05	37.88	0.99	4.32	6.74	0.25	0.00	30.17	57.53	0.28	4.72	7.51	1.84	0.00	28.29	56.36
	C13	1.38	0.59	0.73	4.17	0.00	85.50	7.63	0.32	4.69	3.78	0.51	0.00	76.13	14.57	0.00	5.33	3.64	2.42	0.00	84.20	4.40
	C14	1.25	1.87	5.61	0.25	0.00	26.00	65.02	0.28	5.30	7.69	0.00	1.17	40.82	44.75	0.00	5.53	3.29	0.00	0.00	35.20	54.17
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	2.19	1.28	7.39	2.00	0.50	16.41	69.92	0.31	4.44	7.00	0.00	0.00	26.53	61.00	0.00	4.45	6.40	0.00	0.00	33.15	54.81
	C17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C18	0.58	0.91	8.70	3.19	0.26	75.69	10.68	1.75	5.66	6.05	0.00	0.00	75.16	11.37	1.79	3.51	8.72	0.31	0.00	77.45	7.90
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	1.70	2.19	6.64	4.82	0.91	69.39	14.35	0.28	2.73	7.28	0.00	0.53	66.55	22.64	0.28	2.98	7.58	0.25	0.42	65.74	22.76
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	1.11	0.59	5.88	4.64	0.28	68.50	19.04	0.50	3.54	4.47	0.00	0.00	77.34	13.59	0.36	2.73	5.51	0.00	0.28	75.91	14.90
	C23	0.00	5.13	10.68	2.56	0.31	60.21	20.84	0.36	4.10	5.20	0.00	0.00	64.40	25.80	0.00	3.32	7.51	0.00	0.28	65.86	23.04
	C24	0.59	1.98	10.07	4.60	0.86	68.20	12.90	0.67	1.44	6.30	0.59	0.28	73.19	17.04	0.67	4.67	7.31	0.50	0.00	71.59	15.26
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	2.30	1.20	6.10	2.20	1.40	57.89	27.22	1.25	3.59	12.34	0.50	0.00	53.14	27.92	0.28	3.40	9.56	0.00	0.25	60.61	24.99

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		HBS1-CP																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
T:	C28	0.28	2.02	5.87	1.49	0.00	73.00	17.06	0.88	7.12	4.68	0.00	0.88	61.96	24.48	0.31	7.52	6.03	0.00	2.15	62.54	21.44
	C29	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C31	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 38
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Weekly functional group analysis results for HBS2-CP last updated August 20, 2014.

Transect		HBS2-CP																				
Functional Group	Transect	T1						T2						T3								
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number ⁺	B4	0.31	0.00	1.67	0.00	0.00	65.00	33.06	0.18	0.00	1.84	0.60	0.00	60.46	36.93	0.19	1.01	2.50	0.19	0.00	63.30	32.80
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C12	0.00	0.31	4.06	0.25	0.00	34.32	61.06	0.84	0.28	3.97	0.00	0.00	33.92	61.00	0.00	0.90	2.30	0.00	0.00	23.81	73.04
	C13	0.00	0.36	3.21	0.69	0.28	56.99	38.47	0.00	0.00	2.57	0.00	0.00	57.26	40.17	0.00	0.63	3.66	0.63	0.00	52.31	42.78
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	0.31	0.00	4.27	0.00	0.00	18.85	76.57	0.28	0.28	6.33	0.00	0.00	19.36	73.48	0.00	0.83	3.58	1.11	0.00	18.32	76.16
	C17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C18	0.00	0.63	4.10	0.00	0.00	48.90	46.42	0.25	0.00	6.16	0.00	0.00	45.33	48.26	0.00	0.50	6.81	0.00	0.00	46.25	46.16
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	0.56	1.41	6.20	0.50	0.00	28.10	62.44	1.38	0.91	8.32	0.31	0.00	33.66	55.16	0.56	1.12	6.63	0.00	0.00	42.86	48.59
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	0.31	0.61	5.22	0.50	1.74	48.83	42.79	0.42	0.88	5.76	0.00	0.00	55.78	37.16	0.00	2.10	5.24	0.31	0.00	32.15	60.30
	C23	0.00	0.28	4.82	0.36	0.00	41.16	52.50	0.91	1.40	4.71	0.00	0.00	47.14	45.16	0.00	1.92	4.64	0.00	0.00	43.83	49.61
	C24	0.28	0.56	5.40	0.00	0.00	41.79	52.03	0.56	0.00	3.70	0.31	0.00	47.34	47.83	0.00	0.90	3.93	0.00	0.00	32.43	62.74
	C25	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	0.31	0.31	4.57	0.00	0.00	32.72	62.08	0.90	0.56	5.36	0.31	0.00	38.00	54.87	0.28	1.31	2.53	0.00	0.00	28.54	67.34
	C28	0.87	0.00	2.73	0.36	0.00	36.16	59.58	0.86	1.23	4.72	0.36	0.28	31.10	61.46	0.00	1.12	3.97	0.36	0.00	24.98	69.58

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Transect		HBS2-CP																		
Functional Group	CORAL	T1						T2						T3						
		OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE
C	C32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C34	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

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Weekly functional group analysis results for HBS3-CP last updated August 20, 2014.

Transect		HBS3-CP																				
Functional Group		T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	0.56	11.23	2.32	0.00	0.00	70.10	15.79	0.61	14.88	3.58	2.53	0.00	74.16	4.03	1.48	18.08	3.03	0.53	0.00	63.85	11.93
	C1	1.34	16.29	7.49	1.79	0.00	45.80	26.99	0.90	13.21	4.73	0.69	0.00	50.43	30.04	1.00	12.47	4.46	3.44	0.00	53.44	24.88
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C3	0.98	14.81	4.42	0.31	0.00	39.18	40.31	1.20	15.53	2.34	0.00	0.00	36.48	44.19	0.73	15.66	4.40	1.88	0.00	37.48	39.59
	C4	1.43	13.32	6.73	0.31	0.00	16.74	61.47	0.00	10.69	7.10	0.59	0.00	10.94	70.67	0.31	14.75	2.21	0.00	0.00	15.14	67.28
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	0.95	12.86	3.97	0.25	0.00	28.77	53.21	0.28	16.70	2.56	0.00	0.00	24.27	56.20	0.90	13.46	5.31	0.63	0.00	30.63	49.08
	C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
	C11	0.73	12.70	3.11	0.00	0.00	19.45	64.01	1.74	12.73	1.90	0.28	0.00	12.01	71.39	1.35	12.83	0.73	1.83	0.00	11.94	71.31
	C12	1.19	12.35	0.84	0.00	0.00	14.09	71.53	0.98	16.20	0.53	0.00	0.00	10.17	72.13	1.12	9.56	1.56	1.08	0.00	9.93	76.76
	C13	0.00	13.67	0.30	0.00	0.00	28.64	57.39	0.00	7.73	0.00	0.28	0.00	28.59	63.41	0.00	5.33	0.63	1.98	0.00	30.54	61.51
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	0.56	10.45	3.52	0.00	0.00	9.48	75.73	1.49	8.30	4.90	0.56	0.00	9.27	75.47	0.50	10.59	2.00	0.61	0.00	5.88	80.47
	C17	0.31	11.80	3.70	0.00	0.00	33.26	50.72	1.67	12.10	1.46	0.25	0.00	36.61	47.91	1.28	11.50	3.29	0.63	0.00	31.56	51.49
	C18	1.44	15.85	2.27	0.00	0.00	56.65	23.78	0.00	13.97	1.78	0.50	0.00	37.40	46.36	0.00	20.73	1.90	0.25	0.00	32.08	45.04
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	0.88	13.34	4.00	0.00	0.00	39.80	41.98	0.90	8.21	4.92	0.00	0.00	53.16	32.81	0.50	11.07	4.91	1.40	0.00	43.80	38.07

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Transect		HBS3-CP																				
Functional Group	CORAL	T1					T2					T3										
		OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	
C	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	1.11	9.34	3.18	0.00	0.00	49.69	36.67	0.84	8.86	2.08	0.83	0.00	56.37	30.71	0.53	11.84	3.13	0.28	0.00	43.92	40.30
	C23	0.81	4.70	3.59	0.00	0.00	39.57	51.33	1.52	9.13	1.86	0.56	0.00	36.75	50.18	0.28	13.62	1.47	0.00	0.00	38.06	46.01
	C24	0.91	11.26	2.48	0.00	0.00	28.56	56.79	1.43	12.51	2.74	0.63	0.00	34.70	48.05	0.65	11.66	1.65	0.28	0.00	30.23	54.70
	C25	0.53	13.81	1.86	0.00	0.00	26.62	57.18	1.78	15.13	3.02	0.25	0.00	15.34	64.17	0.26	17.61	1.48	0.54	0.00	23.21	56.90
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	1.86	12.39	2.31	0.36	0.00	34.09	49.00	1.00	11.73	4.02	0.81	0.00	38.83	43.61	0.00	14.84	3.20	0.00	0.25	34.29	47.16
	C28	0.00	12.61	5.57	0.36	0.00	39.08	42.38	2.67	11.69	2.27	0.00	0.31	45.34	37.41	0.00	13.46	2.40	2.40	0.00	50.83	30.91
	C29	0.56	6.66	2.25	0.31	0.00	17.43	72.80	0.73	13.91	3.01	0.00	0.00	11.07	71.28	0.56	13.29	2.48	2.06	0.00	8.95	72.66
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 38
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 38 08/06/14-08/12/14 Dredge Activity
Appendix A Updated August 20, 2014

Weekly functional group analysis results for HBS4-CR last updated August 20, 2014.

		HBS4-CP																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	0.17	9.16	3.15	0.17	0.38	65.81	21.17	0.36	11.60	7.00	0.32	0.34	57.52	22.86	0.44	9.73	4.31	0.92	0.00	56.05	28.54
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C9	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C12	0.00	3.38	2.42	0.00	0.00	14.06	80.14	0.00	9.66	3.62	0.00	0.00	5.99	80.73	0.00	5.88	1.26	0.00	0.00	7.68	85.18
	C13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	1.63	8.40	1.96	0.00	0.00	10.19	77.23	0.50	13.72	3.87	0.00	0.00	14.41	67.51	0.00	7.66	1.61	1.15	0.00	6.93	82.64
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C18	0.33	9.36	0.93	0.00	0.99	25.12	63.27	0.31	11.40	3.73	0.00	0.69	22.86	61.06	1.69	5.29	2.39	0.94	0.00	25.00	64.70
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	0.94	8.98	2.17	0.25	0.00	37.39	50.27	0.00	9.61	3.33	0.00	0.00	43.09	43.97	1.56	4.93	3.84	0.56	0.00	50.43	38.67
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	0.36	7.23	5.38	0.28	0.00	44.87	41.88	0.00	9.44	3.88	0.00	0.00	46.05	40.63	0.63	6.00	2.62	1.40	0.00	39.58	49.83
	C23	1.57	6.40	2.90	0.64	0.00	35.36	52.56	0.28	11.04	2.80	0.00	0.00	31.51	54.37	0.00	6.77	1.69	0.00	0.00	25.82	65.45
	C24	0.63	5.48	2.45	0.31	0.31	30.36	60.45	0.50	8.66	2.75	0.00	0.00	34.40	53.41	0.42	4.71	1.20	0.00	0.00	31.80	61.93

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FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 38 08/06/14-08/12/14 Dredge Activity
Appendix A Updated August 20, 2014

		HBS4-CP																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
C	C25	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	0.31	8.39	2.24	0.00	0.00	12.30	76.76	0.31	12.52	2.33	0.00	0.28	10.94	73.62	0.94	7.94	1.98	0.94	0.00	10.24	77.69
	C28	0.00	3.61	2.03	0.00	0.31	24.37	69.68	0.59	7.71	2.59	0.00	0.00	12.99	75.84	0.00	4.92	1.15	0.63	0.00	18.68	74.63
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 38
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 38 08/06/14-08/12/14 Dredge Activity
Appendix A Updated August 20, 2014

Weekly functional group analysis results for HBSC1-CP last updated August 20, 2014.

Transect		HBSC1-CP																											
Functional Group	Transect	T1						T2						T3															
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND							
Week Number †	B4	9.28	9.52	3.51	0.00	0.66	66.17	10.86	0.64	8.44	2.09	0.00	2.73	79.96	5.46	0.33	7.85	2.77	0.00	4.47	75.27	8.95							
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E				
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E				
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E				
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E				
	C12	9.49	14.08	0.56	0.00	0.00	8.13	67.74	1.38	8.76	2.89	0.00	0.00	20.70	66.32	0.00	11.92	1.77	0.00	0.00	15.98	70.33							
	C13	6.00	9.23	0.57	0.00	0.00	78.62	5.58	0.31	9.50	1.42	0.50	0.00	76.90	11.37	2.25	12.46	1.92	0.00	0.00	70.48	12.53							
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
	C16	9.60	13.01	0.98	0.28	37.73	30.38	5.94	0.83	10.64	4.36	0.00	53.95	21.33	7.66	0.81	8.69	5.10	0.00	58.01	20.14	5.93							
	C17	8.63	11.51	0.56	0.00	0.53	74.25	2.42	0.36	9.88	1.35	0.25	1.23	84.54	0.53	0.81	9.50	2.80	0.00	1.84	80.89	1.13							
	C18	4.64	6.48	4.12	0.00	0.28	49.35	34.27	1.46	9.92	2.85	0.00	0.90	55.70	28.94	1.39	9.98	1.74	0.00	1.65	60.16	23.77							
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
	C20	5.75	9.37	3.60	1.18	0.56	65.95	11.93	1.27	5.33	2.92	0.83	1.50	85.67	1.87	1.11	5.01	2.49	0.00	3.84	83.14	3.63							
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
	C22	6.28	7.46	2.65	0.00	4.28	76.42	1.75	1.16	9.63	1.80	0.00	4.69	81.79	0.67	0.50	7.15	2.54	0.00	6.32	82.55	0.94							
	C23	4.31	9.08	2.35	0.56	1.13	81.12	0.56	0.90	7.21	2.36	0.00	9.60	78.13	0.63	0.31	8.29	5.00	0.00	8.73	75.14	2.21							
	C24	6.54	12.28	1.43	0.00	15.49	60.22	2.62	0.53	10.20	0.56	0.31	14.73	71.33	2.03	0.31	6.38	1.99	0.00	19.08	69.10	1.96							
	C25	5.40	14.59	1.12	0.00	10.00	65.25	2.59	0.75	9.48	0.53	0.50	16.93	71.04	0.53	0.25	13.51	1.25	0.25	15.01	66.17	2.53							
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
	C27	4.96	11.01	2.39	0.00	0.53	59.43	18.21	2.20	11.31	4.11	0.31	0.98	66.77	12.82	1.68	8.69	6.20	0.25	1.65	69.10	12.20							
	C28	7.79	11.70	1.75	0.00	0.28	70.82	7.40	2.09	10.40	1.89	0.00	1.51	68.17	15.65	1.40	10.60	1.99	0.00	2.25	78.37	5.38							

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Week 38 08/06/14-08/12/14 Dredge Activity
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		HBSC1-CP																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 38
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 38 08/06/14-08/12/14 Dredge Activity
Appendix A Updated August 20, 2014

Weekly functional group analysis results for R2N1-RR last updated August 20, 2014.

Transect		R2N1-RR																							
Functional Group		T1				T2				T3															
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND			
Week Number †	B4	0.18	15.67	3.76	0.00	0.00	77.88	0.76	0.85	15.29	2.12	0.00	0.00	79.01	2.06	2.91	16.67	1.52	0.00	0.00	77.92	0.77			
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C9	0.90	13.96	0.94	0.00	0.00	33.12	51.09	1.69	15.01	4.43	0.28	0.00	50.13	27.96	3.84	14.39	2.13	0.00	0.28	43.90	35.47			
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

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Week 38 08/06/14-08/12/14 Dredge Activity
Appendix A Updated August 20, 2014

		R2N1-RR																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
	C21	0.25	16.45	1.37	0.00	0.00	24.99	56.95	1.50	14.36	1.06	0.00	0.00	25.61	57.48	1.95	13.99	2.18	0.00	0.00	19.09	62.80

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 38
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Weekly functional group analysis results for R2N2-LR last updated August 20, 2014.

Transect		R2N2-LR																				
Functional Group		T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	0.62	1.22	2.94	0.23	0.00	79.57	15.21	0.56	2.17	4.00	0.60	0.19	64.04	28.23	0.43	1.07	4.93	1.33	0.00	74.28	17.97
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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Week 38 08/06/14-08/12/14 Dredge Activity
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R2N2-LR																						
Transect		T1							T2							T3						
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
	C21	0.31	1.62	1.46	0.00	0.00	49.61	47.00	0.25	1.03	2.10	0.00	0.00	40.95	55.67	0.28	0.75	2.55	0.28	0.00	47.30	48.84

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

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Weekly functional group analysis results for R2NC1-LR last updated August 20, 2014.

Transect		R2NC1-LR																							
Functional Group		T1				T2				T3															
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND			
Week Number †	B4	1.56	2.89	2.02	5.25	0.17	63.92	23.86	0.61	6.92	2.81	0.00	0.00	70.41	17.97	4.50	8.38	1.63	3.04	0.18	54.12	25.38			
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C9	1.42	1.73	1.40	5.25	0.00	43.09	47.11	0.00	2.23	1.15	0.00	0.00	57.86	38.45	0.84	3.38	0.59	0.90	0.00	55.91	38.38			
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

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Week 38 08/06/14-08/12/14 Dredge Activity
Appendix A Updated August 20, 2014

R2NC1-LR																						
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
	C21	2.03	2.50	0.56	7.30	0.00	43.17	44.45	1.58	3.72	0.28	0.00	0.00	47.14	47.28	1.48	3.76	3.03	2.85	0.00	51.20	37.44

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

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Weekly functional group analysis results for R2NC2-RR last updated August 20, 2014.

Transect		R2NC2-RR																				
Functional Group		T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	1.56	19.68	0.85	0.00	0.38	77.07	0.46	2.49	19.45	2.82	0.00	0.00	75.24	0.00	6.97	17.56	1.29	0.00	0.00	74.18	0.00
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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		R2NC2-RR																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
	C21	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

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Weekly functional group analysis results for R2S1-RR last updated August 20, 2014.

Transect		R2S1-RR																											
Functional Group		T1						T2						T3															
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND							
Week Number †	B4	0.94	5.89	3.15	0.00	0.00	88.49	0.21	0.57	3.77	3.45	0.00	0.00	92.20	0.00	0.33	5.25	3.40	0.49	0.00	89.94	0.41							
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C9	0.99	5.89	1.06	0.00	0.00	11.03	81.02	1.39	2.58	0.59	0.00	0.00	5.74	89.70	0.28	3.00	1.53	0.63	0.00	10.84	83.73							
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			

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		R2S1-RR																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
	C21	1.48	5.19	1.31	0.00	0.00	18.92	73.12	1.47	2.15	1.18	0.00	0.00	13.29	81.92	0.59	3.40	1.04	0.00	0.00	20.48	74.48

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

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Weekly functional group analysis results for R2S2-LR last updated August 20, 2014.

Transect		R2S2-LR																											
Functional Group		T1				T2				T3																			
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND							
Week Number †	B4	1.44	8.32	3.39	0.00	0.00	86.69	0.00	1.04	9.11	3.40	0.00	0.00	86.27	0.00	2.04	18.81	8.13	0.00	0.00	70.64	0.00							
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			

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- T:** Omitted weeks have yet to be analyzed.
- E:** Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.
- N/A:** Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.
- M:** Video camera malfunction prevented data collection and analysis.
- D:** Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

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Weekly functional group analysis results for R2SC1-RR last updated August 20, 2014.

Transect		R2SC1-RR																							
Functional Group		T1				T2				T3															
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND			
Week Number †	B4	0.95	19.40	3.97	7.52	0.00	64.32	3.85	0.76	31.88	3.45	12.51	0.00	50.63	0.37	1.11	16.14	5.33	10.66	0.00	63.97	2.80			
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C9	3.06	10.51	1.98	0.00	0.00	13.68	70.76	5.14	11.86	1.73	0.25	0.00	15.88	65.15	1.71	10.78	2.32	0.00	0.00	14.37	70.82			
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

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R2SC1-RR																						
Transect		T1							T2							T3						
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
	C21	3.62	5.53	1.70	0.00	0.00	65.26	23.89	2.69	4.03	0.84	0.25	0.00	72.08	20.10	1.84	7.15	1.08	1.46	0.00	71.46	17.01

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

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Weekly functional group analysis results for R2SC2-LR last updated August 20, 2014.

Transect		R2SC2-LR																				
Functional Group		T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	1.17	19.28	3.56	8.12	0.00	64.86	3.02	0.19	32.52	4.54	13.95	0.19	47.75	0.87	0.33	13.81	4.90	12.00	0.00	65.91	3.06
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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		R2SC2-LR																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
	C21	0.88	16.90	4.06	5.12	0.00	69.83	2.65	0.31	26.16	5.55	10.02	0.00	57.12	0.53	1.06	17.29	6.20	7.83	0.00	66.03	0.28

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

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Week 39 08/13/14-08/19/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. The hopper dredge Liberty Island left the project area on July 3, 2014 and is not expected to return at this time. During Compliance Week 39 (August 13 to August 19, 2014), the cutterhead dredge Texas and Spider Barge worked in Cut 1 (STA 7+00 to 20+00 and STA 22+00 to 35+00 respectively).

Biological monitoring was required for sites within 750 m of an active dredge and included all middle and outer reef sites (Figure 1). Biological monitoring was conducted twice at all sites within 750m of dredging activity, with the exception of R3N1, R3S1, R3S2, and R3S3 which in most instances could not be safely monitored due to the proximity of the Texas, strong currents, and chop. Adverse environmental conditions (e.g., severe thunderstorms, excessive wind speeds, wave heights, and/or low visibility) during Week 39 of compliance monitoring made conditions unsafe for offshore dive operations during portions of 1/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind, wave, and traffic conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral condition surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral condition, video transect and sediment block survey methods.

Weekly Scleractinian Condition Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)):

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
 - 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color

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changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of “0” or “1” for each parameter (A score of “0” would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a “1” would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a “0” (normal or non-stressed) or “1” (stressed), and photographed. If a “1” is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Statistical comparisons for all condition data are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a “1” during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of all polyps on the colony.
Mucus	Sediment stress	Excessive mucus production resulting in a mucus film and/or sediment balled up in mucus.
Paling	Stress/Elevated irradiance/Elevated water temperature	Live tissue with some loss of color.
Bleaching	Stress/Elevated irradiance/Elevated water temperature	Live tissue with complete loss of color.
Black band disease	Stress	Black band surrounds dead patch.
Yellow Band	Stress	Yellow band surrounds dead patch.
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed.
Physical Disturbance	Abrasion	Abrasion or physical disturbance such as a gauge or a nick, not in a discernable pattern like fish bites.
Sediment Accumulation	Sedimentation	Moderate sediment accumulation on top of colony (more than dusting). Accumulation in grooves and/or between polyps
Partial Burial	Sedimentation	Portion(s) of the colony buried by sediment.
Burial	Sedimentation	Entire colony buried by sediment
Recent Partial	Sedimentation	Partial mortality of coral colony appears white with no live polyps visible. Generally, occurs around the margin

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Condition	Cause	Appearance
Mortality		of the colony. Visible when sediment recedes.
Complete Mortality	Any	Death of the entire colony; no live tissue remaining on the skeleton

Sediment Stress

Sedimentation stress data are qualitative estimations of sediment related stress that are observed on permanently marked hard corals. *In situ* data on sediment stress and other conditions are assigned in the field during data collection. QA/QC is conducted on photos for all coral conditions in the laboratory. Data are entered into an Excel spreadsheet for analysis each week. Sediment dusting (SED) is not considered a “stress” indicator and is given a score of zero. SED is a low amount, a “dusting”, of sediment ontop of the coral. Sediment accumulation (SA), is an accumulation of sediment ontop of the coral, between polyps, or within grooves and is qualitatively more than a dusting of sediment. Partial burial (PBUR) is the accumulation of sediment around the base of the coral, sometimes in the form of a berm, and burial (BUR) is the complete burial of the coral colony by sediment. SA, PBUR, and BUR are given scores of a “1”. A single coral may exhibit one or more conditions, including one or more sediment stress codes. For example, a coral may have sediment accumulation (SA) and partial burial (PBUR). The score for such a coral would be a “1”, code data are collected for all applicable conditions. Sediment stress data are reported in Table 3.

Weekly Functional Group Percent Cover Analysis

Functional groups in the vicinity of the project area (hardbottom, middle, and outer reef) include typical sub-tropical hardbottom and reef environment sessile invertebrates, including octocorals, sponges and hard corals among others. Of these biological constituents, the most abundant and highest in percent cover are the octocorals, which range in cover from 1-15% (Gilliam et al. 2007, Dial Cordy 2010 and 2012). Sponges range from 1-6% cover, while hard corals including *Millepora* range from 0.2 to 4.6% (Dial Cordy et al. 2010 and 2012). Since octocorals dominate the benthic habitat across habitat types, octocorals are used as the proxy indicator group because they are most abundant non-algal benthic component. Percent cover calculations are compared between monitoring events and among transects and sites.

Functional group analysis is conducted for available video transect data, which are collected as part of the weekly compliance monitoring and is used to satisfy FDEP permit Special Condition 32.(a).(ii).d:

Any change of 5% or more in cover by any functional group evaluated in quadrats in two or more adjacent transects, or on average for the zone of monitoring on one side of the channel, or stress expressed above normal by corals and/or octocorals within transects (stress scale used for Broward County Segment III project) will require an additional survey to outline the area(s) of impact. Impacted areas shall continue to be monitored monthly during the construction, one month post-construction, and two times during next year in order to document results of the impact. Final monitoring results shall document permanent impacts, if any, to be used for estimates of additional mitigation using UMAM.

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Quantitative digital video data are collected along each transect with the camera positioned 40cm above the substrate, recording a plan-view of the benthic resources (Aronson et al. 1994). The video camera is equipped with a measuring device to ensure the camera remains at 40-cm above the bottom and a scale bar is visible at the bottom of the camera screen at all times with the site information in the lower right hand corner. The camera records video transect data at a speed of ~5 m per minute to insure quality still images may be extracted for analysis. These data are collected each time a site is surveyed, however analysis is only conducted for a single monitoring survey within a given compliance week. Analysis is conducted for a total of 24m² per site (0.4m x 20m x 3 transects).

Transect video footage is broken down into 40 non-overlapping still images (repetitive quadrats) using GOM Video Player™. Stills are analyzed for selected functional groups (octocorals, sponge, hard corals, zoanthids, macroalgae, CTB (crustose, turf, and bare substrate) using randomly overlaid points in CPCe® software. Percent cover for selected functional groups, and sand are compared over time and presented in Appendix A.

Although no comparison between channel-side and reference sites are required by the FDEP permit, reference site data may be used as a general point of comparison to describe trends in the larger area. Weekly video data collected at reference sites are analyzed when corresponding channel-side site data have been collected. If no video data were collected at a channel-side site in a given week, the corresponding reference site data will not be analyzed and are designated with "N/A" (Appendix A).

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side) in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design used in the Broward

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County Shore Protection Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibial growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.

- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

Results

Scleractinian Condition

Biological monitoring was conducted twice at all sites within 750m of dredging activity, with the exception of outer reef channel-side sites (see Background section). Coral condition data for reference sites (e.g., R2SC1) and channel-side sites (e.g., R2S1) were compared using a two-sampled t-test ($p \leq 0.05$). Stress levels at reference sites ranged from 0.54 ± 0.51 (R3NC1) to 0.83 ± 0.38 (R2NC2) whereas stress levels at channel-side sites ranged from 0.71 ± 0.46 (R2S2) to 1.00 ± 0.0 (R2N1, R2N2, and R3N1; Table 2).

In Week 39 of compliance monitoring, only northern channel-side sites exhibited significantly higher stress levels than their respective controls. Increased stress levels at northern channel-side sites were predominantly attributed to sediment stress (see Sediment Stress section), whereas increased stress levels at northern reference sites were predominantly attributed to bleaching and paling. Coral condition values continue to be elevated across both channel-side and reference sites (Table 2), due to an increase in paling and bleaching of corals in the region. Seasonally warm water temperatures and elevated levels of irradiance are known to induce paling and/or bleaching (stress) in corals (e.g., Baker et al. 2008). The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was also present in permanently marked corals at R2S1, R2S2, R2SC1, and R2N1.

Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 39. Permanently marked scleractinians at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators. See Table 1 for a complete list of stress indicators.

Survey Zone	Area	Site	Scleractinian Condition					
			First Survey			Second Survey		
			Mean	SD	N	Mean	SD	N
Hardbottom	South	HBS1	N/A	N/A	N/A	N/A	N/A	N/A
		HBS2	N/A	N/A	N/A	N/A	N/A	N/A
		HBS3	N/A	N/A	N/A	N/A	N/A	N/A
		HBS4	N/A	N/A	N/A	N/A	N/A	N/A
		HBSC1	N/A	N/A	N/A	N/A	N/A	N/A

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	North	HBN2	N/A	N/A	N/A	N/A	N/A	N/A
		HBN3	N/A	N/A	N/A	N/A	N/A	N/A
		HBNC1	N/A	N/A	N/A	N/A	N/A	N/A
Middle Reef	South	R2S1	0.81	0.40	27	0.81	0.40	27
		R2SC1	0.73	0.45	30	0.67	0.48	30
		R2S2	0.88	0.34	24	0.71	0.46	24
		R2SC2	0.80	0.41	25	0.68	0.48	25
	North	R2N1	1.00*	0.00	30	0.97*	0.18	30
		R2NC2	0.83	0.38	30	0.60	0.50	30
		R2N2	1.00*	0.00	25	0.84	0.37	25
		R2NC1	0.79	0.41	29	0.69	0.47	29
Outer Reef	South	R3S1	D	D	D	D	D	D
		R3SC1	D	D	D	D	D	D
		R3S2	D	D	D	D	D	D
		R3SC2	D	D	D	D	D	D
		R3S3	D	D	D	D	D	D
		R3SC3	D	D	D	D	D	D
	North	R3N1	1.00*	0.00	22	D	D	D
		R3NC1	0.54	0.51	24	D	D	D

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

N/A: Site not within 750m of dredging activity.

D: Proximity of dredge to the site prevented monitoring due to safety.

*: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test.

Sediment Stress

Sedimentation stress including sediment accumulation (SA), partial burial (PBUR) and burial (BUR) were present at higher levels on channel-side v. reference sites (Table 3). The proportion of permanently marked corals exhibiting sediment accumulation was much lower at reference sites when compared to channel-side sites, ranging from 0 to 34% versus 17 to 60% respectively. As much as 10% of permanently marked corals were documented by scientific divers as being partially buried by sediment at reference sites, whereas 25 to 91% of corals were partially buried by sediment at channel-side sites. Complete burial was rare and only occurred at R2N2 and R3N1. Recent partial mortality was documented at the base of several coral colonies at channel-side sites after sediment had receded from bases.

Table 3: Mean scleractinian sediment stress score as measured in Week 39 of compliance monitoring. Permanently marked scleractinians at channel and reference sites were assigned a “0” “1” depending on the presence/absence of sediment stress indicators. Corals with sediment dusting (SED) or no sediment accumulation (SA), partial burial (PBUR), and/or burial (BUR) were assigned a “1”.

Survey Zone	Area	Site	Sediment Stress Proportions								
			First Survey					Second Survey			
			SED	SA	PBUR	BUR	N	SED	SA	PBUR	BUR
Hard-bottom	South	HBS1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBS2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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Week 39 08/13/14-08/19/14 Dredge Activity

Survey Zone	Area	Site	Sediment Stress Proportions									
			First Survey					Second Survey				
			SED	SA	PBUR	BUR	N	SED	SA	PBUR	BUR	N
Middle Reef		HBS3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBS4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBSC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	North	HBN2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBN3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBNC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Outer Reef	South	R2S1	0.04	0.44	0.52	0.00	27	0.00	0.22	0.30	0.00	27
		R2SC1	0.57	0.03	0.00	0.00	30	0.03	0.07	0.00	0.00	30
		R2S2	0.04	0.29	0.58	0.00	24	0.04	0.17	0.13	0.00	24
		R2SC2	0.00	0.04	0.00	0.00	25	0.00	0.00	0.00	0.00	25
	North	R2N1	0.03	0.60	0.87	0.00	30	0.00	0.47	0.67	0.00	30
		R2NC2	0.17	0.28	0.10	0.00	30	0.07	0.17	0.00	0.00	30
		R2N2	0.00	0.52	0.84	0.08	25	0.12	0.28	0.36	0.08	25
		R2NC1	0.00	0.34	0.00	0.00	29	0.00	0.03	0.03	0.00	29

N: Number of corals sampled to calculate the mean.

N/A: No data.

D: Proximity of dredge to the site prevented monitoring due to safety.

Weekly Functional Group Percent Cover Analysis

Functional group percent cover analysis is conducted on video transect data collected during the weekly monitoring surveys. Results are presented in Appendix A. Weeks in which video data has yet to be analyzed have been omitted from the functional group analysis tables. The table is revised as data are analyzed.

Sediment Block Survey

Less than one mm of sediment accumulated on sediment blocks at any compliance monitoring sites in Week 39 (Table 4).

Table 4: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 39. All measurements are in mm. N represents the number of sediment blocks surveyed. N/A designated sites that were not surveyed in the current week and D represents sites that could not be surveyed due to the proximity of dredging equipment to the site.

Survey Zone	Area	Site	Quanitative Sedimentation (mm)	N
Hardbottom	South	HBS1	N/A	N/A

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Survey Zone	Area	Site	Quanitative Sedimentation (mm)	N
		HBS2	N/A	N/A
		HBS3	N/A	N/A
		HBS4	N/A	N/A
		HBSC1	N/A	N/A
	North	HBN2	N/A	N/A
		HBN3	N/A	N/A
		HBNC1	N/A	N/A
Middle Reef	South	R2S1	<1	1
		R2SC1	<1	1
		R2S2	<1	1
		R2SC2	<1	1
	North	R2N1	0	1
		R2NC2	1	1
		R2N2	0	1
		R2NC1	<1	1
Outer Reef	South	R3S1	D	D
		R3SC1	D	D
		R3S2	D	D
		R3SC2	D	D
		R3S3	D	D
		R3SC3	D	D
	North	R3N1	<1	1
		R3NC1	<1	1

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 5). The first sample collected for each site represents the baseline sedimentation values for a site. The sample period may exceed 28 days if adverse environmental conditions and time constraints prevented visitation to a site (e.g., HBNC1 Sample 2). In some instances when dredging operations were not ongoing within 750m of a site, sediment sampling was suspended, therefore no sediment accumulation results are presented for such time periods and are designated in the results by "N/A". Further, outer reef baseline and second month samples were collected, but once plans were finalized for dredge to not be near the outer reef sites until later in the project, sediment sampling efforts were shifted to sites within 750m of dredging activity.

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Week 39 08/13/14-08/19/14 Dredge Activity

Table 5: Sediment accumulation data collected from sediment traps since October 2013. Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in grams per day. N/A designates weeks in which no data were collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit. E designates time periods in which sampling was not possible due to adverse environmental conditions.

Site ID	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
HB11-CR								
Sample Start Date	10/21/2013							
Sample End Date	11/18/2013							
Grain size > #230 Sieve (g/day)	6.98							
Grain Size < # 230 Sieve (g/day)	0.87							
HB12-CR	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	3/5/2014	4/4/2014	5/3/2014	5/29/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	4/2/2014	5/3/2014	5/29/2014	6/25/2014
Grain size > #230 Sieve (g/day)	2.51	3.65	1.87	1.15	4.91	2.74	2.14	0.75
Grain Size < # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.70	0.48	0.25	0.32
HB13-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	3/6/2014	4/3/2014	5/3/2014	5/28/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	4/3/2014	5/3/2014	5/28/2014	6/25/2014
Grain size > #230 Sieve (g/day)	4.13	3.38	3.23	1.83	3.28	1.2	3.02	1.04
HB13-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Grain Size < # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	1.01	0.54	0.25	0.57
HBNC1-CP	Baseline		Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/15/2013		11/12/2013	1/13/2014	3/6/2014	4/2/2014	5/3/2014	5/29/2014
Sample End Date	11/12/2013		1/13/2014	2/7/2014	4/2/2014	5/3/2014	5/29/2014	6/25/2014
Grain size > #230 Sieve (g/day)	0.37		0.40	0.02	0.08	0.02	0.09	0.03
Grain Size < # 230 Sieve (g/day)	0.76		0.99	0.16	1.09	0.19	0.04	0.25
HBS1-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	3/7/2014	4/4/2014	5/3/2014	5/29/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014	6/26/2014
Grain size > #230 Sieve (g/day)	0.67	2.42	1.21	0.95	0.77	0.44	2.32	0.39
Grain Size < # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.74	0.26	0.21	0.23
HBS2-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	3/7/2014	4/4/2014	5/3/2014	5/30/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014	6/26/2014
Grain size > #230 Sieve (g/day)	0.76	3.18	2.05	0.84	1.66	0.54	1.63	0.16
Grain Size < # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.50	0.32	0.42	0.32
HBS3-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014	5/28/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	4/2/2014	4/30/2014	5/28/2014	6/26/2014
Grain size > #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.43	0.26	0.41	0.31
Grain Size < # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.72	0.36	0.36	0.50
HBS4-CR	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014	5/28/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	4/2/2014	4/30/2014	5/28/2014	6/26/2014
Grain size > #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.61	0.33	1.15	0.23
Grain Size < # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	1.09	0.50	0.27	0.59
HBSC1-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	3/6/2014	4/2/2014	4/30/2014	5/28/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	4/2/2014	4/30/2014	5/28/2014	6/25/2014
Grain size > #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.03	0.01	0.04	0.01
Grain Size < # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.32	0.08	0.02	0.12
R2N1-RR	Baseline		Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/23/2013		11/18/2013	1/18/2014	2/17/2014	3/20/2014	4/16/2014	5/24/2014
Sample End Date	11/18/2013		1/18/2014	2/17/2014	3/20/2014	4/16/2014	5/24/2014	6/22/2014
Grain size > #230 Sieve (g/day)	1.81		2.01		0.61	0.59	1.13	0.82
Grain Size < # 230 Sieve (g/day)	0.58		0.96		0.55	0.40	0.58	0.79
R2N2-LR	E	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	E	11/20/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Sample End Date	E	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014	6/22/2014
Grain size > #230 Sieve (g/day)	E	1.77	1.73	0.19	0.43	0.01	0.33	0.35
Grain Size < # 230 Sieve (g/day)	E	0.71	0.85	0.32	0.39	0.14	0.74	0.90
R2NC1-LR	Baseline		Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/27/2013		11/20/2013	1/18/2014	2/16/2014	3/20/2014	4/16/2014	5/24/2014
Sample End Date	11/24/2013		1/18/2014	2/16/2014	3/20/2014	4/16/2014	5/24/2014	6/22/2014
Grain size > #230 Sieve (g/day)	2.74		0.47	0.01	0.01	0.06	0.06	0.03
Grain Size < # 230 Sieve (g/day)	0.59		0.37	0.03	0.00	0.10	0.23	0.06
R2NC2-RR	E		Baseline		Sample 2	Sample 3	Sample 4	Sample 5
Sample Start Date	E		11/19/2013		2/16/2014	3/20/2014	4/16/2014	5/24/2014
Sample End Date	E		2/16/2014		3/20/2014	4/16/2014	5/24/2014	6/22/2014
Grain size > #230 Sieve (g/day)	E		0.07		0.00	0.00	0.01	0.01
Grain Size < # 230 Sieve (g/day)	E		0.22		0.00	0.06	0.13	0.06
R2S1-RR	Baseline		Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/18/2013		11/18/2013	1/15/2014	2/16/2014	3/19/2014	4/16/2014	5/24/2014

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Sample End Date	11/18/2013	1/15/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014	6/26/2014
Grain size > #230 Sieve (g/day)	0.51	0.87	0.22	0.22	0.50	0.47	0.00
Grain Size < # 230 Sieve (g/day)	0.52	0.93	0.35	0.33	0.52	0.78	0.06
R2S2-LR	E	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
Sample Start Date	E	11/21/2013	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014
Sample End Date	E	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	E	0.49	0.51	0.17	0.18	0.29	0.26
Grain Size < # 230 Sieve (g/day)	E	0.49	0.6	0.26	0.20	0.39	0.59
R2SC1-RR	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/19/2013	11/18/2013	1/15/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Sample End Date	11/18/2013	1/15/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014	6/22/2014
Grain size > #230 Sieve (g/day)	0.62	0.57	0.02	0.02	0.02	0.13	0.03
Grain Size < # 230 Sieve (g/day)	0.42	0.72	0.13	0.12	0.10	0.51	0.19
R2SC2-LR	E	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
Sample Start Date	E	11/21/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014
Sample End Date	E	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Grain size > #230 Sieve (g/day)	E	0.80	0.46	0.03	0.04	0.18	0.21
Grain Size < # 230 Sieve (g/day)	E	0.61	0.41	0.12	0.15	0.34	0.47
R3N1-LR	N/A	Baseline	Sample 2	Sample 3	N/A	N/A	Sample 4
Sample Start Date	N/A	12/4/2013	12/30/2013	2/16/2014	N/A	N/A	6/5/2014
Sample End Date	N/A	12/30/2013	2/16/2014	3/19/2014	N/A	N/A	7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.09	0.17	0.03	N/A	N/A	0.18
Grain Size < # 230 Sieve (g/day)	N/A	0.08	0.16	0.00	N/A	N/A	0.11
R3NC1-LR	N/A	Baseline	Sample 2	Sample 3	N/A	N/A	Sample 3
Sample Start Date	N/A	12/5/2013	2/16/2014	N/A	N/A	N/A	6/5/2014
Sample End Date	N/A	2/16/2014	3/20/2014	N/A	N/A	N/A	7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.05	0.01	N/A	N/A	N/A	0.01
Grain Size < # 230 Sieve (g/day)	N/A	0.07	0.00	N/A	N/A	N/A	0.03
R3S1-CP	N/A	Baseline	Sample 2	Sample 3	N/A	N/A	Sample 4
Sample Start Date	N/A	12/3/2013	12/30/2013	2/16/2014	N/A	N/A	6/5/2014
Sample End Date	N/A	12/30/2013	2/16/2014	3/19/2014	N/A	N/A	7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.06	0.13	0.02	N/A	N/A	0.20
Grain Size < # 230 Sieve (g/day)	N/A	0.10	0.20	0.00	N/A	N/A	0.10
R3S2-LR	N/A	Baseline	Sample 2	Sample 3	N/A	N/A	Sample 4
Sample Start Date	N/A	12/3/2013	12/30/2013	2/16/2014	N/A	N/A	6/5/2014
Sample End Date	N/A	12/30/2013	2/16/2014	3/19/2014	N/A	N/A	7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.04	0.15	0.01	N/A	N/A	0.14
Grain Size < # 230 Sieve (g/day)	N/A	0.09	0.14	0.00	N/A	N/A	0.09
R3S3-SG	N/A	Baseline	Sample 2	Sample 3	N/A	N/A	Sample 4
Sample Start Date	N/A	12/3/2013	12/30/2013	2/16/2014	N/A	N/A	6/5/2014
Sample End Date	N/A	12/30/2013	2/16/2014	3/19/2014	N/A	N/A	7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.04	0.13	0.02	N/A	N/A	0.13
Grain Size < # 230 Sieve (g/day)	N/A	0.07	0.13	0.00	N/A	N/A	0.08
R3SC1-CP	N/A	Baseline	Sample 2	Sample 3	N/A	N/A	Sample 3
Sample Start Date	N/A	12/5/2013	2/17/2014	3/19/2014	N/A	N/A	6/5/2014
Sample End Date	N/A	2/17/2014	3/19/2014	N/A	N/A	N/A	7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.08	0.00	N/A	N/A	N/A	0.01
Grain Size < # 230 Sieve (g/day)	N/A	0.17	0.00	N/A	N/A	N/A	0.03
R3SC2-LR	N/A	Baseline	Sample 2	Sample 3	N/A	N/A	Sample 3
Sample Start Date	N/A	12/4/2013	2/17/2014	3/19/2014	N/A	N/A	6/5/2014
Sample End Date	N/A	2/17/2014	3/19/2014	N/A	N/A	N/A	7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.05	0.10	N/A	N/A	N/A	0.01
Grain Size < # 230 Sieve (g/day)	N/A	0.07	0.00	N/A	N/A	N/A	0.03
R3SC3-SG	N/A	Baseline	Sample 2	Sample 3	N/A	N/A	Sample 3
Sample Start Date	N/A	12/4/2014	2/17/2014	3/19/2014	N/A	N/A	6/5/2014
Sample End Date	N/A	2/17/2014	3/19/2014	N/A	N/A	N/A	7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.08	0.10	N/A	N/A	N/A	0.01
Grain Size < # 230 Sieve (g/day)	N/A	0.11	0.00	N/A	N/A	N/A	0.03

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.

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4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.
8. Liberty Island dredging with no overflow as of 6/19/14. Liberty Island departed the project site on July 3, 2014, and is not expected to return to service on this project in the foreseeable future.
9. An additional tug and scow were added to the scow package to allow the Spider Barge to load scows with minimal to no overflow to help reduce possible sedimentation and turbidity as of Compliance Week 39.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.

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Weekly Offshore Coral Stress and Sediment Block Compliance Report 39

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Week 39 08/13/14-08/19/14 Dredge Activity

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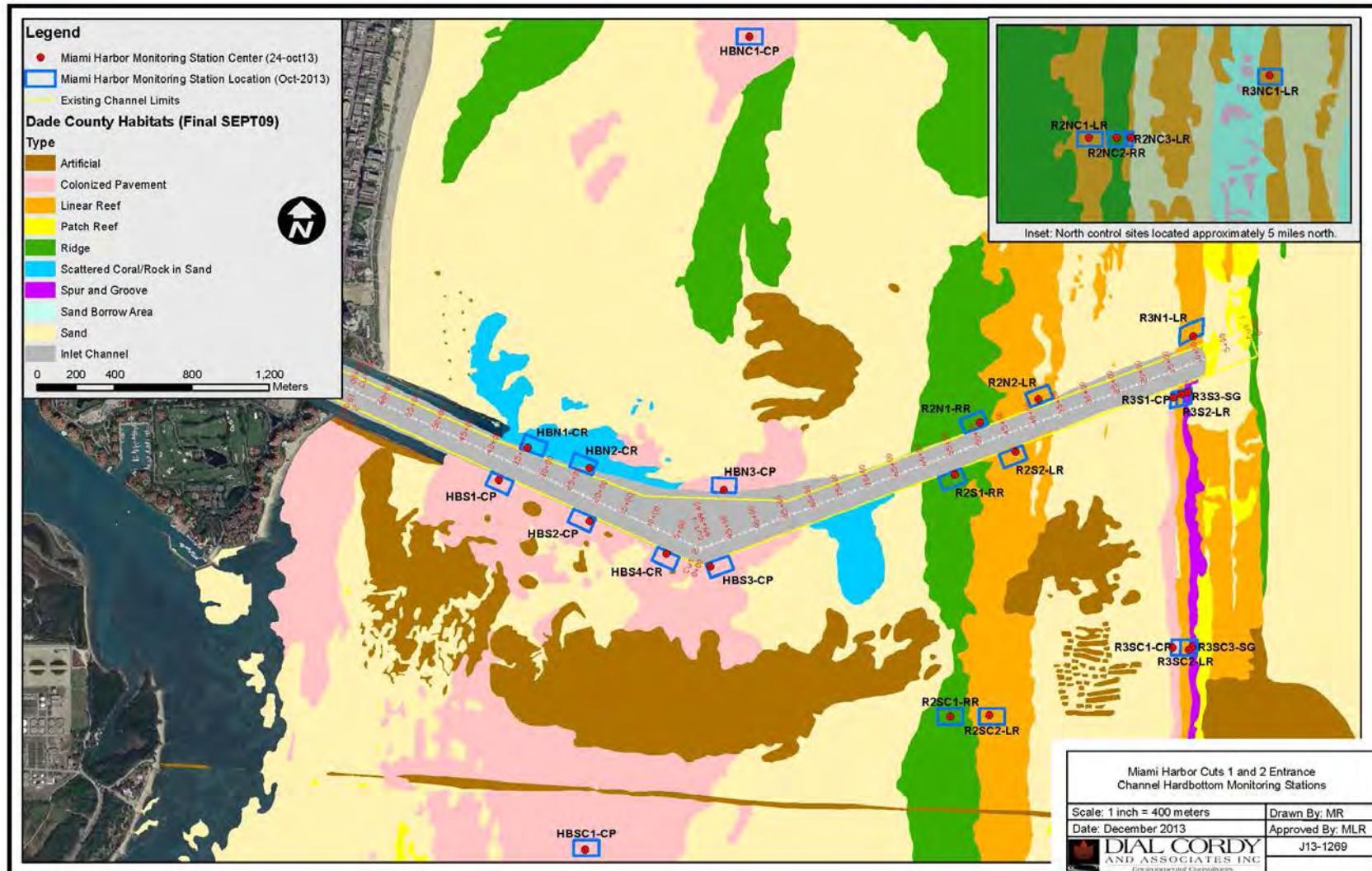


Figure 1: Miami Harbor Cuts 1 and 2 Entrance Channel Hardbottom and Reef monitoring stations.

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Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. Terrapin Island left the job site on December 27, 2013. The hopper dredge Liberty Island left the project area on July 3, 2014 and is not expected to return at this time. During Compliance Week 40 (August 20 to August 26, 2014), the cutterhead dredge Texas and Spider Barge chopped rock in Cut 1 from STA 5+20 to 6+91 and STA 20+77 to 26+00, while the Spider Barge loaded scows in Cut 1 from STA 5+77 to 11+00 and STA 20+20 to 21+91. Dredging operations in the channel flare (easternmost portion of Cut 1) commenced on August 6 2014. On August 24, 2014, the Texas and Spider barge moved inshore for repairs, allowing outer reef southern channel side sites to be monitored for the first time since dredging operations commenced in the channel flare.

Biological monitoring was required for sites within 750 m of an active dredge and included all middle and outer reef sites (Figure 1). Biological monitoring was conducted twice at all sites within 750m of dredging activity, with the exception of R3N1, R3S1, R3S2, and R3S3 which could only be safely monitored once in Week 40 due to the proximity of the dredge Texas, strong currents, and chop. Adverse environmental conditions (e.g., severe thunderstorms, excessive wind speeds, wave heights, and/or low visibility) during Week 40 of compliance monitoring made conditions unsafe for offshore dive operations during 1/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind, wave, and traffic conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral condition surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral condition, video transect and sediment block survey methods.

Weekly Scleractinian Condition Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)):

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:
 - 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal

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currents or wave action;

- 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a "0" (normal or non-stressed) or "1" (stressed), and photographed. If a "1" is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Statistical comparisons for all condition data are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a "1" during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended out of all polyps on the colony.
Mucus	Sediment stress	Excessive mucus production results in a mucus film and/or sediment balled up in mucus.
Paling	Stress/Elevated Irradiance/Temperature	Live tissue with some loss of color.
Partial Bleaching	Stress/Elevated Irradiance/Temperature	Patches of fully bleached or white tissue.
Bleaching	Stress/Elevated Irradiance/Temperature	Live tissue with complete loss of color.
Black Band Disease	Stress	Black band surrounds dead patch.
White Band Disease	Stress	White lines or bands of recently dead coral tissue found in species of the genus <i>Acropora</i> .
White Plague Disease	Stress	White lines or bands of recently dead coral tissue affecting non- <i>Acroporid</i> corals.
Yellow Band	Stress	Yellow band surrounds dead patch.
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed.

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Condition	Cause	Appearance
Unknown Solenastrea Disease	Stress	Patchy discoloration of living tissue resulting in a mottled bleached appearance. Only noted for <i>Solenastrea</i> spp.
Unknown Condition	Stress	Discoloration of living tissue from an unknown cause. Not related to known bleaching or disease indicators.
<i>Cliona delitrix</i>	Competition	Red boring sponge present on colony. Typically accompanied by tissue mortality radiating outward from the point of sponge emergence.
Physical Disturbance	Abrasion	Abrasion or physical disturbance such as a gauge or a nick, not in a discernable pattern like fish bites.
Sediment Accumulation	Sedimentation	Moderate sediment accumulation on top of colony (more than dusting). Accumulation in grooves and/or between polyps.
Partial Burial	Sedimentation	Portion(s) of the colony buried by sediment.
Burial	Sedimentation	Entire colony buried by sediment
Recent Partial Mortality	Sedimentation	Partial mortality of coral colony appears white with no live polyps visible. Generally, occurs around the margin of the colony. Visible when sediment recedes.
Unknown Partial Mortality	Stress	Tissue mortality from an unknown cause.
Competitive Mortality	Competition	Recent partial mortality from a competition event. Typically the result of sponge or zoanthid overgrowth.
Complete Mortality	Any	Death of the entire colony; no live tissue remaining on the skeleton

Sediment Stress

Sedimentation stress data are qualitative estimations of sediment related stress that are observed on permanently marked hard corals. *In situ* data on sediment stress and other conditions are assigned in the field during data collection. QA/QC is conducted on photos for all coral conditions in the laboratory. Data are entered into an Excel spreadsheet for analysis each week. Sediment dusting (SED) is not considered a “stress” indicator and is given a score of zero. SED is a low amount, a “dusting”, of sediment ontop of the coral. Sediment accumulation (SA), is an accumulation of sediment ontop of the coral, between polyps, or within grooves and is qualitatively more than a dusting of sediment. Partial burial (PBUR) is the accumulation of sediment around the base of the coral, sometimes in the form of a berm, and burial (BUR) is the complete burial of the coral colony by sediment. SA, PBUR, and BUR are given scores of a “1”. A single coral may exhibit one or more conditions, including one or more sediment stress codes. For example, a coral may have sediment accumulation (SA) and partial burial (PBUR). The score for such a coral would be a “1”, code data are collected for all applicable conditions. Sediment stress data are reported in Table 3.

Weekly Functional Group Percent Cover Analysis

Functional groups in the vicinity of the project area (hardbottom, middle, and outer reef) include typical sub-tropical hardbottom and reef environment sessile invertebrates, including octocorals,

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sponges and hard corals among others. Of these biological constituents, the most abundant and highest in percent cover are the octocorals, which range in cover from 1-15% (Gilliam et al. 2007, Dial Cordy 2010 and 2012). Sponges range from 1-6% cover, while hard corals including *Millepora* range from 0.2 to 4.6% (Dial Cordy et al. 2010 and 2012). Since octocorals dominate the benthic habitat across habitat types, octocorals are used as the proxy indicator group because they are most abundant non-algal benthic component. Percent cover calculations are compared between monitoring events and among transects and sites.

Functional group analysis is conducted for available video transect data, which are collected as part of the weekly compliance monitoring and is used to satisfy FDEP permit Special Condition 32.(a).(ii).d:

Any change of 5% or more in cover by any functional group evaluated in quadrats in two or more adjacent transects, or on average for the zone of monitoring on one side of the channel, or stress expressed above normal by corals and/or octocorals within transects (stress scale used for Broward County Segment III project) will require an additional survey to outline the area(s) of impact. Impacted areas shall continue to be monitored monthly during the construction, one month post-construction, and two times during next year in order to document results of the impact. Final monitoring results shall document permanent impacts, if any, to be used for estimates of additional mitigation using UMAM.

Quantitative digital video data are collected along each transect with the camera positioned 40cm above the substrate, recording a plan-view of the benthic resources (Aronson et al. 1994). The video camera is equipped with a measuring device to ensure the camera remains at 40-cm above the bottom and a scale bar is visible at the bottom of the camera screen at all times with the site information in the lower right hand corner. The camera records video transect data at a speed of ~5 m per minute to insure quality still images may be extracted for analysis. These data are collected each time a site is surveyed, however analysis is only conducted for a single monitoring survey within a given compliance week. Analysis is conducted for a total of 24m² per site (0.4m x 20m x 3 transects).

Transect video footage is broken down into 40 non-overlapping still images (repetitive quadrats) using GOM Video Player™. Stills are analyzed for selected functional groups (octocorals, sponge, hard corals, zoanthids, macroalgae, CTB (crustose, turf, and bare substrate) using randomly overlaid points in CPCe® software. Percent cover for selected functional groups, and sand are compared over time and presented in Appendix A.

Although no comparison between channel-side and reference sites are required by the FDEP permit, reference site data may be used as a general point of comparison to describe trends in the larger area. Weekly video data collected at reference sites are analyzed when corresponding channel-side site data have been collected. If no video data were collected at a channel-side site in a given week, the corresponding reference site data will not be analyzed and are designated with "N/A" (Appendix A).

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side)

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in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design used in the Broward County Shore Protection Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibial growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

Results

Compliance monitoring sites were originally established approximately 10m from the planned toe of slope, inadvertently placing them within the dredge template. On Reef 3, where the dredge cut new material, the new top of slope in the expanded flare areas is at the edge of the compliance monitoring sites. The difference in the toe of slope and top of slope locations resulted in the loss of a portion of two monitoring transects, damage to sediment trap trees, and loss of one marked coral. Prior to dredging in the area, a lead line was used to delineate the required coral harvest zone within the flare alignments. This lead line is no longer present. It is theorized that the lead line may have become entangled in the cutterhead during dredging

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operations and caused some of the documented damage in the area as it was removed from the bottom. Specifically at Station R3N1:

- The end marker at Transect 1 was removed and less than a meter of the transect is missing.
- On Transect 2 four corals were buried by sediment.
- The sediment trap trees at Transect 1 and Transect 2 were bent. New trap trees were installed and the sediment block was righted.
- A *Xestospongia muta* was sheared from its base, likely as the lead line was removed from the bottom. Triage is planned for this sponge as soon as divers return to the site.

At Station R3S1 Transect 1, the beginning of the transect is no longer physically present. Approximately 0.75 m of the transect and permanently marked coral #1 was lost.

No other damage in the form of broken or lost corals or rocks or rubble physically damaged the site. The loss of a portion of the monitoring site, will not affect the ability of the team to continue to use these sites to monitor project effects on the Reef 3 system. The placement of sites at the time of installation was based on the planned channel line, which did not include a slope. It does highlight the need to confirm station placement based on the widest extent of construction activities (top of slope) in order to maintain the integrity of the monitoring sites; while emphasizing the need for a larger buffer between the construction zone and station locations. Figure 1 shows the extent of actual dredging in relation to the planned toe of slope and top of slope, documenting the Texas did not overdredge adjacent to these sites.

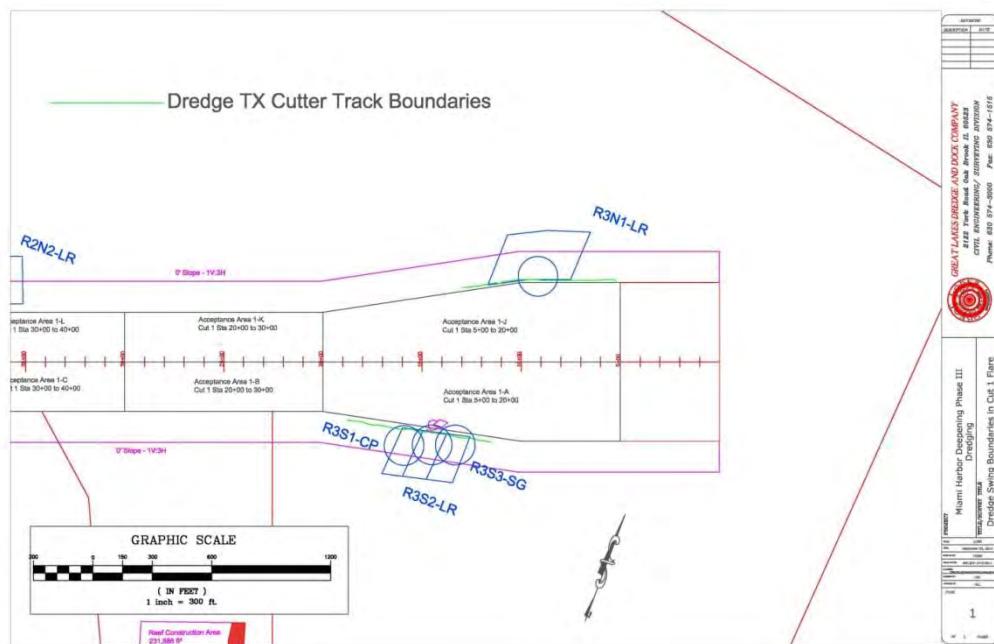


Figure 1. Actual dredge line in green in relation to Reef 3 channel-side sites, demonstrates that the Texas did not overdredge.

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Scleractinian Condition

Biological monitoring was conducted twice at all sites within 750m of dredging activity, with the exception of outer reef channel-side sites, which could only be monitored once (see Background section). Coral condition data for reference sites (e.g., R2SC1) and channel-side sites (e.g., R2S1) were compared using a two-sample t-test ($p \leq 0.05$). Stress levels at reference sites ranged from 0.54 ± 0.51 (R3NC1) to 0.86 ± 0.35 (R2NC2) whereas stress levels at channel-side sites ranged from 0.71 ± 0.46 (R2S2) to 1.00 ± 0.0 (R2N1, R2N2, R2S1 and R3N1; Table 2).

In Week 40 of compliance monitoring, almost all channel-side sites (i.e., R2S1, R2N1, R2N2, R3S1, R3S3, and R3N1) exhibited significantly higher stress levels than their respective controls, with the exception of R2S2 and R3S2. Increased stress levels at channel-side sites were predominantly attributed to sediment stress (see Sediment Stress section), whereas increased stress levels at northern reference sites were predominantly attributed to bleaching and paling. Coral condition values continue to be elevated across both channel-side and reference sites (Table 2), due to an increase in paling and bleaching of corals in the region. Seasonally warm water temperatures and elevated levels of irradiance are known to induce paling and/or bleaching (stress) in corals (e.g., Baker et al. 2008). The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was also present in permanently marked corals at R2S1, R2SC1 R2N1, R2N2, and R3SC1.

Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 40. Permanently marked scleractinians at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators. See Table 1 for a complete list of stress indicators.

Survey Zone	Area	Site	Scleractinian Condition					
			First Survey			Second Survey		
Mean	SD	N	Mean	SD	N			
Hardbottom	South	HBS1	N/A	N/A	N/A	N/A	N/A	N/A
		HBS2	N/A	N/A	N/A	N/A	N/A	N/A
		HBS3	N/A	N/A	N/A	N/A	N/A	N/A
		HBS4	N/A	N/A	N/A	N/A	N/A	N/A
		HBSC1	N/A	N/A	N/A	N/A	N/A	N/A
	North	HBN2	N/A	N/A	N/A	N/A	N/A	N/A
		HBN3	N/A	N/A	N/A	N/A	N/A	N/A
		HBNC1	N/A	N/A	N/A	N/A	N/A	N/A
Middle Reef	South	R2S1	1.00*	0.00	27	0.89	0.32	27
		R2SC1	0.77	0.43	30	0.80	0.41	30
		R2S2	0.79	0.41	24	0.88	0.34	24
		R2SC2	0.72	0.46	25	0.72	0.46	25
	North	R2N1	1.00*	0.00	30	1.00*	0.00	30
		R2NC2	0.83	0.38	30	0.86	0.35	30
		R2N2	1.00*	0.00	25	1.00*	0.00	25
		R2NC1	0.79	0.41	29	0.79	0.41	29
Outer Reef	South	R3S1	0.94*	0.24	18	D	D	D
		R3SC1	0.63	0.49	24	D	D	D
		R3S2	0.88	0.33	25	D	D	D
		R3SC2	0.70	0.47	20	D	D	D

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		R3S3	0.92*	0.28	25	D	D	D
		R3SC3	0.71	0.46	24	D	D	D
	North	R3N1	1.00*	0.00	22	D	D	D
		R3NC1	0.54	0.51	24	D	D	D

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

N/A: Site not within 750m of dredging activity.

D: Proximity of dredge to the site prevented monitoring due to safety.

*: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test.

Sediment Stress

Sedimentation stress including sediment accumulation (SA), partial burial (PBUR) and burial (BUR) were higher at channel-side sites v. reference sites (Table 3). The proportion of permanently marked corals exhibiting sediment accumulation was much lower at reference sites when compared to channel-side sites, ranging from 0 to 34% versus 15 to 80% respectively. As much as 13% of permanently marked corals were documented by scientific divers as being partially buried by sediment at reference sites, whereas 8 to 93% of corals were partially buried by sediment at channel-side sites. Complete burial was noted at R2N2 (8%), R3S2 (4%), and R3N1 (18%; Table 3) with no burial events occurring at reference sites. At middle and outer reef reference sites, partial mortality due to sediment stress occurred in as many as 8% of permanently marked corals, whereas channel-side sites had as many as 37% of corals exhibiting partial mortality following the recession of sediment.

Table 3: Proportions of sediment stress indicators as measured in Week 40 of compliance monitoring. Permanently marked scleractinians at channel and reference sites were assigned a “0” “1” depending on the presence/absence of sediment stress indicators. Corals with sediment dusting (SED) or no sediment accumulation were assigned a “0”, while corals exhibiting sediment accumulation (SA), partial burial (PBUR), and/or burial (BUR) were assigned a “1”.

Survey Zone	Area	Site	Proportion of Sediment Stress									
			First Survey					Second Survey				
			SED	SA	PBUR	BUR	N	SED	SA	PBUR	BUR	N
Hard-bottom	South	HBS1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBS2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBS3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBS4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBSC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	North	HBN2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HBN3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Middle Reef	South	HBNC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R2S1	0.22	0.37	0.78	0.00	27	0.04	0.15	0.52	0.00	27
		R2SC1	0.00	0.17	0.00	0.00	30	0.07	0.00	0.13	0.00	30
		R2S2	0.04	0.21	0.38	0.00	24	0.04	0.25	0.33	0.00	24
	North	R2SC2	0.00	0.00	0.00	0.00	25	0.00	0.00	0.00	0.00	25
		R2N1	0.10	0.73	0.90	0.00	30	0.20	0.67	0.93	0.00	30
		R2NC2	0.21	0.14	0.07	0.00	30	0.14	0.34	0.10	0.00	30

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Survey Zone	Area	Site	Proportion of Sediment Stress									
			First Survey					Second Survey				
			SED	SA	PBUR	BUR	N	SED	SA	PBUR	BUR	N
		R2N2	0.12	0.36	0.68	0.08	25	0.16	0.20	0.76	0.08	25
		R2NC1	0.00	0.14	0.00	0.00	29	0.14	0.07	0.00	0.00	29
Outer Reef	South	R3S1	0.22	0.61	0.33	0.00	18	D	D	D	D	D
		R3SC1	0.08	0.04	0.00	0.00	24	D	D	D	D	D
		R3S2	0.24	0.48	0.08	0.04	25	D	D	D	D	D
		R3SC2	0.00	0.05	0.00	0.00	20	D	D	D	D	D
		R3S3	0.16	0.80	0.28	0.00	25	D	D	D	D	D
		R3SC3	0.08	0.04	0.00	0.00	24	D	D	D	D	D
	North	R3N1	0.14	0.45	0.64	0.18	22	D	D	D	D	D
		R3NC1	0.42	0.08	0.00	0.00	24	D	D	D	D	D

N: Number of corals sampled to calculate the mean.

N/A: No data.

D: Proximity of dredge to the site prevented monitoring due to safety.

Weekly Functional Group Percent Cover Analysis

Functional group percent cover analysis is conducted on video transect data collected during the weekly monitoring surveys. Results are presented in Appendix A. Weeks in which video data has yet to be analyzed have been omitted from the functional group analysis tables. The table is revised as data are analyzed.

Sediment Block Survey

Due to the proximity of dredge activity at R3N1 the sediment block was overturned in Week 40. Divers returned the block to an upward facing position for future monitoring purposes. Less than one mm of sediment accumulated on sediment blocks at the remaining compliance monitoring sites in Week 40 (Table 4).

Table 4: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 40. All measurements are in mm. N represents the number of sediment blocks surveyed. N/A designated sites that were not surveyed in the current week and D represents sites that could not be surveyed due to the proximity of dredging equipment to the site.

Survey Zone	Area	Site	Quanitative Sedimentation (mm)	N
Hardbottom	South	HBS1	N/A	N/A
		HBS2	N/A	N/A
		HBS3	N/A	N/A
		HBS4	N/A	N/A
		HBSC1	N/A	N/A
	North	HBN2	N/A	N/A
		HBN3	N/A	N/A
		HBNC1	N/A	N/A
Middle Reef	South	R2S1	<1	1
		R2SC1	0	1
		R2S2	<1	1

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Survey Zone	Area	Site	Quanitative Sedimentation (mm)	N
North	Outer Reef	R2SC2	<1	1
		R2N1	<1	1
		R2NC2	<1	1
		R2N2	<1	1
		R2NC1	<1	1
Outer Reef	South	R3S1	<1	1
		R3SC1	<1	1
		R3S2	<1	1
		R3SC2	<1	1
		R3S3	<1	1
		R3SC3	0	1
Outer Reef	North	R3N1	N/A	N/A
		R3NC1	<1	1

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 5). The first sample collected for each site represents the baseline sedimentation values for a site. The sample period may exceed 28 days if adverse environmental conditions and time constraints prevented visitation to a site (e.g., HBNC1 Sample 2). In some instances when dredging operations were not ongoing within 750m of a site, sediment sampling was suspended, therefore no sediment accumulation results are presented for such time periods and are designated in the results by "N/A". Further, outer reef baseline and second month samples were collected, but once plans were finalized for dredge to not be near the outer reef sites until later in the project, sediment sampling efforts were shifted to sites within 750m of dredging activity.

Table 5: Sediment accumulation data collected from sediment traps since October 2013. Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in grams per day. N/A designates weeks in which no data were collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit. E designates time periods in which sampling was not possible due to adverse environmental conditions.

HBN1-CR	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/21/2013	SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.						
Sample End Date	11/18/2013							
Grain size > #230 Sieve (g/day)	6.98							
Grain Size < # 230 Sieve (g/day)	0.87							
HBN2-CR	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	3/5/2014	4/4/2014	5/3/2014	5/29/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	4/2/2014	5/3/2014	5/29/2014	6/25/2014
Grain size > #230 Sieve (g/day)	2.51	3.65	1.87	1.15	4.91	2.74	2.14	0.75
Grain Size < # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.70	0.48	0.25	0.32
HBN3-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	3/6/2014	4/3/2014	5/3/2014	5/28/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	4/3/2014	5/3/2014	5/28/2014	6/25/2014
Grain size > #230 Sieve (g/day)	4.13	3.38	3.23	1.83	3.28	1.2	3.02	1.04
HBN3-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Grain Size < # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	1.01	0.54	0.25	0.57

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Sample ID	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
HBNC1-CP							
Sample Start Date	10/15/2013	11/12/2013	1/13/2014	3/6/2014	4/2/2014	5/3/2014	5/29/2014
Sample End Date	11/12/2013	1/13/2014	2/7/2014	4/2/2014	5/3/2014	5/29/2014	6/25/2014
Grain size > #230 Sieve (g/day)	0.37	0.40	0.02	0.08	0.02	0.09	0.03
Grain Size < # 230 Sieve (g/day)	0.76	0.99	0.16	1.09	0.19	0.04	0.25
HBS1-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	3/7/2014	4/4/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014
Grain size > #230 Sieve (g/day)	0.67	2.42	1.21	0.95	0.77	0.44	2.32
Grain Size < # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.74	0.26	0.21
HBS2-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	3/7/2014	4/4/2014	5/3/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014
Grain size > #230 Sieve (g/day)	0.76	3.18	2.05	0.84	1.66	0.54	1.63
Grain Size < # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.50	0.32	0.42
HBS3-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.43	0.26	0.41
Grain Size < # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.72	0.36	0.50
HBS4-CR	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.61	0.33	1.15
Grain Size < # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	1.09	0.50	0.27
HBSC1-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	3/6/2014	4/2/2014	4/30/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	4/2/2014	4/30/2014	5/28/2014
Grain size > #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.03	0.01	0.04
Grain Size < # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.32	0.08	0.02
R2N1-RR	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/23/2013	11/18/2013	1/18/2014	2/17/2014	3/20/2014	4/16/2014	5/24/2014
Sample End Date	11/18/2013	11/18/2014	2/17/2014	3/20/2014	4/16/2014	5/24/2014	6/22/2014
Grain size > #230 Sieve (g/day)	1.81	2.01	0.61	0.59	1.13	0.82	0.46
Grain Size < # 230 Sieve (g/day)	0.58	0.96	0.55	0.40	0.58	0.79	1.48
R2N2-LR	E	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
Sample Start Date	E	11/20/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014
Sample End Date	E	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Grain size > #230 Sieve (g/day)	E	1.77	1.73	0.19	0.43	0.01	0.33
Grain Size < # 230 Sieve (g/day)	E	0.71	0.85	0.32	0.39	0.14	0.74
R2NC1-LR	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/27/2013	11/20/2013	1/18/2014	2/16/2014	3/20/2014	4/16/2014	5/24/2014
Sample End Date	11/24/2013	1/18/2014	2/16/2014	3/20/2014	4/16/2014	5/24/2014	6/22/2014
Grain size > #230 Sieve (g/day)	2.74	0.47	0.01	0.01	0.06	0.06	0.03
Grain Size < # 230 Sieve (g/day)	0.59	0.37	0.03	0.00	0.10	0.23	0.06
R2NC2-RR	E	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
Sample Start Date	E	11/19/2013		2/16/2014	3/20/2014	4/16/2014	5/24/2014
Sample End Date	E		2/16/2014	3/20/2014	4/16/2014	5/24/2014	6/22/2014
Grain size > #230 Sieve (g/day)	E	0.07		0.00	0.00	0.01	0.01
Grain Size < # 230 Sieve (g/day)	E	0.22		0.00	0.06	0.13	0.06
R2S1-RR	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/18/2013	11/18/2013	1/15/2014	2/16/2014	3/19/2014	4/16/2014	5/24/2014
Sample End Date	11/18/2013	1/15/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014	6/26/2014
Grain size > #230 Sieve (g/day)	0.51	0.87	0.22	0.22	0.50	0.47	0.00
Grain Size < # 230 Sieve (g/day)	0.52	0.93	0.35	0.33	0.52	0.78	0.06
R2S2-LR	E	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
Sample Start Date	E	11/21/2013	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014
Sample End Date	E	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014
Grain size > #230 Sieve (g/day)	E	0.49	0.51	0.17	0.18	0.29	0.26
Grain Size < # 230 Sieve (g/day)	E	0.49	0.6	0.26	0.20	0.39	0.59
R2SC1-RR	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/19/2013	11/18/2013	1/15/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Sample End Date	11/18/2013	1/15/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014	6/22/2014
Grain size > #230 Sieve (g/day)	0.62	0.57	0.02	0.02	0.02	0.13	0.03
Grain Size < # 230 Sieve (g/day)	0.42	0.72	0.13	0.12	0.10	0.51	0.19
R2SC2-LR	E	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
Sample Start Date	E	11/21/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014
Sample End Date	E	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Grain size > #230 Sieve (g/day)	E	0.80	0.46	0.03	0.04	0.18	0.21
Grain Size < # 230 Sieve (g/day)	E	0.61	0.41	0.12	0.15	0.34	0.47
R3N1-LR	N/A	Baseline	Sample 2	Sample 3	N/A		Sample 4
Sample Start Date	N/A	12/4/2013	12/30/2013	2/16/2014	N/A		6/5/2014
Sample End Date	N/A	12/30/2013	2/16/2014	3/19/2014	N/A		7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.09	0.17	0.03	N/A		0.18
Grain Size < # 230 Sieve (g/day)	N/A	0.08	0.16	0.00	N/A		0.11
R3NC1-LR	N/A	Baseline	Sample 2	N/A			Sample 3
Sample Start Date	N/A		12/5/2013	2/16/2014	N/A		6/5/2014

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Sample End Date	N/A	2/16/2014	3/20/2014	N/A	7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.05	0.01	N/A	0.01
Grain Size < # 230 Sieve (g/day)	N/A	0.07	0.00	N/A	0.03
R3S1-CP	N/A	Baseline	Sample 2	Sample 3	N/A
Sample Start Date	N/A	12/3/2013	12/30/2013	2/16/2014	N/A
Sample End Date	N/A	12/30/2013	2/16/2014	3/19/2014	N/A
Grain size > #230 Sieve (g/day)	N/A	0.06	0.13	0.02	N/A
Grain Size < # 230 Sieve (g/day)	N/A	0.10	0.20	0.00	N/A
R3S2-LR	N/A	Baseline	Sample 2	Sample 3	N/A
Sample Start Date	N/A	12/3/2013	12/30/2013	2/16/2014	N/A
Sample End Date	N/A	12/30/2013	2/16/2014	3/19/2014	N/A
Grain size > #230 Sieve (g/day)	N/A	0.04	0.15	0.01	N/A
Grain Size < # 230 Sieve (g/day)	N/A	0.09	0.14	0.00	N/A
R3S3-SG	N/A	Baseline	Sample 2	Sample 3	N/A
Sample Start Date	N/A	12/3/2013	12/30/2013	2/16/2014	N/A
Sample End Date	N/A	12/30/2013	2/16/2014	3/19/2014	N/A
Grain size > #230 Sieve (g/day)	N/A	0.04	0.13	0.02	N/A
Grain Size < # 230 Sieve (g/day)	N/A	0.07	0.13	0.00	N/A
R3SC1-CP	N/A	Baseline	Sample 2	N/A	Sample 3
Sample Start Date	N/A	12/5/2013	2/17/2014	N/A	6/5/2014
Sample End Date	N/A	2/17/2014	3/19/2014	N/A	7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.08	0.00	N/A	0.01
Grain Size < # 230 Sieve (g/day)	N/A	0.17	0.00	N/A	0.03
R3SC2-LR	N/A	Baseline	Sample 2	N/A	Sample 3
Sample Start Date	N/A	12/4/2013	2/17/2014	N/A	6/5/2014
Sample End Date	N/A	2/17/2014	3/19/2014	N/A	7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.05	0.10	N/A	0.01
Grain Size < # 230 Sieve (g/day)	N/A	0.07	0.00	N/A	0.03
R3SC3-SG	N/A	Baseline	Sample 2	N/A	Sample 3
Sample Start Date	N/A	12/4/2014	2/17/2014	N/A	6/5/2014
Sample End Date	N/A	2/17/2014	3/19/2014	N/A	7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.08	0.10	N/A	0.01
Grain Size < # 230 Sieve (g/day)	N/A	0.11	0.00	N/A	0.03

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.
8. Liberty Island dredging with no overflow as of 6/19/14. Liberty Island departed the project site on July 3, 2014, and is not expected to return to service on this project in the foreseeable future.

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Week 40 08/20/14-08/26/14 Dredge Activity

9. An additional tug and scow were added to the scow package to allow the Spider Barge to load scows with minimal to no overflow to help reduce possible sedimentation and turbidity as of Compliance Week 39.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.

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Week 34 07/02/14-07/08/14 Dredge Activity

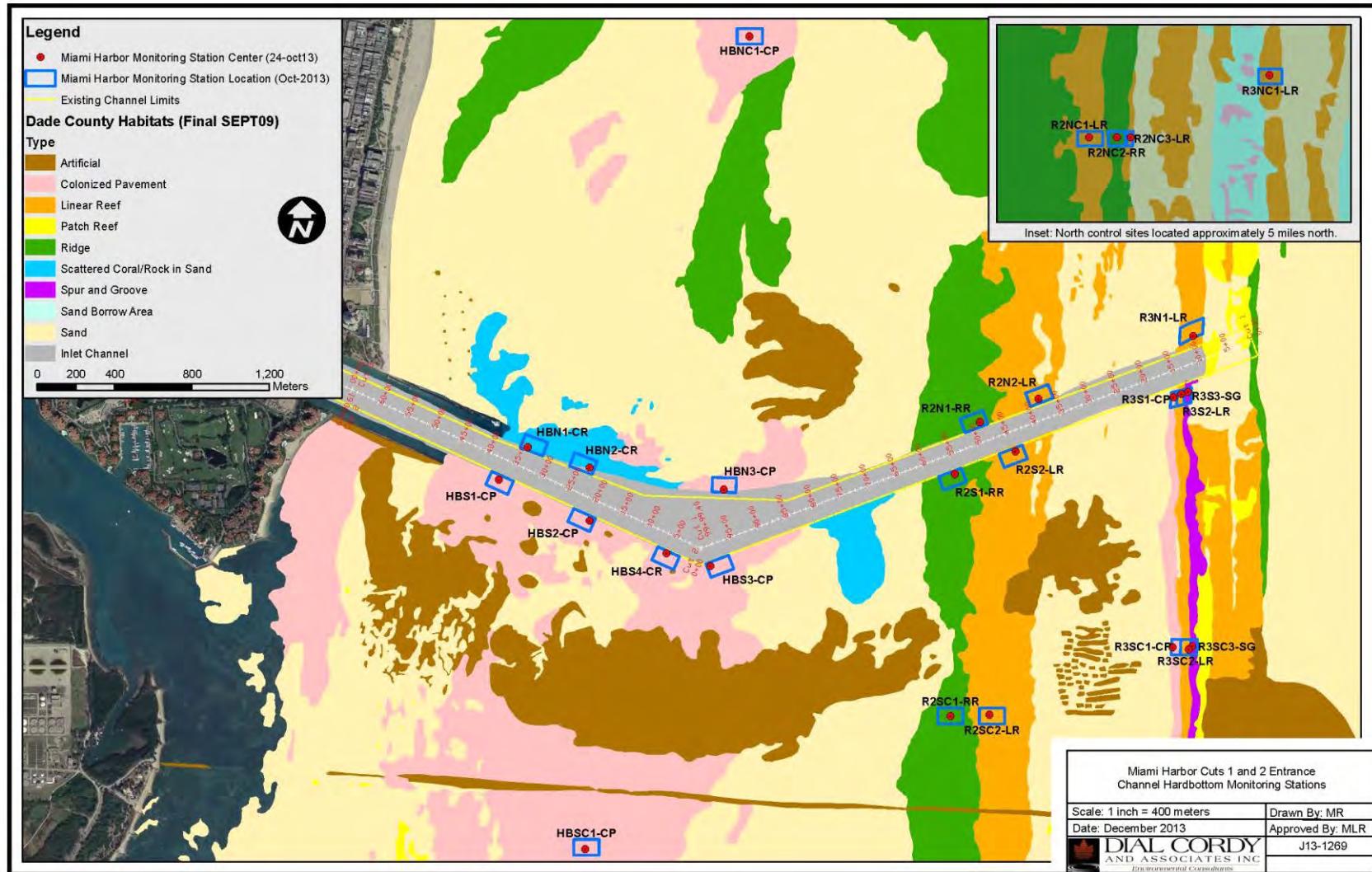


Figure 1: Miami Harbor Cuts 1 and 2 Entrance Channel Hardbottom and Reef monitoring stations.

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Appendix A Updated September 6, 2014

Weekly functional group analysis results for HBN2-CR last updated September 6, 2014.

Transect		HBN2-CR																					
Functional Group		T1					T2					T3											
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	
Week Number †	B4	0.19	0.00	4.82	0.00	0.00	93.83	1.16	0.17	0.00	5.50	0.00	0.00	89.83	4.29	0.00	0.82	4.02	0.00	0.00	90.17	4.98	
	C1	0.31	0.67	5.72	0.00	0.00	42.56	49.55	0.00	0.00	4.79	0.00	0.00	33.81	59.73	0.00	0.94	3.76	0.00	1.49	6.80	86.41	
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C4	0.00	0.00	2.56	0.00	0.00	9.90	87.26	0.00	0.00	0.53	0.00	0.00	14.39	85.08	0.00	0.56	1.30	0.00	1.50	11.72	84.92	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	0.00	0.56	1.46	0.00	0.00	9.90	88.08	0.00	0.00	1.79	0.00	0.00	15.86	82.35	0.00	0.75	0.59	0.63	0.00	8.55	89.49	
	C8	0.73	0.56	0.88	0.00	0.00	6.63	90.90	0.00	0.00	0.97	0.00	0.00	8.79	90.24	0.00	0.53	1.21	0.00	0.00	11.07	87.19	
	C9	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	
	C11	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C12	0.00	0.25	0.00	0.00	0.00	16.12	83.63	M	M	M	M	M	M	M	0.31	1.44	0.00	0.00	0.00	20.18	78.07	
	C13	0.00	0.00	1.17	0.00	0.00	23.22	75.61	0.28	0.00	0.00	0.00	0.00	0.00	35.25	64.47	0.00	0.63	0.56	0.00	0.00	36.06	62.75
	C14	0.31	0.50	0.63	0.00	0.00	28.30	70.27	0.00	0.25	1.09	0.00	0.00	38.01	60.65	0.28	1.03	2.98	0.00	0.00	26.36	69.35	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	0.00	0.28	0.94	0.00	0.00	19.60	79.17	0.00	0.00	0.80	0.00	0.00	29.85	69.36	0.31	0.00	1.49	0.00	0.00	13.57	84.63	
	C17	0.00	0.00	1.99	0.00	0.25	39.12	58.65	0.00	0.00	0.78	0.00	0.00	48.06	51.16	0.50	0.53	0.36	0.00	0.00	39.49	59.13	
	C18	0.25	0.28	2.22	0.00	0.00	25.67	71.58	0.00	0.28	2.07	0.00	1.07	27.85	68.48	0.00	0.75	4.87	0.00	0.00	26.61	67.78	
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	0.28	0.00	0.28	0.00	0.00	49.27	50.17	0.25	0.00	1.83	0.00	0.00	58.42	39.50	0.56	0.56	1.06	0.00	0.31	50.88	46.64	
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

HBN2-CR																						
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
C	C23	0.00	0.00	1.42	0.00	0.00	38.16	60.42	0.00	0.00	0.00	0.00	0.00	33.51	66.49	0.00	0.56	0.63	0.00	0.00	38.19	60.63
	C24	0.25	0.25	2.32	0.00	0.00	50.39	46.54	0.00	0.00	2.31	0.00	0.00	44.77	52.92	0.00	0.00	0.91	0.00	0.00	46.39	52.70
	C25	0.25	0.75	1.00	0.00	0.00	40.10	57.35	0.25	0.00	1.56	0.00	0.00	55.65	42.54	0.28	0.00	1.00	0.00	0.00	39.61	59.11
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	0.00	0.31	1.90	0.00	0.00	52.22	45.57	0.94	0.00	1.75	0.00	0.00	56.62	40.69	0.00	0.50	2.22	0.00	0.00	55.81	41.47
	C28	0.00	1.11	1.27	0.00	0.00	57.65	39.61	0.00	0.00	1.60	0.00	0.00	64.81	33.59	0.00	0.75	1.22	0.00	0.00	57.32	40.71
	C33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for HBN3-CP last updated September 6, 2014.

		HBN3-CP																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOALGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	3.66	5.82	5.55	1.00	0.00	77.10	5.67	1.29	3.78	12.50	2.92	0.00	75.89	3.43	1.15	4.33	13.13	0.77	0.00	74.88	5.53
	C1	1.06	5.68	9.43	2.38	0.00	71.22	10.24	0.59	3.91	10.27	4.00	0.00	64.05	17.18	1.19	6.36	13.57	0.56	0.00	69.69	7.81
	C2	1.29	4.72	4.91	1.96	0.00	61.01	26.10	1.06	5.52	6.73	4.34	0.00	66.73	15.63	2.29	6.50	7.21	1.61	0.00	61.39	20.99
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C4	1.29	5.08	3.49	0.56	0.00	54.12	35.46	3.42	12.88	1.86	0.00	0.00	25.47	56.37	1.39	13.11	1.42	0.50	1.00	15.90	66.78
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C9	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C10	1.11	7.40	3.14	1.50	0.00	63.35	23.13	1.38	3.06	10.51	2.12	0.00	68.30	14.63	0.59	5.52	7.74	2.78	0.00	66.87	16.50
	C11	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C12	1.88	3.53	4.38	0.94	0.00	24.82	64.45	1.63	5.01	9.11	3.09	0.00	51.16	30.00	1.34	2.43	8.99	1.57	0.00	54.49	31.18
	C13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	0.90	2.13	2.48	0.56	0.00	11.42	82.24	0.98	3.68	9.66	5.28	0.00	14.45	65.95	0.81	4.36	3.78	0.25	0.00	21.69	68.48
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C18	1.58	8.32	5.99	1.23	0.00	24.22	58.65	1.32	9.96	11.83	2.60	0.00	51.89	22.39	0.69	2.46	8.66	0.00	0.00	62.72	25.46
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	3.09	3.08	3.01	1.69	0.00	48.29	40.84	0.31	2.95	5.61	5.53	0.00	60.65	24.94	0.36	3.28	4.96	0.31	0.00	56.79	34.30

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

HBN3-CP																						
Transect	T1							T2							T3							
Functional Group	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	
C	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C22	1.16	4.06	3.02	1.12	0.00	45.56	45.08	0.53	3.80	4.15	3.17	0.00	54.00	34.35	0.75	2.09	6.98	0.56	0.00	55.14	34.49
	C23	1.42	4.38	1.77	0.31	0.00	23.70	68.41	0.59	3.78	4.09	3.06	0.00	45.47	43.01	0.81	2.69	2.53	0.71	0.00	37.26	55.75
	C24	1.77	3.52	2.47	0.69	0.00	38.84	52.70	1.06	2.43	8.09	4.29	0.00	49.97	34.16	0.81	2.68	5.71	2.14	0.00	41.92	46.73
	C25	1.06	5.50	3.83	0.25	0.00	14.92	74.44	0.25	5.67	5.44	5.00	0.00	32.42	51.23	1.50	3.33	6.50	2.50	0.00	28.15	57.77
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	2.03	3.89	1.79	2.19	0.00	49.58	40.03	1.11	4.86	8.00	4.76	0.00	57.87	22.81	1.18	3.31	10.16	0.56	0.00	48.89	35.60
	C28	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D		
	C30	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D		
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for HBNC1-CP last updated September 6, 2014.

		HBNC1-CP																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
Week Number +	B4	1.43	17.85	4.53	0.00	0.33	73.68	0.95	0.00	24.28	11.45	0.00	0.41	63.05	0.48	0.38	22.69	7.39	0.00	0.00	68.46	0.79
	C1	0.98	24.75	3.81	0.00	0.31	44.97	24.58	0.28	25.03	6.80	0.00	0.50	40.22	26.62	0.00	28.32	1.81	0.00	0.28	45.61	23.67
	C2	1.56	26.34	1.67	0.00	0.00	47.14	22.35	0.67	35.54	2.33	0.00	0.31	31.81	29.34	0.42	29.69	4.19	0.00	0.25	33.32	32.14
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C4	0.71	12.56	3.13	0.00	0.69	50.00	32.91	0.00	15.76	2.38	0.00	0.00	55.47	26.40	0.28	21.80	2.85	0.00	0.50	46.66	27.92
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C8	1.22	24.95	2.88	0.00	0.63	42.50	27.83	0.00	25.61	2.53	0.00	0.36	49.99	21.52	0.28	23.40	4.12	0.00	0.36	41.92	29.92
	C9	0.28	20.80	5.13	0.00	0.28	50.96	22.28	0.59	25.56	5.38	0.00	1.44	41.12	25.60	0.31	20.73	2.90	0.00	0.31	41.88	33.55
	C10	0.25	13.34	1.28	0.00	0.28	59.36	24.78	0.31	19.00	1.37	0.00	0.00	53.62	25.45	0.25	17.48	2.28	0.00	0.00	57.44	22.55
	C11	2.67	20.71	2.29	0.00	0.00	41.79	32.54	0.00	19.26	5.01	0.00	0.25	43.88	31.60	0.59	16.25	1.87	0.00	0.31	51.38	29.60
	C12	1.59	24.81	1.40	0.00	0.00	32.31	39.89	0.53	14.92	0.78	0.00	0.00	33.78	49.99	0.31	17.95	2.12	0.00	0.00	31.76	47.59
	C13	0.59	18.31	1.55	0.00	0.00	55.93	23.63	0.31	19.76	1.57	0.00	0.00	38.84	39.51	0.00	17.10	2.56	0.00	0.00	37.23	42.33
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	0.50	18.77	2.06	0.00	0.00	49.78	28.63	1.15	18.48	1.59	0.00	0.28	29.33	46.67	0.24	19.67	0.55	0.00	0.00	30.65	48.64
	C17	0.50	14.16	1.68	0.00	0.81	68.39	12.79	0.28	15.38	2.63	0.00	0.00	72.04	9.42	0.00	19.49	1.09	0.00	0.00	71.15	7.80
	C18	1.07	19.96	1.12	0.00	0.00	60.15	16.60	0.87	12.33	1.92	0.00	0.25	56.53	27.54	1.18	19.70	1.42	0.00	0.59	65.93	10.11
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	1.94	15.70	3.72	0.00	0.00	60.37	18.33	0.28	17.60	4.77	0.00	0.00	56.31	20.49	0.00	19.23	2.10	0.00	0.00	61.78	16.62
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

		HBNC1-CP																				
Transect		T1						T2						T3								
Functional Group	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	
C	C22	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E		
	C23	1.07	14.77	1.96	0.00	0.00	47.18	34.74	0.00	13.02	1.71	0.00	0.63	30.76	53.60	0.56	17.53	2.47	0.00	0.25	34.58	44.61
	C24	0.26	17.14	2.81	0.00	0.00	54.56	24.91	0.31	19.74	4.06	0.00	1.61	55.16	18.10	0.56	17.30	4.40	0.00	0.59	55.61	21.34
	C25	1.33	25.49	2.39	0.00	0.50	42.20	27.03	0.25	24.11	3.45	0.00	0.28	32.14	37.19	0.28	27.83	1.86	0.00	1.00	39.04	28.35
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	0.59	22.98	4.66	0.00	0.56	27.28	42.82	0.25	22.52	4.74	0.31	0.31	30.16	40.81	0.56	25.49	3.09	0.00	0.50	34.60	35.20
	C28	0.00	20.18	3.21	0.00	1.23	47.08	28.30	0.25	26.54	1.64	0.00	1.00	40.64	29.98	0.59	23.39	3.75	0.00	0.56	45.09	26.61
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

^t: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for HBS1-CP last updated September 6, 2014.

Transect		HBS1-CP																				
Functional Group		T1						T2						T3								
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	2.90	1.50	5.20	0.90	0.00	87.80	1.10	0.88	9.10	7.50	0.40	0.00	78.90	3.00	2.80	1.80	5.40	1.00	0.00	87.50	1.00
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C12	1.71	3.45	7.13	2.78	0.00	47.05	37.88	0.99	4.32	6.74	0.25	0.00	30.17	57.53	0.28	4.72	7.51	1.84	0.00	28.29	56.36
	C13	1.38	0.59	0.73	4.17	0.00	85.50	7.63	0.32	4.69	3.78	0.51	0.00	76.13	14.57	0.00	5.33	3.64	2.42	0.00	84.20	4.40
	C14	1.25	1.87	5.61	0.25	0.00	26.00	65.02	0.28	5.30	7.69	0.00	1.17	40.82	44.75	0.00	5.53	3.29	0.00	0.00	35.20	54.17
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	2.19	1.28	7.39	2.00	0.50	16.41	69.92	0.31	4.44	7.00	0.00	0.00	26.53	61.00	0.00	4.45	6.40	0.00	0.00	33.15	54.81
	C17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C18	0.58	0.91	8.70	3.19	0.26	75.69	10.68	1.75	5.66	6.05	0.00	0.00	75.16	11.37	1.79	3.51	8.72	0.31	0.00	77.45	7.90
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	1.70	2.19	6.64	4.82	0.91	69.39	14.35	0.28	2.73	7.28	0.00	0.53	66.55	22.64	0.28	2.98	7.58	0.25	0.42	65.74	22.76
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	1.11	0.59	5.88	4.64	0.28	68.50	19.04	0.50	3.54	4.47	0.00	0.00	77.34	13.59	0.36	2.73	5.51	0.00	0.28	75.91	14.90
	C23	0.00	5.13	10.68	2.56	0.31	60.21	20.84	0.36	4.10	5.20	0.00	0.00	64.40	25.80	0.00	3.32	7.51	0.00	0.28	65.86	23.04
	C24	0.59	1.98	10.07	4.60	0.86	68.20	12.90	0.67	1.44	6.30	0.59	0.28	73.19	17.04	0.67	4.67	7.31	0.50	0.00	71.59	15.26
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	2.30	1.20	6.10	2.20	1.40	57.89	27.22	1.25	3.59	12.34	0.50	0.00	53.14	27.92	0.28	3.40	9.56	0.00	0.25	60.61	24.99

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		HBS1-CP																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
T:	C28	0.28	2.02	5.87	1.49	0.00	73.00	17.06	0.88	7.12	4.68	0.00	0.88	61.96	24.48	0.31	7.52	6.03	0.00	2.15	62.54	21.44
	C29	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C31	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

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Weekly functional group analysis results for HBS2-CP last updated September 6, 2014.

Transect		HBS2-CP																				
		T1					T2					T3										
Functional Group	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	
Week Number ⁺	B4	0.31	0.00	1.67	0.00	0.00	65.00	33.06	0.18	0.00	1.84	0.60	0.00	60.46	36.93	0.19	1.01	2.50	0.19	0.00	63.30	32.80
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C12	0.00	0.31	4.06	0.25	0.00	34.32	61.06	0.84	0.28	3.97	0.00	0.00	33.92	61.00	0.00	0.90	2.30	0.00	0.00	23.81	73.04
	C13	0.00	0.36	3.21	0.69	0.28	56.99	38.47	0.00	0.00	2.57	0.00	0.00	57.26	40.17	0.00	0.63	3.66	0.63	0.00	52.31	42.78
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	0.31	0.00	4.27	0.00	0.00	18.85	76.57	0.28	0.28	6.33	0.00	0.00	19.36	73.48	0.00	0.83	3.58	1.11	0.00	18.32	76.16
	C17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C18	0.00	0.63	4.10	0.00	0.00	48.90	46.42	0.25	0.00	6.16	0.00	0.00	45.33	48.26	0.00	0.50	6.81	0.00	0.00	46.25	46.16
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	0.56	1.41	6.20	0.50	0.00	28.10	62.44	1.38	0.91	8.32	0.31	0.00	33.66	55.16	0.56	1.12	6.63	0.00	0.00	42.86	48.59
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	0.31	0.61	5.22	0.50	1.74	48.83	42.79	0.42	0.88	5.76	0.00	0.00	55.78	37.16	0.00	2.10	5.24	0.31	0.00	32.15	60.30
	C23	0.00	0.28	4.82	0.36	0.00	41.16	52.50	0.91	1.40	4.71	0.00	0.00	47.14	45.16	0.00	1.92	4.64	0.00	0.00	43.83	49.61
	C24	0.28	0.56	5.40	0.00	0.00	41.79	52.03	0.56	0.00	3.70	0.31	0.00	47.34	47.83	0.00	0.90	3.93	0.00	0.00	32.43	62.74
	C25	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	0.31	0.31	4.57	0.00	0.00	32.72	62.08	0.90	0.56	5.36	0.31	0.00	38.00	54.87	0.28	1.31	2.53	0.00	0.00	28.54	67.34
	C28	0.87	0.00	2.73	0.36	0.00	36.16	59.58	0.86	1.23	4.72	0.36	0.28	31.10	61.46	0.00	1.12	3.97	0.36	0.00	24.98	69.58

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Transect		HBS2-CP																			
Functional Group	Transect	T1						T2						T3							
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE
C	C32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C34	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

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Weekly functional group analysis results for HBS3-CP last updated September 6, 2014.

Transect		HBS3-CP																							
Functional Group		T1						T2						T3											
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND			
Week Number †	B4	0.56	11.23	2.32	0.00	0.00	70.10	15.79	0.61	14.88	3.58	2.53	0.00	74.16	4.03	1.48	18.08	3.03	0.53	0.00	63.85	11.93			
	C1	1.34	16.29	7.49	1.79	0.00	45.80	26.99	0.90	13.21	4.73	0.69	0.00	50.43	30.04	1.00	12.47	4.46	3.44	0.00	53.44	24.88			
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E		
	C3	0.98	14.81	4.42	0.31	0.00	39.18	40.31	1.20	15.53	2.34	0.00	0.00	36.48	44.19	0.73	15.66	4.40	1.88	0.00	37.48	39.59			
	C4	1.43	13.32	6.73	0.31	0.00	16.74	61.47	0.00	10.69	7.10	0.59	0.00	10.94	70.67	0.31	14.75	2.21	0.00	0.00	15.14	67.28			
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E		
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E		
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E		
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C9	0.95	12.86	3.97	0.25	0.00	28.77	53.21	0.28	16.70	2.56	0.00	0.00	24.27	56.20	0.90	13.46	5.31	0.63	0.00	30.63	49.08			
	C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D		
	C11	0.73	12.70	3.11	0.00	0.00	19.45	64.01	1.74	12.73	1.90	0.28	0.00	12.01	71.39	1.35	12.83	0.73	1.83	0.00	11.94	71.31			
	C12	1.19	12.35	0.84	0.00	0.00	14.09	71.53	0.98	16.20	0.53	0.00	0.00	10.17	72.13	1.12	9.56	1.56	1.08	0.00	9.93	76.76			
	C13	0.00	13.67	0.30	0.00	0.00	28.64	57.39	0.00	7.73	0.00	0.28	0.00	28.59	63.41	0.00	5.33	0.63	1.98	0.00	30.54	61.51			
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C16	0.56	10.45	3.52	0.00	0.00	9.48	75.73	1.49	8.30	4.90	0.56	0.00	9.27	75.47	0.50	10.59	2.00	0.61	0.00	5.88	80.47			
	C17	0.31	11.80	3.70	0.00	0.00	33.26	50.72	1.67	12.10	1.46	0.25	0.00	36.61	47.91	1.28	11.50	3.29	0.63	0.00	31.56	51.49			
	C18	1.44	15.85	2.27	0.00	0.00	56.65	23.78	0.00	13.97	1.78	0.50	0.00	37.40	46.36	0.00	20.73	1.90	0.25	0.00	32.08	45.04			
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C20	0.88	13.34	4.00	0.00	0.00	39.80	41.98	0.90	8.21	4.92	0.00	0.00	53.16	32.81	0.50	11.07	4.91	1.40	0.00	43.80	38.07			

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Transect		HBS3-CP																				
Functional Group	CORAL	T1					T2					T3										
		OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	
C	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	1.11	9.34	3.18	0.00	0.00	49.69	36.67	0.84	8.86	2.08	0.83	0.00	56.37	30.71	0.53	11.84	3.13	0.28	0.00	43.92	40.30
	C23	0.81	4.70	3.59	0.00	0.00	39.57	51.33	1.52	9.13	1.86	0.56	0.00	36.75	50.18	0.28	13.62	1.47	0.00	0.00	38.06	46.01
	C24	0.91	11.26	2.48	0.00	0.00	28.56	56.79	1.43	12.51	2.74	0.63	0.00	34.70	48.05	0.65	11.66	1.65	0.28	0.00	30.23	54.70
	C25	0.53	13.81	1.86	0.00	0.00	26.62	57.18	1.78	15.13	3.02	0.25	0.00	15.34	64.17	0.26	17.61	1.48	0.54	0.00	23.21	56.90
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	1.86	12.39	2.31	0.36	0.00	34.09	49.00	1.00	11.73	4.02	0.81	0.00	38.83	43.61	0.00	14.84	3.20	0.00	0.25	34.29	47.16
	C28	0.00	12.61	5.57	0.36	0.00	39.08	42.38	2.67	11.69	2.27	0.00	0.31	45.34	37.41	0.00	13.46	2.40	2.40	0.00	50.83	30.91
	C29	0.56	6.66	2.25	0.31	0.00	17.43	72.80	0.73	13.91	3.01	0.00	0.00	11.07	71.28	0.56	13.29	2.48	2.06	0.00	8.95	72.66
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for HBS4-CR last updated September 6, 2014.

Transect		HBS4-CP																			
		T1						T2						T3							
Functional Group	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
	B4	0.17	9.16	3.15	0.17	0.38	65.81	21.17	0.36	11.60	7.00	0.32	0.34	57.52	22.86	0.44	9.73	4.31	0.92	0.00	56.05
C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C9	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
C12	0.00	3.38	2.42	0.00	0.00	14.06	80.14	0.00	9.66	3.62	0.00	0.00	5.99	80.73	0.00	5.88	1.26	0.00	0.00	7.68	85.18
C13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C16	1.63	8.40	1.96	0.00	0.00	10.19	77.23	0.50	13.72	3.87	0.00	0.00	14.41	67.51	0.00	7.66	1.61	1.15	0.00	6.93	82.64
C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C18	0.33	9.36	0.93	0.00	0.99	25.12	63.27	0.31	11.40	3.73	0.00	0.69	22.86	61.06	1.69	5.29	2.39	0.94	0.00	25.00	64.70
C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C20	0.94	8.98	2.17	0.25	0.00	37.39	50.27	0.00	9.61	3.33	0.00	0.00	43.09	43.97	1.56	4.93	3.84	0.56	0.00	50.43	38.67
C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C22	0.36	7.23	5.38	0.28	0.00	44.87	41.88	0.00	9.44	3.88	0.00	0.00	46.05	40.63	0.63	6.00	2.62	1.40	0.00	39.58	49.83
C23	1.57	6.40	2.90	0.64	0.00	35.36	52.56	0.28	11.04	2.80	0.00	0.00	31.51	54.37	0.00	6.77	1.69	0.00	0.00	25.82	65.45
C24	0.63	5.48	2.45	0.31	0.31	30.36	60.45	0.50	8.66	2.75	0.00	0.00	34.40	53.41	0.42	4.71	1.20	0.00	0.00	31.80	61.93

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FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

		HBS4-CP																			
Transect		T1						T2						T3							
Functional Group	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
C	C25	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	0.31	8.39	2.24	0.00	0.00	12.30	76.76	0.31	12.52	2.33	0.00	0.28	10.94	73.62	0.94	7.94	1.98	0.94	0.00	10.24
	C28	0.00	3.61	2.03	0.00	0.31	24.37	69.68	0.59	7.71	2.59	0.00	0.00	12.99	75.84	0.00	4.92	1.15	0.63	0.00	18.68
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for HBSC1-CP last updated September 6, 2014.

Transect		HBSC1-CP														T3						
Functional Group		T1						T2						T3								
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	9.28	9.52	3.51	0.00	0.66	66.17	10.86	0.64	8.44	2.09	0.00	2.73	79.96	5.46	0.33	7.85	2.77	0.00	4.47	75.27	8.95
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C12	9.49	14.08	0.56	0.00	0.00	8.13	67.74	1.38	8.76	2.89	0.00	0.00	20.70	66.32	0.00	11.92	1.77	0.00	0.00	15.98	70.33
	C13	6.00	9.23	0.57	0.00	0.00	78.62	5.58	0.31	9.50	1.42	0.50	0.00	76.90	11.37	2.25	12.46	1.92	0.00	0.00	70.48	12.53
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	9.60	13.01	0.98	0.28	37.73	30.38	5.94	0.83	10.64	4.36	0.00	53.95	21.33	7.66	0.81	8.69	5.10	0.00	58.01	20.14	5.93
	C17	8.63	11.51	0.56	0.00	0.53	74.25	2.42	0.36	9.88	1.35	0.25	1.23	84.54	0.53	0.81	9.50	2.80	0.00	1.84	80.89	1.13
	C18	4.64	6.48	4.12	0.00	0.28	49.35	34.27	1.46	9.92	2.85	0.00	0.90	55.70	28.94	1.39	9.98	1.74	0.00	1.65	60.16	23.77
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	5.75	9.37	3.60	1.18	0.56	65.95	11.93	1.27	5.33	2.92	0.83	1.50	85.67	1.87	1.11	5.01	2.49	0.00	3.84	83.14	3.63
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	6.28	7.46	2.65	0.00	4.28	76.42	1.75	1.16	9.63	1.80	0.00	4.69	81.79	0.67	0.50	7.15	2.54	0.00	6.32	82.55	0.94
	C23	4.31	9.08	2.35	0.56	1.13	81.12	0.56	0.90	7.21	2.36	0.00	9.60	78.13	0.63	0.31	8.29	5.00	0.00	8.73	75.14	2.21
	C24	6.54	12.28	1.43	0.00	15.49	60.22	2.62	0.53	10.20	0.56	0.31	14.73	71.33	2.03	0.31	6.38	1.99	0.00	19.08	69.10	1.96
	C25	5.40	14.59	1.12	0.00	10.00	65.25	2.59	0.75	9.48	0.53	0.50	16.93	71.04	0.53	0.25	13.51	1.25	0.25	15.01	66.17	2.53
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	4.96	11.01	2.39	0.00	0.53	59.43	18.21	2.20	11.31	4.11	0.31	0.98	66.77	12.82	1.68	8.69	6.20	0.25	1.65	69.10	12.20
	C28	7.79	11.70	1.75	0.00	0.28	70.82	7.40	2.09	10.40	1.89	0.00	1.51	68.17	15.65	1.40	10.60	1.99	0.00	2.25	78.37	5.38

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

		HBSC1-CP																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for R2N1-RR last updated September 6, 2014.

Transect		R2N1-RR																							
Functional Group		T1				T2				T3															
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND			
Week Number †	B4	0.18	15.67	3.76	0.00	0.00	77.88	0.76	0.85	15.29	2.12	0.00	0.00	79.01	2.06	2.91	16.67	1.52	0.00	0.00	77.92	0.77			
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C9	0.90	13.96	0.94	0.00	0.00	33.12	51.09	1.69	15.01	4.43	0.28	0.00	50.13	27.96	3.84	14.39	2.13	0.00	0.28	43.90	35.47			
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

R2N1-RR																						
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
C	C21	0.25	16.45	1.37	0.00	0.00	24.99	56.95	1.50	14.36	1.06	0.00	0.00	25.61	57.48	1.95	13.99	2.18	0.00	0.00	19.09	62.80
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C23	1.06	15.41	0.98	0.00	0.00	11.63	70.92	0.56	8.77	0.97	0.00	0.00	25.53	64.17	2.50	13.94	0.87	0.00	0.00	23.32	59.38
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for R2N2-LR last updated September 6, 2014.

Transect		R2N2-LR																											
Functional Group		T1					T2					T3																	
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND							
Week Number †	B4	0.62	1.22	2.94	0.23	0.00	79.57	15.21	0.56	2.17	4.00	0.60	0.19	64.04	28.23	0.43	1.07	4.93	1.33	0.00	74.28	17.97							
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

		R2N2-LR																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
C	C21	0.31	1.62	1.46	0.00	0.00	49.61	47.00	0.25	1.03	2.10	0.00	0.00	40.95	55.67	0.28	0.75	2.55	0.28	0.00	47.30	48.84
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C23	0.31	0.00	1.93	0.00	0.00	67.35	30.40	0.00	0.28	1.99	0.00	0.00	52.22	45.51	0.00	0.98	3.84	1.00	0.00	54.17	40.01
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

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Weekly functional group analysis results for R2NC1-LR last updated September 6, 2014.

Transect		R2NC1-LR																				
Functional Group		T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	1.56	2.89	2.02	5.25	0.17	63.92	23.86	0.61	6.92	2.81	0.00	0.00	70.41	17.97	4.50	8.38	1.63	3.04	0.18	54.12	25.38
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	1.42	1.73	1.40	5.25	0.00	43.09	47.11	0.00	2.23	1.15	0.00	0.00	57.86	38.45	0.84	3.38	0.59	0.90	0.00	55.91	38.38
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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R2NC1-LR																							
Transect		T1						T2						T3									
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	
C	C21	2.03	2.50	0.56	7.30	0.00	43.17	44.45	1.58	3.72	0.28	0.00	0.00	47.14	47.28	1.48	3.76	3.03	2.85	0.00	51.20	37.44	
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

[†]: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for R2NC2-RR last updated September 6, 2014.

Transect		R2NC2-RR																				
Functional Group		T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	1.56	19.68	0.85	0.00	0.38	77.07	0.46	2.49	19.45	2.82	0.00	0.00	75.24	0.00	6.97	17.56	1.29	0.00	0.00	74.18	0.00
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

		R2NC2-RR																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
C	C21	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

[†]: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for R2S1-RR last updated September 6, 2014.

Transect		R2S1-RR																											
Functional Group		T1				T2				T3																			
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND							
Week Number †	B4	0.94	5.89	3.15	0.00	0.00	88.49	0.21	0.57	3.77	3.45	0.00	0.00	92.20	0.00	0.33	5.25	3.40	0.49	0.00	89.94	0.41							
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C9	0.99	5.89	1.06	0.00	0.00	11.03	81.02	1.39	2.58	0.59	0.00	0.00	5.74	89.70	0.28	3.00	1.53	0.63	0.00	10.84	83.73							
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

R2S1-RR																						
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
	C21	1.48	5.19	1.31	0.00	0.00	18.92	73.12	1.47	2.15	1.18	0.00	0.00	13.29	81.92	0.59	3.40	1.04	0.00	0.00	20.48	74.48
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C23	1.15	1.90	0.75	0.00	0.25	25.84	70.11	3.76	1.06	0.56	0.00	0.00	9.39	85.24	0.00	4.19	1.47	0.00	0.28	16.20	77.86
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for R2S2-LR last updated September 6, 2014.

Transect		R2S2-LR																											
Functional Group		T1				T2				T3																			
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND							
Week Number †	B4	1.44	8.32	3.39	0.00	0.00	86.69	0.00	1.04	9.11	3.40	0.00	0.00	86.27	0.00	2.04	18.81	8.13	0.00	0.00	70.64	0.00							
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

R2S2-LR																							
Transect		T1						T2						T3									
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	
C	C21	1.94	4.81	0.25	0.53	0.00	7.15	85.32	0.63	9.76	1.44	0.00	0.00	10.13	78.05	1.33	13.60	1.31	0.00	0.00	15.93	67.83	
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

^T: Omitted weeks have yet to be analyzed.

^E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

^{N/A}: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

^M: Video camera malfunction prevented data collection and analysis.

^D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for R2SC1-RR last updated August 27, 2014.

Transect		R2SC1-RR																				
Functional Group		T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	0.95	19.40	3.97	7.52	0.00	64.32	3.85	0.76	31.88	3.45	12.51	0.00	50.63	0.37	1.11	16.14	5.33	10.66	0.00	63.97	2.80
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	3.06	10.51	1.98	0.00	0.00	13.68	70.76	5.14	11.86	1.73	0.25	0.00	15.88	65.15	1.71	10.78	2.32	0.00	0.00	14.37	70.82
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

R2SC1-RR																						
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND
	C21	3.62	5.53	1.70	0.00	0.00	65.26	23.89	2.69	4.03	0.84	0.25	0.00	72.08	20.10	1.84	7.15	1.08	1.46	0.00	71.46	17.01
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C24	2.62	7.01	2.06	0.00	0.00	83.96	4.36	3.65	7.13	4.17	1.06	0.00	80.83	3.15	2.21	6.44	3.97	0.31	0.00	83.44	3.63
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for R2SC2-LR last updated September 6, 2014.

Transect		R2SC2-LR																				
Functional Group		T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	1.17	19.28	3.56	8.12	0.00	64.86	3.02	0.19	32.52	4.54	13.95	0.19	47.75	0.87	0.33	13.81	4.90	12.00	0.00	65.91	3.06
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

R2SC2-LR																							
Transect		T1						T2						T3									
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND	
C	C21	0.88	16.90	4.06	5.12	0.00	69.83	2.65	0.31	26.16	5.55	10.02	0.00	57.12	0.53	1.06	17.29	6.20	7.83	0.00	66.03	0.28	
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for R3N1-LR last updated September 6, 2014.

Transect		R3N1-LR																				
Functional Group		T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	0.70	9.18	8.59	0.00	0.36	68.22	12.14	0.17	3.70	6.31	0.42	0.85	77.71	10.65	1.12	4.83	6.62	0.00	0.60	71.73	15.11
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

		R3N1-LR																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
C	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C34	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	0.87	10.16	4.85	0.00	0.00	7.29	76.82	1.31	2.56	3.00	0.28	0.50	5.93	86.42	2.26	4.00	3.25	0.00	0.00	5.63	84.87	

⁺: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

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Weekly functional group analysis results for R3NC1-LR last updated September 6, 2014.

Transect		R3NC1-LR																				
Functional Group		T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	0.19	19.26	9.21	0.00	1.56	62.52	6.69	0.21	15.11	8.01	0.00	0.19	65.11	10.80	1.69	14.95	7.54	0.00	1.33	68.52	5.81
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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		R3NC1-LR																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
C	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C34	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	0.00	8.38	4.01	0.00	0.00	63.82	23.79	0.63	7.81	3.33	0.00	0.00	58.39	29.84	0.00	8.43	3.40	0.00	0.00	70.11	18.06

⁺: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for R3S1-CP last updated September 6, 2014.

Transect		R3S1-CP																				
Functional Group		T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	0.00	4.55	2.75	0.00	0.00	56.32	32.30	0.00	5.77	2.03	0.00	0.00	64.55	24.28	0.44	6.07	1.55	0.00	0.00	58.43	22.34
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

		R3S1-CP																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND
C	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C34	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C39	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	

^T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

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FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for R3S2-LR last updated September 6, 2014.

Transect		R3S2-LR																											
Functional Group		T1				T2				T3																			
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND							
Week Number †	B4	1.03	12.40	3.99	0.00	0.63	75.56	3.99	0.42	13.79	1.99	0.17	1.45	76.27	1.84	0.41	13.09	4.03	1.09	0.00	79.80	0.70							
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			

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Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

		R3S2-LR																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND
C	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C34	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C39	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	

^T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

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FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for R3S3-SG last updated September 6, 2014.

Transect		R3S3-SG																				
Functional Group		T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	1.21	4.89	4.19	0.21	0.00	88.76	0.54	1.66	18.44	3.53	0.17	0.00	75.37	0.28	1.41	13.90	1.57	0.47	0.64	80.93	1.08
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

		R3S3-SG																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOALGAE	CORALLINE, TURF, BARE	SAND
C	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C34	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C39	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	

^T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for R3SC1-CP last updated September 6, 2014.

Transect		R3SC1-CP																				
Functional Group		T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	0.21	10.48	4.56	0.42	0.00	69.82	6.66	0.94	4.10	4.37	0.00	0.00	73.16	13.05	0.38	7.76	5.34	0.00	0.00	59.61	13.73
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

		R3SC1-CP																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND
C	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C34	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

^T: Omitted weeks have yet to be analyzed.

^E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

^{N/A}: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

^M: Video camera malfunction prevented data collection and analysis.

^D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

Weekly functional group analysis results for R3SC2-LR last updated September 6, 2014.

Transect		R3SC2-LR																				
Functional Group		T1					T2					T3										
		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROGAE	CORALLINE, TURF, BARE	SAND
Week Number †	B4	1.51	10.77	6.61	0.42	0.00	77.55	2.06	1.06	5.49	9.76	0.54	0.00	81.73	1.00	1.30	14.98	6.98	1.47	0.00	74.84	0.00
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

		R3SC2-LR																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MARCOGAE	CORALLINE, TURF, BARE	SAND
C	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C34	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

^T: Omitted weeks have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

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Weekly functional group analysis results for R3SC3-SG last updated September 6, 2014.

Transect		R3SC3-SG																			
Functional Group		T1					T2					T3									
Week Number †	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
B4	0.65	10.32	12.93	0.00	0.00	74.93	0.00	0.42	7.23	10.88	0.00	0.00	78.70	1.30	0.50	17.21	15.17	0.00	0.00	65.75	0.48
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Weekly Offshore Coral Stress and Sediment Block Compliance Report 40
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 40 08/20/14-08/26/14 Dredge Activity
Appendix A Updated September 6, 2014

		R3SC3-SG																				
Transect		T1						T2						T3								
Functional Group		CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND	CORAL	OCTOCORALS	SPONGES	ZOANTHIDS	MACROALGAE	CORALLINE, TURF, BARE	SAND
C	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C34	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

^T: Omitted weeks have yet to be analyzed.

^E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

^{N/A}: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

^M: Video camera malfunction prevented data collection and analysis.

^D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 41

FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening

Week 41 08/27/14-09/02/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. The dredge Texas and the Spider barge began chopping rock and offloading dredged material to scows for ODMDS and JTSMS disposal on December 17, 2013. Terrapin Island left the job site on December 27, 2013, but the Texas and Spider barge have since continued working offshore. The hopper dredge Liberty Island arrived at the Project site on May 14, 2014 and worked offshore until July 3, 2014. The hopper dredges Terrapin Island and Liberty Island are not expected to return to the Project at this time. Dredging operations in the channel flare (easternmost portion of Cut 1) commenced on August 6 2014. On August 24, 2014, the Texas and Spider barge moved inshore for repairs. On August 26 2014 the Texas and Spider barge began dredging again in Cut 2.

During Compliance Week 41 (August 27 to September 2, 2014), the cutterhead Texas dredged in Cut 2 from STA 30+97 to 6+91 and STA 40+32, while the Spider Barge loaded scows in Cut 2 from STA 15+97 to 25+32. Biological monitoring was required for sites within 750 m of an active dredge and included all hardbottom sites (Figure 1). Biological monitoring was conducted twice at all sites within 750m of dredging activity, with the exception of HBN2, HBS1, and HBS2 which could not be safely monitored during one or both visits due to the proximity of the dredge Texas, reduced visibility, and/or strong currents. Adverse environmental conditions (e.g., severe thunderstorms, excessive wind speeds, wave heights, and/or low visibility) during Week 41 of compliance monitoring made conditions unsafe for offshore dive operations during 2/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind, wave, and traffic conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral condition surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral condition, video transect and sediment block survey methods.

Weekly Scleractinian Condition Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)):

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:

Weekly Offshore Coral Stress and Sediment Block Compliance Report 41

FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening

Week 41 08/27/14-09/02/14 Dredge Activity

- 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
- 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a "0" (normal or non-stressed) or "1" (stressed), and photographed. If a "1" is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Statistical comparisons for all condition data are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a "1" during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended on 100% of polyps on the colony.
Mucus	Sediment stress	Excessive mucus production results in a mucus film and/or sediment balled up in mucus.
Paling	Stress/Elevated Irradiance/Temperature	Live tissue with some loss of color.
Partial Bleaching	Stress/Elevated Irradiance/Temperature	Patches of fully bleached or white tissue.
Bleaching	Stress/Elevated Irradiance/Temperature	Live tissue with complete loss of color across the entire colony.
Black Band Disease	Stress	Black band surrounds dead patch.
White Band Disease	Stress	White lines or bands of recently dead coral tissue found in species of the genus <i>Acropora</i> .
White Plague Disease	Stress	White lines or bands of recently dead coral tissue affecting non- <i>Acroporid</i> corals.
Yellow Band	Stress	Yellow band surrounds dead patch.
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 41

FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening

Week 41 08/27/14-09/02/14 Dredge Activity

Condition	Cause	Appearance
Unknown <i>Solenastrea</i> Disease	Stress	Patchy discoloration of living tissue resulting in a mottled bleached appearance. Only noted for <i>Solenastrea</i> spp.
Unknown Condition	Stress	Discoloration of living tissue from an unknown cause. Not related to known bleaching or disease indicators.
<i>Cliona delitrix</i>	Competition	Red boring sponge present on colony. Typically accompanied by tissue mortality radiating outward from the point of sponge emergence.
Physical Disturbance	Abrasion	Abrasion or physical disturbance such as a gauge or a nick, not in a discernable pattern like fish bites.
Sediment Accumulation	Sedimentation	Moderate sediment accumulation on top of colony (more than dusting). Accumulation in grooves and/or between polyps.
Partial Burial	Sedimentation	Portion(s) of the colony buried by sediment.
Burial	Sedimentation	Entire colony buried by sediment.
Recent Partial Mortality	Sedimentation	Partial mortality of coral colony appears white with no live polyps visible. Generally, occurs around the margin of the colony. Visible when sediment recedes.
Unknown Partial Mortality	Stress	Tissue mortality from an unknown cause.
Competitive Mortality	Competition	Recent partial mortality from a competition event. Typically the result of sponge or zoanthid overgrowth.
Complete Mortality	Any	Death of the entire colony; no live tissue remaining on the skeleton.

Sediment Stress

Sedimentation stress data are qualitative estimations of sediment related stress that are observed on permanently marked hard corals. *In situ* data on sediment stress and other conditions are assigned in the field during data collection. QA/QC is conducted on photos for all coral conditions in the laboratory. Data are entered into an Excel spreadsheet for analysis each week. Sediment dusting (SED) is not considered a “stress” indicator and is given a score of zero. SED is a low amount, a “dusting”, of sediment ontop of the coral. Sediment accumulation (SA), is an accumulation of sediment ontop of the coral, between polyps, or within grooves and is qualitatively more than a dusting of sediment. Partial burial (PBUR) is the accumulation of sediment around the base of the coral, sometimes in the form of a berm, and burial (BUR) is the complete burial of the coral colony by sediment. SA, PBUR, and BUR are given scores of a “1”. A single coral may exhibit one or more conditions, including one or more sediment stress codes. For example, a coral may have sediment accumulation (SA) and partial burial (PBUR). The score for such a coral would be a “1”, code data are collected for all applicable conditions. Sediment stress data are reported in Table 3.

Weekly Functional Group Percent Cover Analysis

Functional groups in the vicinity of the project area (hardbottom, middle, and outer reef) include typical sub-tropical hardbottom and reef environment sessile invertebrates, including octocorals,

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sponges and hard corals among others. Of these biological constituents, the most abundant and highest in percent cover are the octocorals, which range in cover from 1-15% (Gilliam et al. 2007, Dial Cordy 2010 and 2012). Sponges range from 1-6% cover, while hard corals including *Millepora* range from 0.2 to 4.6% (Dial Cordy et al. 2010 and 2012). Since octocorals dominate the benthic habitat across habitat types, octocorals are used as the proxy indicator group because they are most abundant non-algal benthic component. Percent cover calculations are compared between monitoring events and among transects and sites.

Functional group analysis is conducted for available video transect data, which are collected as part of the weekly compliance monitoring and is used to satisfy FDEP permit Special Condition 32.(a).(ii).d:

Any change of 5% or more in cover by any functional group evaluated in quadrats in two or more adjacent transects, or on average for the zone of monitoring on one side of the channel, or stress expressed above normal by corals and/or octocorals within transects (stress scale used for Broward County Segment III project) will require an additional survey to outline the area(s) of impact. Impacted areas shall continue to be monitored monthly during the construction, one month post-construction, and two times during next year in order to document results of the impact. Final monitoring results shall document permanent impacts, if any, to be used for estimates of additional mitigation using UMAM.

Quantitative digital video data are collected along each transect with the camera positioned 40cm above the substrate, recording a plan-view of the benthic resources (Aronson et al. 1994). The video camera is equipped with a measuring device to ensure the camera remains at 40-cm above the bottom and a scale bar is visible at the bottom of the camera screen at all times with the site information in the lower right hand corner. The camera records video transect data at a speed of ~5 m per minute to insure quality still images may be extracted for analysis. These data are collected each time a site is surveyed, however analysis is only conducted for a single monitoring survey within a given compliance week. Analysis is conducted for a total of 24m² per site (0.4m x 20m x 3 transects).

Transect video footage is broken down into 40 non-overlapping still images (repetitive quadrats) using GOM Video Player™. Stills are analyzed for selected functional groups (octocorals, sponge, hard corals, zoanthids, macroalgae, CTB (crustose, turf, and bare substrate) using randomly overlaid points in CPCe® software. Percent cover for selected functional groups, and sand are compared over time and presented in Appendix A.

Although no comparison between channel-side and reference sites are required by the FDEP permit, reference site data may be used as a general point of comparison to describe regional trends. Weekly video data collected at reference sites are analyzed when corresponding channel-side site data have been collected. If no video data were collected at a channel-side site in a given week, the corresponding reference site data will not be analyzed and are designated with "N/A" (Appendix A).

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side)

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in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design used in the Broward County Shore Protection Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibial growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

Results

Scleractinian Condition

Biological monitoring was conducted twice at all sites within 750m of dredging activity, with the exception of HBS1, which could only be monitored once, and HBS2 and HBN2, which could not be monitored at all (see Background section). Coral condition data for reference sites (e.g., R2SC1) and channel-side sites (e.g., R2S1) were compared using a two-sampled t-test ($p \leq 0.05$). Stress levels at the two harbottom reference sites ranged from 0.83 ± 0.39 (HBNC1) to 0.92 ± 0.29 (HBNC1) whereas stress levels at channel-side sites ranged from 0.72 ± 0.46

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(HBS1) to 1.00 ± 0.0 (HBS4 and HBN3; Table 2).

Coral condition values continue to be elevated across both channel-side and reference sites (Table 2), due to an increase in paling and bleaching of corals in the region. Seasonally warm water temperatures and elevated levels of irradiance are known to induce paling and/or bleaching (stress) in corals (e.g., Baker et al. 2008).

In Week 41 of compliance monitoring, only one site exhibited significantly higher stress levels than its' respective control (HBS4). At HBS1, stress levels were significantly lower when compared to HBSC1 during the first survey. Although 100% of corals exhibited one or more stress indicators at HBN3, coral stress indicators (including sediment stress) are similarly high at HBNC1. South of the channel however, increased stress levels at HBSC1 were predominantly attributed to bleaching and paling, whereas increased stress levels at channel-side sites were predominantly attributed to sediment stress. The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was also present in permanently marked corals at HBS3, HBN3, and HBNC1. Cyanobacterial mats were present at all surveyed sites, except HBNC1 and HBS1. In Week 41 cyanobacterial mats were not affecting resources (octocorals, hard corals, or sponges).

Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 41. Permanently marked scleractinians at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators. See Table 1 for a complete list of stress indicators.

Survey Zone	Area	Site	Scleractinian Condition					
			First Survey			Second Survey		
			Mean	SD	N	Mean	SD	N
Hardbottom	South	HBS1	0.72*	0.46	18	D	D	D
		HBS2	D	D	D	D	D	D
		HBS3	0.93	0.27	27	0.79	0.42	28
		HBS4	0.92	0.28	24	1.00*	0.00	24
		HBSC1	0.87	0.35	30	0.90	0.31	30
	North	HBN2	D	D	D	D	D	D
		HBN3	1.00	0.00	26	1.00	0.00	25
		HBNC1	0.83	0.39	12	0.92	0.29	12
Middle Reef	South	R2S1	N/A	N/A	N/A	N/A	N/A	N/A
		R2SC1	N/A	N/A	N/A	N/A	N/A	N/A
		R2S2	N/A	N/A	N/A	N/A	N/A	N/A
		R2SC2	N/A	N/A	N/A	N/A	N/A	N/A
	North	R2N1	N/A	N/A	N/A	N/A	N/A	N/A
		R2NC2	N/A	N/A	N/A	N/A	N/A	N/A
		R2N2	N/A	N/A	N/A	N/A	N/A	N/A
		R2NC1	N/A	N/A	N/A	N/A	N/A	N/A
Outer Reef	South	R3S1	N/A	N/A	N/A	N/A	N/A	N/A
		R3SC1	N/A	N/A	N/A	N/A	N/A	N/A
		R3S2	N/A	N/A	N/A	N/A	N/A	N/A
		R3SC2	N/A	N/A	N/A	N/A	N/A	N/A
		R3S3	N/A	N/A	N/A	N/A	N/A	N/A

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		R3SC3	N/A	N/A	N/A	N/A	N/A	N/A
North	R3N1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R3NC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

N/A: Site not within 750m of dredging activity.

D: Proximity of dredge to the site prevented monitoring due to safety.

*****: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test.

Sediment Stress

Sedimentation stress including sediment accumulation (SA), partial burial (PBUR) and burial (BUR) were higher at channel-side sites v. reference sites (Table 3). Overall, the proportion of permanently marked corals exhibiting sediment accumulation was much lower at reference sites when compared to channel-side sites. As much as 42% of permanently marked corals were documented by scientific divers as being partially buried by sediment at reference sites, whereas 32 to 84% of corals were partially buried by sediment at channel-side sites. Complete burial was noted at HBS4 (4%; Table 3) with no burial documented at reference sites. At harbotttom reference sites, partial mortality due to sediment stress occurred in as many as 8% of permanently marked corals, whereas channel-side sites had as many as 44% of corals exhibiting recent partial mortality of the colony following the recession of sediment.

Table 3: Proportions of sediment stress indicators as measured in Week 41 of compliance monitoring. Permanently marked scleractinians at channel and reference sites were assigned a “0” “1” depending on the presence/absence of sediment stress indicators. Corals with sediment dusting (SED) or no sediment accumulation were assigned a “0”, while corals exhibiting sediment accumulation (SA), partial burial (PBUR), and/or burial (BUR) were assigned a “1”.

Survey Zone	Area	Site	Proportion of Sediment Stress									
			First Survey					Second Survey				
			SED	SA	PBUR	BUR	N	SED	SA	PBUR	BUR	N
Hard-bottom	South	HBS1	0.11	0.33	0.33	0.00	18	D	D	D	D	D
		HBS2	D	D	D	D	D	D	D	D	D	D
		HBS3	0.00	0.44	0.59	0.00	27	0.14	0.14	0.32	0.00	27
		HBS4	0.00	0.17	0.42	0.04	24	0.00	0.00	0.79	0.00	24
		HBSC1	0.00	0.07	0.03	0.00	30	0.10	0.03	0.03	0.00	30
	North	HBN2	D	D	D	D	D	D	D	D	D	D
		HBN3	0.00	0.41	0.44	0.00	26	0.00	0.68	0.84	0.00	26
Middle Reef	South	HBNC1	0.00	0.17	0.50	0.00	12	0.08	0.25	0.42	0.00	12
		R2S1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R2SC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R2S2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	North	R2SC2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R2N1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R2NC2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R2N2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R2NC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Outer	South	R3S1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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Survey Zone	Area	Site	Proportion of Sediment Stress									
			First Survey					Second Survey				
			SED	SA	PBUR	BUR	N	SED	SA	PBUR	BUR	N
Reef	R3	R3SC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R3S2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R3SC2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R3S3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R3SC3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	North	R3N1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R3NC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N: Number of corals sampled to calculate the mean.

N/A: No data.

D: Proximity of dredge to the site prevented monitoring due to safety.

Weekly Functional Group Percent Cover Analysis

Functional group percent cover analysis is conducted on video transect data collected during the weekly monitoring surveys. Results are presented the tables included in Appendix A. The tables are revised as data are analyzed.

Sediment Block Survey

Less than one mm of sediment accumulated on sediment blocks at the remaining compliance monitoring sites in Week 41 (Table 4).

Table 4: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 41. All measurements are in mm. N represents the number of sediment blocks surveyed. N/A designated sites that were not surveyed in the current week and D represents sites that could not be surveyed due to the proximity of dredging equipment to the site.

Survey Zone	Area	Site	Quanitative Sedimentation (mm)	N
Hardbottom	South	HBS1	0	1
		HBS2	D	D
		HBS3	<1	1
		HBS4	<1	1
		HBSC1	<1	1
	North	HBN2	D	D
		HBN3	<1	1
		HBNC1	<1	1
Middle Reef	South	R2S1	N/A	N/A
		R2SC1	N/A	N/A
		R2S2	N/A	N/A
		R2SC2	N/A	N/A
	North	R2N1	N/A	N/A
		R2NC2	N/A	N/A
		R2N2	N/A	N/A
		R2NC1	N/A	N/A
Outer Reef	South	R3S1	N/A	N/A

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Survey Zone	Area	Site	Quanitative Sedimentation (mm)	N
		R3SC1	N/A	N/A
		R3S2	N/A	N/A
		R3SC2	N/A	N/A
		R3S3	N/A	N/A
		R3SC3	N/A	N/A
	North	R3N1	N/A	N/A
		R3NC1	N/A	N/A

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 5). The first sample collected for each site represents the baseline sedimentation values for a site. The sample period may exceed 28 days if adverse environmental conditions and time constraints prevented visitation to a site (e.g., HBNC1 Sample 2). In some instances when dredging operations were not ongoing within 750m of a site, sediment sampling was suspended, therefore no sediment accumulation results are presented for such time periods and are designated in the results by "N/A". Further, outer reef baseline and second month samples were collected, but once plans were finalized for dredge to not be near the outer reef sites until later in the project, sediment sampling efforts were shifted to sites within 750m of dredging activity.

Table 5: Sediment accumulation data collected from sediment traps since October 2013. Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in grams per day. N/A designates weeks in which no data were collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit. E designates time periods in which sampling was not possible due to adverse environmental conditions.

	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
HBNC1-CR								
Sample Start Date	10/21/2013							
Sample End Date	11/18/2013							
Grain size > #230 Sieve (g/day)	6.98							
Grain Size < # 230 Sieve (g/day)	0.87							
HBN2-CR	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	3/5/2014	4/4/2014	5/3/2014	5/29/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	4/2/2014	5/3/2014	5/29/2014	6/25/2014
Grain size > #230 Sieve (g/day)	2.51	3.65	1.87	1.15	4.91	2.74	2.14	0.75
Grain Size < # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.70	0.48	0.25	0.32
HBN3-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	3/6/2014	4/3/2014	5/3/2014	5/28/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	4/3/2014	5/3/2014	5/28/2014	6/25/2014
Grain size > #230 Sieve (g/day)	4.13	3.38	3.23	1.83	3.28	1.2	3.02	1.04
HBN3-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	3/6/2014	4/3/2014	5/3/2014	5/28/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	4/3/2014	5/3/2014	5/28/2014	6/25/2014
Grain size > # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	1.01	0.54	0.25	0.57
HBNC1-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/15/2013	11/12/2013	1/13/2014	1/13/2014	3/6/2014	4/2/2014	5/3/2014	5/29/2014
Sample End Date	11/12/2013	1/13/2014	2/7/2014	4/2/2014	5/3/2014	5/29/2014	6/25/2014	
Grain size > #230 Sieve (g/day)	0.37	0.40		0.02	0.08	0.02	0.09	0.03
Grain Size < # 230 Sieve (g/day)	0.76	0.99		0.16	1.09	0.19	0.04	0.25
HBS1-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	3/7/2014	4/4/2014	5/3/2014	5/29/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014	6/26/2014
Grain size > #230 Sieve (g/day)	0.67	2.42	1.21	0.95	0.77	0.44	2.32	0.39
Grain Size < # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.74	0.26	0.21	0.23
HBS2-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	3/7/2014	4/4/2014	5/3/2014	5/30/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014	6/26/2014

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Grain size > #230 Sieve (g/day)	0.76	3.18	2.05	0.84	1.66	0.54	1.63	0.16
Grain Size < # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.50	0.32	0.42	0.32
HBS3-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014	5/28/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	4/2/2014	4/30/2014	5/28/2014	6/26/2014
Grain size > #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.43	0.26	0.41	0.31
Grain Size < # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.72	0.36	0.36	0.50
HBS4-CR	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014	5/28/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	4/2/2014	4/30/2014	5/28/2014	6/26/2014
Grain size > #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.61	0.33	1.15	0.23
Grain Size < # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	1.09	0.50	0.27	0.59
HBSC1-CP	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	3/6/2014	4/2/2014	4/30/2014	5/28/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	4/2/2014	4/30/2014	5/28/2014	6/25/2014
Grain size > #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.03	0.01	0.04	0.01
Grain Size < # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.32	0.08	0.02	0.12
R2N1-RR	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	
Sample Start Date	10/23/2013	11/18/2013	1/18/2014	2/17/2014	3/20/2014	4/16/2014	5/24/2014	
Sample End Date	11/18/2013	1/18/2014	2/17/2014	3/20/2014	4/16/2014	5/24/2014	6/22/2014	
Grain size > #230 Sieve (g/day)	1.81	2.01	0.61	0.59	1.13	0.82	0.46	
Grain Size < # 230 Sieve (g/day)	0.58	0.96	0.55	0.40	0.58	0.79	1.48	
R2N2-LR	E	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	E	11/20/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Sample End Date	E	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014	6/22/2014
Grain size > #230 Sieve (g/day)	E	1.77	1.73	0.19	0.43	0.01	0.33	0.35
Grain Size < # 230 Sieve (g/day)	E	0.71	0.85	0.32	0.39	0.14	0.74	0.90
R2NC1-LR	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	
Sample Start Date	10/27/2013	11/20/2013	1/18/2014	2/16/2014	3/20/2014	4/16/2014	5/24/2014	
Sample End Date	11/24/2013	1/18/2014	2/16/2014	3/20/2014	4/16/2014	5/24/2014	6/22/2014	
Grain size > #230 Sieve (g/day)	2.74	0.47	0.01	0.01	0.06	0.06	0.03	
Grain Size < # 230 Sieve (g/day)	0.59	0.37	0.03	0.00	0.10	0.23	0.06	
R2NC2-RR	E	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 5
Sample Start Date	E	11/19/2013	2/16/2014	3/20/2014	4/16/2014	5/24/2014		
Sample End Date	E	2/16/2014	3/20/2014	4/16/2014	5/24/2014	6/22/2014		
Grain size > #230 Sieve (g/day)	E	0.07	0.00	0.00	0.01	0.01	0.01	
Grain Size < # 230 Sieve (g/day)	E	0.22	0.00	0.06	0.06	0.13	0.06	
R2S1-RR	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	
Sample Start Date	10/18/2013	11/18/2013	1/15/2014	2/16/2014	3/19/2014	4/16/2014	5/24/2014	
Sample End Date	11/18/2013	1/15/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014	6/26/2014	
Grain size > #230 Sieve (g/day)	0.51	0.87	0.22	0.22	0.50	0.47	0.00	
Grain Size < # 230 Sieve (g/day)	0.52	0.93	0.35	0.33	0.52	0.78	0.06	
R2S2-LR	E	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	E	11/21/2013	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014
Sample End Date	E	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014	6/22/2014
Grain size > #230 Sieve (g/day)	E	0.49	0.51	0.17	0.18	0.29	0.26	0.15
Grain Size < # 230 Sieve (g/day)	E	0.49	0.6	0.26	0.20	0.39	0.59	0.65
R2SC1-RR	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	
Sample Start Date	10/19/2013	11/18/2013	1/15/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014	
Sample End Date	11/18/2013	1/15/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014	6/22/2014	
Grain size > #230 Sieve (g/day)	0.62	0.57	0.02	0.02	0.02	0.13	0.03	
Grain Size < # 230 Sieve (g/day)	0.42	0.72	0.13	0.12	0.10	0.51	0.19	
R2SC2-LR	E	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	E	11/21/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014
Sample End Date	E	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014	6/22/2014
Grain size > #230 Sieve (g/day)	E	0.80	0.46	0.03	0.04	0.18	0.21	0.04
Grain Size < # 230 Sieve (g/day)	E	0.61	0.41	0.12	0.15	0.34	0.47	0.17
R3N1-LR	N/A	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 4
Sample Start Date	N/A	12/4/2013	12/30/2013	2/16/2014	N/A	N/A		6/5/2014
Sample End Date	N/A	12/30/2013	2/16/2014	3/19/2014	N/A	N/A		7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.09	0.17	0.03	N/A	N/A		0.18
Grain Size < # 230 Sieve (g/day)	N/A	0.08	0.16	0.00	N/A	N/A		0.11
R3NC1-LR	N/A	Baseline	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 3
Sample Start Date	N/A	12/5/2013	2/16/2014	N/A	N/A	N/A		6/5/2014
Sample End Date	N/A	2/16/2014	3/20/2014	N/A	N/A	N/A		7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.05	0.01	N/A	N/A	N/A		0.01
Grain Size < # 230 Sieve (g/day)	N/A	0.07	0.00	N/A	N/A	N/A		0.03
R3S1-CP	N/A	Baseline	Sample 2	Sample 3	N/A	N/A		Sample 4
Sample Start Date	N/A	12/3/2013	12/30/2013	2/16/2014	N/A	N/A		6/5/2014
Sample End Date	N/A	12/30/2013	2/16/2014	3/19/2014	N/A	N/A		7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.06	0.13	0.02	N/A	N/A		0.20
Grain Size < # 230 Sieve (g/day)	N/A	0.10	0.20	0.00	N/A	N/A		0.10
R3S2-LR	N/A	Baseline	Sample 2	Sample 3	N/A	N/A		Sample 4
Sample Start Date	N/A	12/3/2013	12/30/2013	2/16/2014	N/A	N/A		6/5/2014
Sample End Date	N/A	12/30/2013	2/16/2014	3/19/2014	N/A	N/A		7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.04	0.15	0.01	N/A	N/A		0.14
Grain Size < # 230 Sieve (g/day)	N/A	0.09	0.14	0.00	N/A	N/A		0.09
R3S3-SG	N/A	Baseline	Sample 2	Sample 3	N/A	N/A		Sample 4

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Sample Start Date	N/A	12/3/2013	12/30/2013	2/16/2014	N/A	6/5/2014
Sample End Date	N/A	12/30/2013	2/16/2014	3/19/2014	N/A	7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.04	0.13	0.02	N/A	0.13
Grain Size < # 230 Sieve (g/day)	N/A	0.07	0.13	0.00	N/A	0.08
R3SC1-CP	N/A		Baseline	Sample 2	N/A	Sample 3
Sample Start Date	N/A	12/5/2013		2/17/2014	N/A	6/5/2014
Sample End Date	N/A	2/17/2014		3/19/2014	N/A	7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.08	0.00	N/A	0.01	
Grain Size < # 230 Sieve (g/day)	N/A	0.17	0.00	N/A	0.03	
R3SC2-LR	N/A		Baseline	Sample 2	N/A	Sample 3
Sample Start Date	N/A	12/4/2013		2/17/2014	N/A	6/5/2014
Sample End Date	N/A	2/17/2014		3/19/2014	N/A	7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.05	0.10	N/A	0.01	
Grain Size < # 230 Sieve (g/day)	N/A	0.07	0.00	N/A	0.03	
R3SC3-SG	N/A		Baseline	Sample 2	N/A	Sample 3
Sample Start Date	N/A	12/4/2014		2/17/2014	N/A	6/5/2014
Sample End Date	N/A	2/17/2014		3/19/2014	N/A	7/3/2014
Grain size > #230 Sieve (g/day)	N/A	0.08	0.10	N/A	0.01	
Grain Size < # 230 Sieve (g/day)	N/A	0.11	0.00	N/A	0.03	

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from of 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.
8. Liberty Island dredging with no overflow as of 6/19/14. Liberty Island departed the project site on July 3, 2014, and is not expected to return to service on this project in the foreseeable future.
9. An additional tug and scow were added to the scow package to allow the Spider Barge to load scows with minimal to no overflow to help reduce possible sedimentation and turbidity as of Compliance Week 39.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.

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Week 34 07/02/14-07/08/14 Dredge Activity

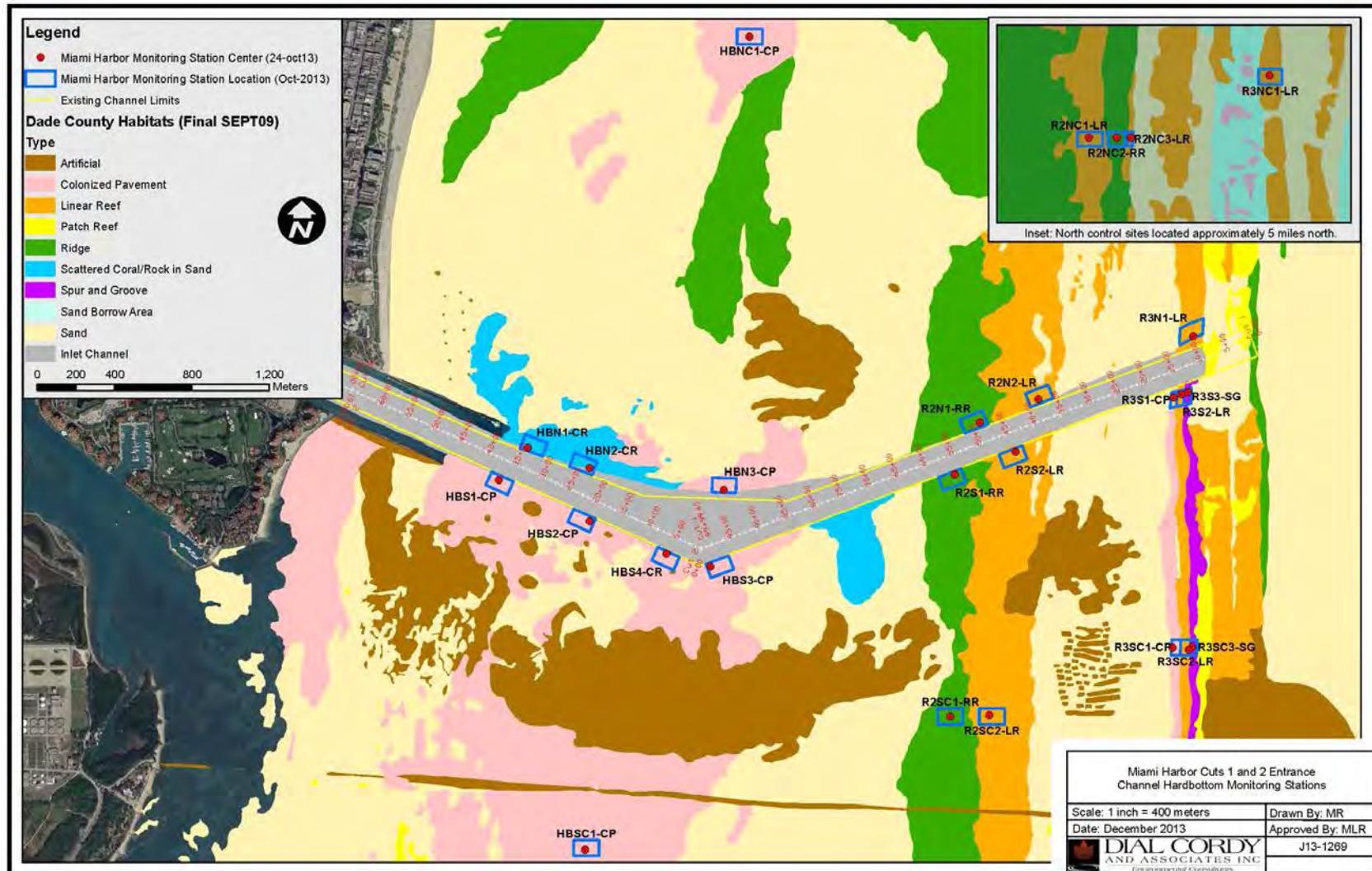


Figure 1: Miami Harbor Cuts 1 and 2 Entrance Channel hardbottom, middle, and outer reef monitoring stations.

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Week 42 09/03/14-09/09/14 Dredge Activity

Background

The hopper dredge Terrapin Island began dredging on November 20, 2013 adjacent to hardbottom monitoring sites. The dredge Texas and the Spider barge began chopping rock and offloading dredged material to scows for ODMDS and JTSMS disposal on December 17, 2013. Terrapin Island left the job site on December 27, 2013, but the Texas and Spider barge have since continued working offshore. The hopper dredge Liberty Island arrived at the Project site on May 14, 2014 and worked offshore until July 3, 2014. The hopper dredges Terrapin Island and Liberty Island are not expected to return to the Project at this time. Dredging operations in the channel flare (easternmost portion of Cut 1) commenced on August 6, 2014. On August 24, 2014, the Texas and Spider barge moved inshore for repairs. On August 26, 2014 the Texas and Spider barge began dredging again in Cut 2.

During Week 42 of compliance monitoring (September 3 to September 9, 2014), the cutterhead Texas dredged in Cut 2 from STA 33+55 to 49+00, while the Spider Barge loaded scows in Cut 2 from STA 18+55 to 34+00. Biological monitoring was required for sites within 750 m of an active dredge and included all hardbottom sites (Figure 1). Biological monitoring was conducted once at all sites within 750m of dredging activity, with the exception of HBN2. Only HBS1, HBS3, and HBSC1 could be monitored a second time due to reduced visibility at all other sites. Adverse environmental conditions (e.g., severe thunderstorms, excessive wind speeds, wave heights, and/or low visibility) during Week 42 of compliance monitoring made conditions unsafe for offshore dive operations during 3/7 days. Safe diving conditions are described in EM-385 (EM-385 is the safety regulation document that guides all USACE scientific diving operations) as current <1 knot and visibility >3 feet; additionally best professional judgment of wind, wave, and traffic conditions is used to determine whether or not scientific dive operations may be conducted safely.

During the 4 week baseline survey period (October 17 to November 18, 2013), a natural sand transport event was documented on the north side of the channel, close to the north jetty. A sand wave moved from north to south following the general movement of the regional longshore drift in the vicinity of HBN1. At HBN1 all marked corals documented in Weeks 1 and 2 were buried by Week 3 of baseline, as documented in photos and video collected at the site on November 1, 2013. Photos from HBN2 and HBN3 show turbid water and sedimentation during baseline surveys, although no corals were buried at these sites, it was apparent that natural sand transport influences the sediment dynamics of the nearshore hardbottom communities.

Methods

Coral condition surveys and sediment block surveys are conducted during dredging at sites within 750m of an active dredge. The following methods describe the coral condition, video transect and sediment block survey methods.

Weekly Scleractinian Condition Surveys

Comparisons of reference (control) sites and channel-side (compliance) sites were made to satisfy FDEP permit conditions required of the Contractor during dredging operations. The following language from the FDEP permit describes the method for construction period surveys for coral health (SC 32.(a).(i)):

- A) Construction surveys shall be conducted at each transect within each monitoring station by qualified biologists and involve:

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- 1) Evaluating benthic organisms (scleractinian corals, octocorals, sponges, etc.) for standing sediment that is not removed by normal currents or wave action;
- 2) Evaluating scleractinian corals along each transect for additional indications of sedimentation stress such as excessive mucus, extruded polyps, and color changes (bleaching or paling). All scleractinian corals on each transect will be assessed for each of the health parameters and assigned a health level of "0" or "1" for each parameter (A score of "0" would indicate no observed bleaching, excess mucus production, polyp extension, or disease, while a "1" would be indicated for each observed parameter – please see example below). These data will be collected for each project area transect and each control area transect.

Permanently marked (tagged) corals are evaluated by qualified marine biologists during compliance monitoring events for indications of stress and/or standing sediment not moved by normal waves or current action. During underwater surveys (*in situ*), corals are assigned a "0" (normal or non-stressed) or "1" (stressed), and photographed. If a "1" is assigned to a coral, a code or description is recorded on the data sheet. Descriptions of possible conditions and observations are provided in Table 1. Comparisons are made between reference and channel sites for a side (north or south). For example all southern channel-side sites are compared to their reference within the same compliance monitoring week, (e.g. Week 1 HBSC1 v. Week 1 HBS1). Statistical comparisons for all condition data are presented in Table 2.

Table 1: Possible conditions for permanently marked scleractinians receiving a "1" during *in situ* surveys.

Condition	Cause	Appearance
Polyp Extension	Stress and feeding	Tentacles are extended on 100% of polyps on the colony.
Mucus	Sediment stress/Lunar cycle	Excessive mucus production results in a mucus film and/or sediment balled up in mucus.
Paling	Stress/Elevated Irradiance/Temperature	Live tissue with some loss of color.
Partial Bleaching	Stress/Elevated Irradiance/Temperature	Patches of fully bleached or white tissue.
Bleaching	Stress/Elevated Irradiance/Temperature	Live tissue with complete loss of color across the entire colony.
Black Band Disease	Stress	Black band surrounds dead patch.
White Band Disease	Stress	White lines or bands of recently dead coral tissue found in species of the genus <i>Acropora</i> .
White Plague Disease	Stress	White lines or bands of recently dead coral tissue affecting non- <i>Acroporid</i> corals.
Yellow Band	Stress	Yellow band surrounds dead patch.
Dark spot	Stress	Dark spots on otherwise normal <i>Siderastrea</i> spp.
Fish bites	Grazing	Bites of live tissue removed.

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Condition	Cause	Appearance
Unknown <i>Solenastrea</i> Disease	Stress	Patchy discoloration of living tissue resulting in a mottled bleached appearance. Only noted for <i>Solenastrea</i> spp.
Unknown Condition	Stress	Discoloration of living tissue from an unknown cause. Not related to known bleaching or disease indicators.
<i>Cliona delitrix</i>	Competition	Red boring sponge present on colony. Typically accompanied by tissue mortality radiating outward from the point of sponge emergence.
Physical Disturbance	Abrasion	Abrasion or physical disturbance such as a gouge or a nick, not in a discernable pattern like fish bites.
Sediment Accumulation	Sedimentation	Moderate sediment accumulation on top of colony (more than dusting). Accumulation in grooves and/or between polyps.
Partial Burial	Sedimentation	Portion(s) of the colony buried by sediment.
Burial	Sedimentation	Entire colony buried by sediment.
Recent Partial Mortality	Sedimentation	Partial mortality of coral colony appears white with no live polyps visible. Generally, occurs around the margin of the colony. Visible when sediment recedes.
Unknown Partial Mortality	Stress	Tissue mortality from an unknown cause.
Competitive Mortality	Competition	Recent partial mortality from a competition event. Typically the result of sponge or zoanthid overgrowth.
Complete Mortality	Any	Death of the entire colony; no live tissue remaining on the skeleton.

Sediment Stress

Sedimentation stress data are qualitative estimations of sediment related stress that are observed on permanently marked hard corals. *In situ* data on sediment stress and other conditions are assigned in the field during data collection. QA/QC is conducted on photos for all coral conditions in the laboratory. Data are entered into an Excel spreadsheet for analysis each week. Sediment dusting (SED) is not considered a “stress” indicator and is given a score of zero. SED is a low amount, a “dusting”, of sediment ontop of the coral. Sediment accumulation (SA), is an accumulation of sediment ontop of the coral, between polyps, or within grooves and is qualitatively more than a dusting of sediment. Partial burial (PBUR) is the accumulation of sediment around the base of the coral, sometimes in the form of a berm, and burial (BUR) is the complete burial of the coral colony by sediment. SA, PBUR, and BUR are given scores of a “1”. A single coral may exhibit one or more conditions, including one or more sediment stress codes. For example, a coral may have sediment accumulation (SA) and partial burial (PBUR). The score for such a coral would be a “1”, code data are collected for all applicable conditions. Sediment stress data are reported in Table 3.

Weekly Functional Group Percent Cover Analysis

Functional groups in the vicinity of the project area (hardbottom, middle, and outer reef) include typical sub-tropical hardbottom and reef environment sessile invertebrates, including octocorals,

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sponges and hard corals among others. Of these biological constituents, the most abundant and highest in percent cover are the octocorals, which range in cover from 1-15% (Gilliam et al. 2007, Dial Cordy 2010 and 2012). Sponges range from 1-6% cover, while hard corals including *Millepora* range from 0.2 to 4.6% (Dial Cordy et al. 2010 and 2012). Since octocorals dominate the benthic habitat across habitat types, octocorals are used as the proxy indicator group because they are most abundant non-algal benthic component. Percent cover calculations are compared between monitoring events and among transects and sites.

Functional group analysis is conducted for available video transect data, which are collected as part of the weekly compliance monitoring and is used to satisfy FDEP permit Special Condition 32.(a).(ii).d:

Any change of 5% or more in cover by any functional group evaluated in quadrats in two or more adjacent transects, or on average for the zone of monitoring on one side of the channel, or stress expressed above normal by corals and/or octocorals within transects (stress scale used for Broward County Segment III project) will require an additional survey to outline the area(s) of impact. Impacted areas shall continue to be monitored monthly during the construction, one month post-construction, and two times during next year in order to document results of the impact. Final monitoring results shall document permanent impacts, if any, to be used for estimates of additional mitigation using UMAM.

Quantitative digital video data are collected along each transect with the camera positioned 40cm above the substrate, recording a plan-view of the benthic resources (Aronson et al. 1994). The video camera is equipped with a measuring device to ensure the camera remains at 40-cm above the bottom and a scale bar is visible at the bottom of the camera screen at all times with the site information in the lower right hand corner. The camera records video transect data at a speed of ~5 m per minute to insure quality still images may be extracted for analysis. These data are collected each time a site is surveyed, however analysis is only conducted for a single monitoring survey within a given compliance week. Analysis is conducted for a total of 24m² per site (0.4m x 20m x 3 transects).

Transect video footage is broken down into 40 non-overlapping still images (repetitive quadrats) using GOM Video Player™. Stills are analyzed for selected functional groups (octocorals, sponge, hard corals, zoanthids, macroalgae, CTB (crustose, turf, and bare substrate) using randomly overlaid points in CPCe® software. Percent cover for selected functional groups, and sand are compared over time and presented in Appendix A.

Although no comparison between channel-side and reference sites are required by the FDEP permit, reference site data may be used as a general point of comparison to describe regional trends. Weekly video data collected at reference sites are analyzed when corresponding channel-side site data have been collected. If no video data were collected at a channel-side site in a given week, the corresponding reference site data will not be analyzed and are designated with "N/A" (Appendix A).

Weekly Sediment Block Survey

Sediment blocks are positioned at all hardbottom monitoring sites (reference and channel-side)

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in the middle of each site, near Transect 2, as close to the middle of the transect as possible. Observations of sediment accumulation are made weekly as proscribed in the FDEP permit (Specific Condition 32.a.iii.(a)(5)):

Measurements shall be made in the center and at four points approximately 2.5 in. toward the center from each corner of the block, using a millimeter ruler. Sediment accumulation depth measurements shall be recorded from these five positions, and the block shall be swept clear of sediments as the last step before leaving the site. Any observations of fishes or invertebrates impacting the sediment layer on the block also shall be recorded. Following the completion of the dredging project and monitoring program, all sediment accumulation blocks shall be removed from both seagrass areas and hard bottom/reef stations.

Monthly Sediment Accumulation Assessment

Sedimentation traps were positioned at the 10 m mark on all compliance and reference transects. Observations of sediment accumulation are made every 28 days and are oriented as required in the FDEP permit Specific Condition (Specific Condition 32.a.iii.(c)(1-2)):

Sediment Traps:

- 1) Arrays of three sediment traps shall be placed at each of the hardbottom monitoring stations (including controls) to allow the comparison of net sediment accumulation block data with sediment trap data. The sediment traps shall be constructed of 1.0 in. inside diameter x 8 in. length polyvinyl chloride (PVC) pipe and a 500-ml Nalgene collection jar, similar to the design used in the Broward County Shore Protection Project monitoring program. Both trap necks and jars shall be coated with anti-fouling paint to minimize epibial growth. The PVC traps with the attached jar lids shall be fastened to the steel sediment trap frame with hose clamps. The frame shall be drilled and cemented into the bottom at hard bottom stations. Following completion of the monitoring program, all sediment traps, frames, and blocks shall be removed.
- 2) The traps shall be positioned with the mouth of the trap no more than 18 in. above the bottom. Sediment traps shall be changed at 28-day intervals by unscrewing the Nalgene trap jars from the PVC collars and capping the jars. New jars then shall be attached to the trap collars for the next collection interval. Sediment samples shall be transported to the laboratory where the water and sediment shall be filtered through labeled pre-weighed filters. The filters and sediments shall be rinsed with fresh water to remove salts, and the filters containing the sediments then shall be dried in an oven and weighed.

Results

Scleractinian Condition

Biological monitoring was conducted once at most sites within 750m of dredging activity, with the exception of HBN2. Further, secondary surveys for most sites could not be safely conducted due to reduced visibility (see Background section). Coral condition data for reference sites (e.g., HBSC1) and channel-side sites (e.g., HBS1) were compared using a two-sampled t-test ($p \leq 0.05$).

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Stress levels at the two hardbottom reference sites ranged from 0.83 ± 0.39 (HBNC1 and HBSC1) to 1.00 ± 0.00 (HBSC1) whereas stress levels at channel-side sites ranged from 0.79 ± 0.42 (HBS3) to 0.94 ± 0.34 (HBS1; Table 2). No sites exhibited significantly higher stress levels than their respective control. Further, one site (HBS3) exhibited a significantly lower level of stress when compared to HBSC1 during the second survey.

Seasonally warm water temperatures and elevated levels of irradiance are known to induce paling and/or bleaching (stress) in corals (e.g., Baker et al. 2008). Coral condition values continue to be elevated across both channel-side and reference sites (Table 2), due to an increase in paling and bleaching of corals in the region. Although the overall condition of corals channelside were equal to or lower than those found at the reference sites, sediment stress (e.g., SA and PBUR) continues to be higher at channel-side sites, whereas heat stress (e.g., bleaching and paling) is more prevalent at the reference sites (see Sediment Stress section).

The unknown disease affecting colonies of *Solenastrea bournoni*, which was documented during baseline surveys, was also present in permanently marked corals at all sites surveyed in the current week except HBS3 and HBSC1. Cyanobacterial mats were noticeably less prevalent in Week 42 when compared to Week 41 at all hardbottom sites. Of all sites surveyed, HBSC1 still had the highest occurrence of cyanobacteria as documented from photos.

Table 2: Mean scleractinian condition score as measured in Compliance Monitoring Week 42. Permanently marked scleractinians at channel and reference sites were assigned a “1” or “0” depending on the presence/absence of stress indicators. See Table 1 for a complete list of stress indicators.

Survey Zone	Area	Site	Scleractinian Condition					
			First Survey			Second Survey		
			Mean	SD	N	Mean	SD	N
Hardbottom	South	HBS1	0.89	0.32	18	0.94	0.34	18
		HBS2	0.95	0.22	21	E	E	E
		HBS3	0.82	0.39	28	0.79*	0.42	28
		HBS4	0.88	0.34	24	E	E	E
		HBSC1	0.83	0.38	30	1.00	0.00	30
	North	HBN2	E	E	E	E	E	E
		HBN3	0.92	0.27	26	E	E	E
		HBNC1	0.83	0.39	12	E	E	E
Middle Reef	South	R2S1	N/A	N/A	N/A	N/A	N/A	N/A
		R2SC1	N/A	N/A	N/A	N/A	N/A	N/A
		R2S2	N/A	N/A	N/A	N/A	N/A	N/A
		R2SC2	N/A	N/A	N/A	N/A	N/A	N/A
	North	R2N1	N/A	N/A	N/A	N/A	N/A	N/A
		R2NC2	N/A	N/A	N/A	N/A	N/A	N/A
		R2N2	N/A	N/A	N/A	N/A	N/A	N/A
		R2NC1	N/A	N/A	N/A	N/A	N/A	N/A
Outer Reef	South	R3S1	N/A	N/A	N/A	N/A	N/A	N/A
		R3SC1	N/A	N/A	N/A	N/A	N/A	N/A
		R3S2	N/A	N/A	N/A	N/A	N/A	N/A
		R3SC2	N/A	N/A	N/A	N/A	N/A	N/A

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Week 42 09/03/14-09/09/14 Dredge Activity

		R3S3	N/A	N/A	N/A	N/A	N/A	N/A
		R3SC3	N/A	N/A	N/A	N/A	N/A	N/A
	North	R3N1	N/A	N/A	N/A	N/A	N/A	N/A
		R3NC1	N/A	N/A	N/A	N/A	N/A	N/A

N: Number of corals sampled to calculate the mean.

SD: The standard deviation of the mean.

N/A: Site not within 750m of dredging activity.

D: Proximity of dredge to the site prevented monitoring due to safety.

E: Adverse environmental conditions prevented monitoring due to safety.

*****: Denotes a statistically significant difference ($P \leq 0.05$) between the channel-side site and reference site using a two sample t-test.

Sediment Stress

Overall, sedimentation stress indicators (i.e., sediment accumulation (SA), partial burial (PBUR) and burial (BUR)) were higher at channel-side sites v. reference sites (Table 3).

South of the channel, all four sediment stress indicators were found in much lower proportions at the reference site (i.e., HBSC1) than at any southern channelside sites (i.e., HBS1, HBS2, HBS3, HBS4). Sediment accumulation (SA), which is defined as moderate sediment accumulation on top of colony (more than dusting), in grooves, and/or between polyps (see Methods section), was lower at the reference site versus the controls, ranging from 3 to 10% and 4 to 22% respectively. No permanently marked corals were documented by scientific divers as being partially buried by sediment at reference sites, whereas 29 to 62% of corals were partially buried by sediment at channelside sites. Complete burial was noted at HBS2 (5%; Table 3). At the four southern channelside sites, recent partial mortality levels due to partial burial of the coral colony ranged from 11 to 38%. No corals at the southern control exhibited recent partial mortality.

Although both HBN3 and HBNC1 experienced elevated sediment stress levels, HBN3 saw almost twice as much sediment stress when compared to HBNC1. Further, reports of recent partial mortality due to partial burial of the coral colony was nearly double at HBN3 versus HBNC1.

Table 3: Proportions of sediment stress indicators as measured in Week 42 of compliance monitoring. Permanently marked scleractinians at channel and reference sites were assigned a “0” “1” depending on the presence/absence of sediment stress indicators. Corals with sediment dusting (SED) or no sediment accumulation were assigned a “0”, while corals exhibiting sediment accumulation (SA), partial burial (PBUR), and/or burial (BUR) were assigned a “1”.

Survey Zone	Area	Site	Proportion of Sediment Stress									
			First Survey					Second Survey				
			SED	SA	PBUR	BUR	N	SED	SA	PBUR	BUR	N
Hard-bottom	South	HBS1	0.17	0.22	0.56	0.00	18	0.28	0.22	0.44	0.00	18
		HBS2	0.33	0.14	0.62	0.05	21	E	E	E	E	E
		HBS3	0.11	0.14	0.29	0.00	28	0.21	0.04	0.32	0.00	28
		HBS4	0.33	0.17	0.46	0.00	24	E	E	E	E	E
		HBSC1	0.07	0.03	0.00	0.00	30	0.13	0.10	0.00	0.00	30
	North	HBN2	E	E	E	E	E	E	E	E	E	
		HBN3	0.07	0.52	0.63	0.00	26	E	E	E	E	E

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Survey Zone	Area	Site	Proportion of Sediment Stress									
			First Survey					Second Survey				
			SED	SA	PBUR	BUR	N	SED	SA	PBUR	BUR	N
		HBNC1	0.00	0.17	0.50	0.00	12	E	E	E	E	E
Middle Reef	South	R2S1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R2SC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R2S2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R2SC2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	North	R2N1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R2NC2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R2N2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R2NC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Outer Reef	South	R3S1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R3SC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R3S2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R3SC2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R3S3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R3SC3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	North	R3N1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		R3NC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N: Number of corals sampled to calculate the mean.

N/A: No data.

D: Proximity of dredge to the site prevented monitoring due to safety.

E: Adverse environmental conditions prevented monitoring due to safety.

Weekly Functional Group Percent Cover Analysis

Functional group percent cover analysis is conducted on video transect data collected during the weekly monitoring surveys. Results are presented the tables included in Appendix A. The tables are revised as data are analyzed.

Sediment Block Survey

Less than one mm of sediment accumulated on sediment blocks at the compliance monitoring sites in Week 42 (Table 4).

Table 4: Sediment accumulation data collected from sediment blocks during compliance monitoring Week 42. All measurements are in mm. N represents the number of sediment blocks surveyed. N/A designated sites that were not surveyed in the currrent week and D represents sites that could not be surveyed due to the proximity of dredging equipment to the site. E designates sites where sampling was not possible due to adverse environmental conditions.

Survey Zone	Area	Site	Quanitative Sedimentation (mm)	N
Hardbottom	South	HBS1	<1	1
		HBS2	0	1
		HBS3	<1	1
		HBS4	0	1
		HBSC1	<1	1
	North	HBN2	E	E

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Survey Zone	Area	Site	Quanitative Sedimentation (mm)	N
		HBN3	<1	1
		HBNC1	<1	1
Middle Reef	South	R2S1	N/A	N/A
		R2SC1	N/A	N/A
		R2S2	N/A	N/A
		R2SC2	N/A	N/A
	North	R2N1	N/A	N/A
		R2NC2	N/A	N/A
		R2N2	N/A	N/A
		R2NC1	N/A	N/A
Outer Reef	South	R3S1	N/A	N/A
		R3SC1	N/A	N/A
		R3S2	N/A	N/A
		R3SC2	N/A	N/A
		R3S3	N/A	N/A
		R3SC3	N/A	N/A
	North	R3N1	N/A	N/A
		R3NC1	N/A	N/A

Quantitative Sediment Accumulation

Quantitative sediment accumulation collection and laboratory analysis occurs every 28 days as required in the FDEP permit (Specific Condition 32.a.iii.(c)(1-2) and the results are included in this report (Table 5). The first sample collected for each site represents the baseline sedimentation values for a site. The sample period may exceed 28 days if adverse environmental conditions and time constraints prevented visitation to a site (e.g., HBNC1 Sample 2). In some instances when dredging operations were not ongoing within 750m of a site, sediment sampling was suspended, therefore no sediment accumulation results are presented for such time periods and are designated in the results by "N/A". Further, outer reef baseline and second month samples were collected, but once plans were finalized for dredge to not be near the outer reef sites until later in the project, sediment sampling efforts were shifted to sites within 750m of dredging activity.

Table 5: Sediment accumulation data collected from sediment traps since October 2013. Coarse (\geq #230 sieve) and fine (\leq #230 sieve) grain sedimentation rates are presented in grams per day. N/A designates weeks in which no data were collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit. E designates time periods in which sampling was not possible due to adverse environmental conditions.

HBN1-CR	Baseline									
Sample Start Date	10/21/2013									
Sample End Date	11/18/2013									
Grain size > #230 Sieve (g/day)	6.98									
Grain Size < # 230 Sieve (g/day)	0.87									

SITE BURIED IN WEEK 3 OF BASELINE SURVEYS DUE TO NATURAL SAND TRANSPORT. NOT DREDGE RELATED.

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HBN2-CR	Baseline	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/15/2014	3/5/2014	4/4/2014	5/3/2014	5/29/2014	6/25/2014
Sample End Date	11/18/2013	12/18/2013	1/15/2014	2/7/2014	4/2/2014	5/3/2014	5/29/2014	6/25/2014	7/22/2014
Grain size > #230 Sieve (g/day)	2.51	3.65	1.87	1.15	4.91	2.74	2.14	0.75	0.26
Grain Size < # 230 Sieve (g/day)	0.96	0.96	0.80	0.20	0.70	0.48	0.25	0.32	0.11
HBN3-CP	Baseline	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/21/2013	11/18/2013	12/18/2013	1/14/2014	3/6/2014	4/3/2014	5/3/2014	5/28/2014	6/25/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/9/2014	4/3/2014	5/3/2014	5/28/2014	6/25/2014	7/22/2014
Grain size > #230 Sieve (g/day)	4.13	3.38	3.23	1.83	3.28	1.2	3.02	1.04	0.23
Grain Size < # 230 Sieve (g/day)	0.81	1.13	0.97	0.79	1.01	0.54	0.25	0.57	0.21
HBNC1-CP	Baseline	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/15/2013	11/12/2013		1/13/2014	3/6/2014	4/2/2014	5/3/2014	5/29/2014	6/25/2014
Sample End Date	11/12/2013		1/13/2014		2/7/2014	4/2/2014	5/3/2014	5/29/2014	6/25/2014
Grain size > #230 Sieve (g/day)	0.37		0.40		0.02	0.08	0.02	0.09	0.03
Grain Size < # 230 Sieve (g/day)	0.76		0.99		0.16	1.09	0.19	0.04	0.25
HBS1-CP	Baseline	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/14/2014	3/7/2014	4/4/2014	5/3/2014	5/29/2014	6/26/2014
Sample End Date	11/18/2013	12/18/2013	1/14/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014	6/26/2014	7/22/2014
Grain size > #230 Sieve (g/day)	0.67	2.42	1.21	0.95	0.77	0.44	2.32	0.39	0.34
Grain Size < # 230 Sieve (g/day)	0.62	0.90	0.73	0.24	0.74	0.26	0.21	0.23	0.14
HBS2-CP	Baseline	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/13/2014	3/7/2014	4/4/2014	5/3/2014	5/30/2014	6/26/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/8/2014	4/4/2014	5/3/2014	5/30/2014	6/26/2014	7/20/2014
Grain size > #230 Sieve (g/day)	0.76	3.18	2.05	0.84	1.66	0.54	1.63	0.16	0.10
Grain Size < # 230 Sieve (g/day)	0.65	1.35	1.03	0.40	0.50	0.32	0.42	0.32	0.14
HBS3-CP	Baseline	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/19/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014	5/28/2014	6/26/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/8/2014	4/2/2014	4/30/2014	5/28/2014	6/26/2014	7/22/2014
Grain size > #230 Sieve (g/day)	0.40	1.98	0.71	1.46	0.43	0.26	0.41	0.31	0.08
Grain Size < # 230 Sieve (g/day)	0.72	1.50	0.79	1.73	0.72	0.36	0.36	0.5	0.16
HBS4-CR	Baseline	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/20/2013	11/18/2013	12/18/2013	1/28/2014	3/5/2014	4/2/2014	4/30/2014	5/28/2014	6/26/2014
Sample End Date	11/18/2013	12/18/2013	1/28/2014	2/18/2014	4/2/2014	4/30/2014	5/28/2014	6/26/2014	7/22/2014
Grain size > #230 Sieve (g/day)	0.98	2.50	1.18	1.09	0.61	0.33	1.15	0.23	0.12
Grain Size < # 230 Sieve (g/day)	0.82	1.71	0.79	0.83	1.09	0.50	0.27	0.59	0.26
HBSC1-CP	Baseline	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Sample Start Date	10/18/2013	11/18/2013	12/18/2013	1/13/2014	3/6/2014	4/2/2014	4/30/2014	5/28/2014	6/25/2014
Sample End Date	11/18/2013	12/18/2013	1/13/2014	2/17/2014	4/2/2014	4/30/2014	5/28/2014	6/25/2014	7/20/2014
Grain size > #230 Sieve (g/day)	0.30	0.59	0.30	0.01	0.03	0.01	0.04	0.01	0.01
Grain Size < # 230 Sieve (g/day)	0.49	0.92	1.06	0.10	0.32	0.08	0.02	0.12	0.03

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R2N1-RR	Baseline	Sample 1		Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/23/2013	11/18/2013		1/18/2014	2/17/2014	3/20/2014	4/16/2014	5/24/2014	6/22/2014
Sample End Date	11/18/2013	1/18/2014		2/17/2014	3/20/2014	4/16/2014	5/24/2014	6/22/2014	7/20/2014
Grain size > #230 Sieve (g/day)	1.81	2.01		0.61	0.59	1.13	0.82	0.46	0.08
Grain Size < # 230 Sieve (g/day)	0.58	0.96		0.55	0.40	0.58	0.79	1.48	0.45
R2N2-LR	Baseline	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	
Sample Start Date	-	11/20/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014	6/22/2014
Sample End Date	-	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014	6/22/2014	7/20/2014
Grain size > #230 Sieve (g/day)	-	1.77	1.73	0.19	0.43	0.01	0.33	0.35	0.06
Grain Size < # 230 Sieve (g/day)	-	0.71	0.85	0.32	0.39	0.14	0.74	0.90	0.23
R2NC1-LR	Baseline	Sample 1		Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/27/2013	11/20/2013		1/18/2014	2/16/2014	3/20/2014	4/16/2014	5/24/2014	6/22/2014
Sample End Date	11/24/2013	1/18/2014		2/16/2014	3/20/2014	4/16/2014	5/24/2014	6/22/2014	7/20/2014
Grain size > #230 Sieve (g/day)	2.74	0.47		0.01	0.01	0.06	0.06	0.03	0.01
Grain Size < # 230 Sieve (g/day)	0.59	0.37		0.03	0.00	0.10	0.23	0.06	0.02
R2NC2-RR	Baseline	Baseline			Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Sample Start Date	-	11/19/2013			2/16/2014	3/20/2014	4/16/2014	5/24/2014	6/22/2014
Sample End Date	-	2/16/2014			3/20/2014	4/16/2014	5/24/2014	6/22/2014	7/20/2014
Grain size > #230 Sieve (g/day)	-	0.07			0.00	0.00	0.01	0.01	0.00
Grain Size < # 230 Sieve (g/day)	-	0.22			0.00	0.06	0.13	0.06	0.02
R2S1-RR	Baseline	Sample 1		Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/18/2013	11/18/2013		1/15/2014	2/16/2014	3/19/2014	4/16/2014	5/24/2014	6/27/2014
Sample End Date	11/18/2013	1/15/2014		2/17/2014	3/19/2014	4/16/2014	5/24/2014	6/26/2014	7/20/2014
Grain size > #230 Sieve (g/day)	0.51	0.87		0.22	0.22	0.50	0.47	0.00	0.14
Grain Size < # 230 Sieve (g/day)	0.52	0.93		0.35	0.33	0.52	0.78	0.06	0.49
R2S2-LR	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8	
Sample Start Date	-	11/21/2013	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014	6/22/2014
Sample End Date	-	12/15/2013	1/28/2014	2/17/2014	3/19/2014	4/16/2014	5/24/2014	6/22/2014	7/20/2014
Grain size > #230 Sieve (g/day)	-	0.49	0.51	0.17	0.18	0.29	0.26	0.15	0.02
Grain Size < # 230 Sieve (g/day)	-	0.49	0.6	0.26	0.20	0.39	0.59	0.65	0.17
R2SC1-RR	Baseline	Sample 1		Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Sample Start Date	10/19/2013	11/18/2013		1/15/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014	6/22/2014
Sample End Date	11/18/2013	1/15/2014		2/26/2014	3/30/2014	4/27/2014	5/24/2014	6/22/2014	7/20/2014
Grain size > #230 Sieve (g/day)	0.62	0.57		0.02	0.02	0.02	0.13	0.03	0.01
Grain Size < # 230 Sieve (g/day)	0.42	0.72		0.13	0.12	0.10	0.51	0.19	0.05
R2SC2-LR	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8	
Sample Start Date	-	11/21/2013	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014	6/22/2014
Sample End Date	-	12/15/2013	1/28/2014	2/26/2014	3/30/2014	4/27/2014	5/24/2014	6/22/2014	7/20/2014
Grain size > #230 Sieve (g/day)	-	0.80	0.46	0.03	0.04	0.18	0.21	0.04	0.01
Grain Size < # 230 Sieve (g/day)	-	0.61	0.41	0.12	0.15	0.34	0.47	0.17	0.04

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R3N1-LR		Baseline	Sample 1	Sample 2		Sample 3	Sample 4
Sample Start Date	-	12/4/2013	12/30/2013	2/16/2014	3/19/2014	6/5/2014	6/22/2014
Sample End Date	-	12/30/2013	2/16/2014	3/19/2014	6/5/2014	7/3/2014	7/20/2014
Grain size > #230 Sieve (g/day)	-	0.09	0.17	0.03	No samples collected during this time. No dredging in the area.	0.18	0.01
Grain Size < # 230 Sieve (g/day)	-	0.08	0.16	0.00		0.11	0.03
R3NC1-LR		Baseline	Sample 1	Sample 2	Sample 3	Sample 4	
Sample Start Date	-	12/5/2013	2/16/2014	3/20/2014	6/5/2014	6/22/2014	
Sample End Date	-	2/16/2014	3/20/2014	6/5/2014	7/3/2014	7/20/2014	
Grain size > #230 Sieve (g/day)	-	0.05	0.01	No samples collected during this time. No dredging in the area.	0.01	0.03	
Grain Size < # 230 Sieve (g/day)	-	0.07	0.00		0.03	0.04	
R3S1-CP		Baseline	Sample 1	Sample 2		Sample 3	Sample 4
Sample Start Date	-	12/3/2013	12/30/2013	2/16/2014	3/19/2014	6/5/2014	7/3/2014
Sample End Date	-	12/30/2013	2/16/2014	3/19/2014	6/5/2014	7/3/2014	8/1/2014
Grain size > #230 Sieve (g/day)	-	0.06	0.13	0.02	No samples collected during this time. No dredging in the area.	0.20	0.02
Grain Size < # 230 Sieve (g/day)	-	0.10	0.20	0.00		0.10	0.05
R3S2-LR		Baseline	Sample 1	Sample 2		Sample 3	Sample 4
Sample Start Date	-	12/3/2013	12/30/2013	2/16/2014	3/19/2014	6/5/2014	7/3/2014
Sample End Date	-	12/30/2013	2/16/2014	3/19/2014	6/5/2014	7/3/2014	8/1/2014
Grain size > #230 Sieve (g/day)	-	0.04	0.15	0.01	No samples collected during this time. No dredging in the area.	0.14	0.01
Grain Size < # 230 Sieve (g/day)	-	0.09	0.14	0.00		0.09	0.03
R3S3-SG		Baseline	Sample 1	Sample 2		Sample 3	Sample 4
Sample Start Date	-	12/3/2013	12/30/2013	2/16/2014	3/19/2014	6/5/2014	7/3/2014
Sample End Date	-	12/30/2013	2/16/2014	3/19/2014	6/5/2014	7/3/2014	8/1/2014
Grain size > #230 Sieve (g/day)	-	0.04	0.13	0.02	No samples collected during this time. No dredging in the area.	0.13	0.04
Grain Size < # 230 Sieve (g/day)	-	0.07	0.13	0.00		0.08	0.05
R3SC1-CP		Baseline	Sample 1		Sample 2	Sample 3	
Sample Start Date	-	12/5/2013	2/17/2014	3/19/2014	6/5/2014	7/3/2014	
Sample End Date	-	2/17/2014	3/19/2014	6/5/2014	7/3/2014	8/1/2014	
Grain size > #230 Sieve (g/day)	-	0.08	0.00	No samples collected during this time. No dredging in the area.	0.01	0.01	
Grain Size < # 230 Sieve (g/day)	-	0.17	0.00		0.03	0.02	
R3SC2-LR		Baseline	Sample 1		Sample 2	Sample 3	
Sample Start Date	-	12/4/2013	2/17/2014	3/19/2014	6/5/2014	7/3/2014	
Sample End Date	-	2/17/2014	3/19/2014	6/5/2014	7/3/2014	8/1/2014	
Grain size > #230 Sieve (g/day)	-	0.05	0.10	No samples collected during this time. No dredging in the area.	0.01	0.03	
Grain Size < # 230 Sieve (g/day)	-	0.07	0.00		0.03	0.04	
R3SC3-SG		Baseline	Sample 1		Sample 2	Sample 3	
Sample Start Date	-	12/4/2014	2/17/2014	3/19/2014	6/5/2014	7/3/2014	
Sample End Date	-	2/17/2014	3/19/2014	6/5/2014	7/3/2014	8/1/2014	
Grain size > #230 Sieve (g/day)	-	0.08	0.10	No samples collected during this time. No dredging in the area.	0.01	0.01	
Grain Size < # 230 Sieve (g/day)	-	0.11	0.00		0.03	0.03	

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42

FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening

Week 42 09/03/14-09/09/14 Dredge Activity

Adaptive Management

The following strategies have been implemented to address *in situ* compliance monitoring observations.

1. Turtle excluder devices (TEDs) removed on 12/9/13 and removal coordinated with NMFS as required under the SARBO for Dredge Terrapin Island.
2. Dredge movements and operations are closely coordinated with compliance monitoring dive team.
3. Spider barge activity ceased from 2/9/14 to 3/6/14 to allow time for the southern hardbottom sites to recover from scow filling activity.
4. Dredging has been relocated to the red side of the channel (inbound) away from the southern hardbottom sites.
5. The dredge has been relocated several times to limit the immediate impacts to adjacent habitat between material preparation in Cut 3 and material removal in Cut 2 with the Spider Barge and scows.
6. Additional scows will be brought into service to allow for more efficient loading from the spider barge.
7. Minimization of overflow from scows to the greatest extent practical by optimizing the slurry density and actively managing the material flow. Greater scow loads can be achieved with less overflow volume required.
8. Liberty Island dredging with no overflow as of 6/19/14. Liberty Island departed the project site on July 3, 2014, and is not expected to return to service on this project in the foreseeable future.
9. An additional tug and scow were added to the scow package to allow the Spider Barge to load scows with minimal to no overflow to help reduce possible sedimentation and turbidity as of Compliance Week 39.

Recommendations

1. Hardbottom site HBN1 should be eliminated from future monitoring due to burial by natural longshore drift during pre-construction baseline monitoring, which was not associated with dredging operations.

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FDEP Permit # 0305721-001-BI – Port Miami Phase III Harbor Deepening

Week 42 09/03/14-09/09/14 Dredge Activity

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Week 42 09/03/14-09/09/14 Dredge Activity

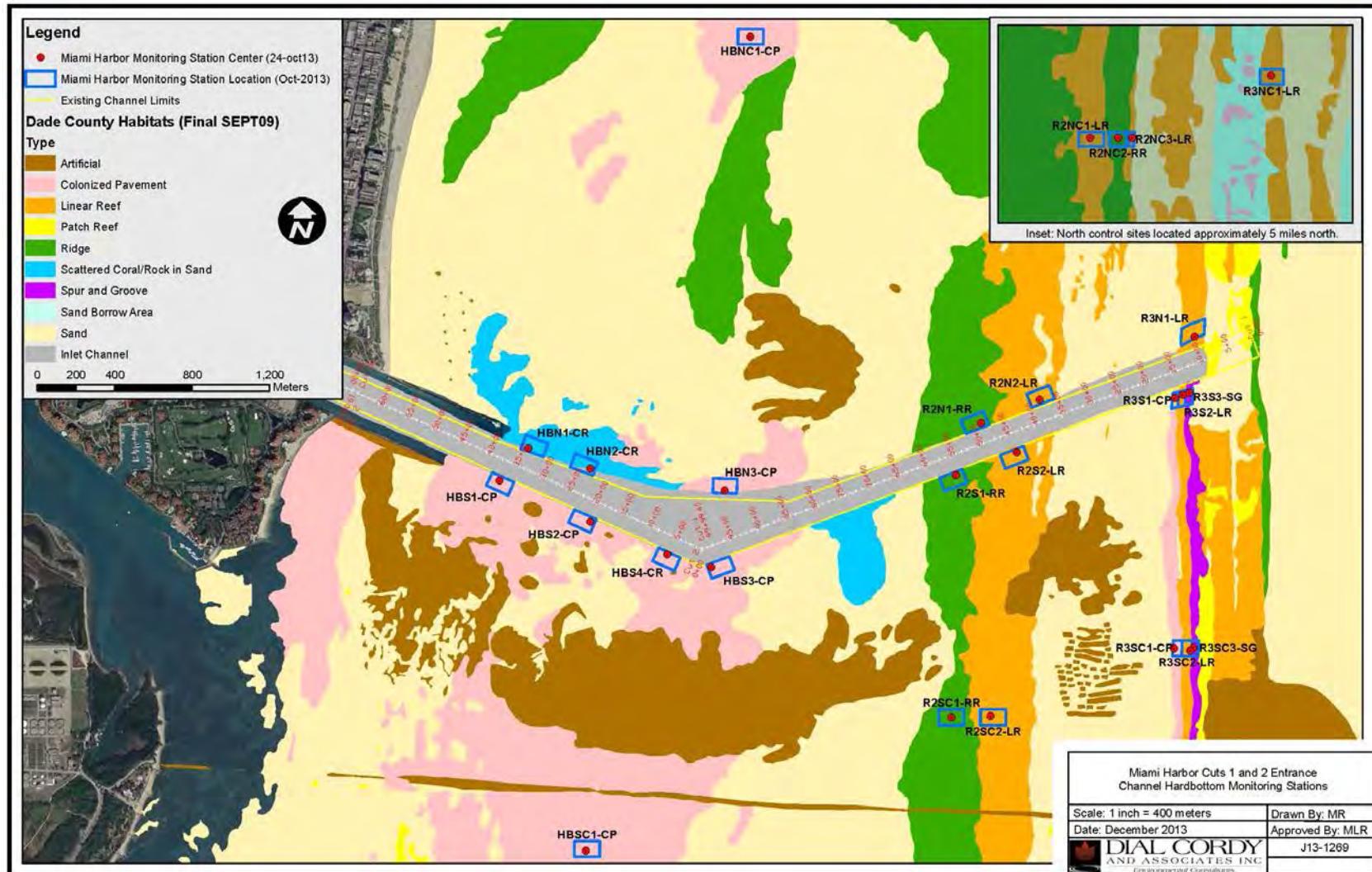


Figure 1: Miami Harbor Cuts 1 and 2 Entrance Channel hardbottom, middle, and outer reef monitoring stations.

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Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for HBN2-CR.

Transect		HBN2-CR																					
Functional Group	Transect	T1					T2					T3											
		Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	
Week Number	B4	0.19	0.00	4.82	0.00	0.00	93.83	1.16	0.17	0.00	5.50	0.00	0.00	89.83	4.29	0.00	0.82	4.02	0.00	0.00	90.17	4.98	
	C1	0.31	0.67	5.72	0.00	0.00	42.56	49.55	0.00	0.00	4.79	0.00	0.00	33.81	59.73	0.00	0.94	3.76	0.00	1.49	6.80	86.41	
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C4	0.00	0.00	2.56	0.00	0.00	9.90	87.26	0.00	0.00	0.53	0.00	0.00	14.39	85.08	0.00	0.56	1.30	0.00	1.50	11.72	84.92	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	0.00	0.56	1.46	0.00	0.00	9.90	88.08	0.00	0.00	1.79	0.00	0.00	15.86	82.35	0.00	0.75	0.59	0.63	0.00	8.55	89.49	
	C8	0.73	0.56	0.88	0.00	0.00	6.63	90.90	0.00	0.00	0.97	0.00	0.00	8.79	90.24	0.00	0.53	1.21	0.00	0.00	11.07	87.19	
	C9	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	
	C10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C11	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C12	0.00	0.25	0.00	0.00	0.00	16.12	83.63	M	M	M	M	M	M	M	0.31	1.44	0.00	0.00	0.00	20.18	78.07	
	C13	0.00	0.00	1.17	0.00	0.00	23.22	75.61	0.28	0.00	0.00	0.00	0.00	0.00	35.25	64.47	0.00	0.63	0.56	0.00	0.00	36.06	62.75
	C14	0.31	0.50	0.63	0.00	0.00	28.30	70.27	0.00	0.25	1.09	0.00	0.00	38.01	60.65	0.28	1.03	2.98	0.00	0.00	26.36	69.35	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	0.00	0.28	0.94	0.00	0.00	19.60	79.17	0.00	0.00	0.80	0.00	0.00	29.85	69.36	0.31	0.00	1.49	0.00	0.00	13.57	84.63	
	C17	0.00	0.00	1.99	0.00	0.25	39.12	58.65	0.00	0.00	0.78	0.00	0.00	48.06	51.16	0.50	0.53	0.36	0.00	0.00	39.49	59.13	
	C18	0.25	0.28	2.22	0.00	0.00	25.67	71.58	0.00	0.28	2.07	0.00	1.07	27.85	68.48	0.00	0.75	4.87	0.00	0.00	26.61	67.78	
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	0.28	0.00	0.28	0.00	0.00	49.27	50.17	0.25	0.00	1.83	0.00	0.00	58.42	39.50	0.56	0.56	1.06	0.00	0.31	50.88	46.64	
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C23	0.00	0.00	1.42	0.00	0.00	38.16	60.42	0.00	0.00	0.00	0.00	0.00	33.51	66.49	0.00	0.56	0.63	0.00	0.00	38.19	60.63	
	C24	0.25	0.25	2.32	0.00	0.00	50.39	46.54	0.00	0.00	2.31	0.00	0.00	44.77	52.92	0.00	0.00	0.91	0.00	0.00	46.39	52.70	
	C25	0.25	0.75	1.00	0.00	0.00	40.10	57.35	0.25	0.00	1.56	0.00	0.00	55.65	42.54	0.28	0.00	1.00	0.00	0.00	39.61	59.11	

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Week 42 09/03/14-09/09/14 Dredge Activity
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Transect		HBN2-CR																				
		T1						T2						T3								
Functional Group	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C27	0.00	0.31	1.90	0.00	0.00	52.22	45.57	0.94	0.00	1.75	0.00	0.00	56.62	40.69	0.00	0.50	2.22	0.00	0.00	55.81	41.47
	C28	0.00	1.11	1.27	0.00	0.00	57.65	39.61	0.00	0.00	1.60	0.00	0.00	64.81	33.59	0.00	0.75	1.22	0.00	0.00	57.32	40.71
	C29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C41	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C42	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

*: Cyanobacteria found at the site –video analysis cannot differentiate between cyanobacteria and CTB, therefore CTB values may be higher than true CTB cover

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Weekly functional group analysis results for HBN3-CP.

Transect		HBN3-CP																				
Functional Group		T1					T2					T3										
		Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand
Week Number	B4	3.66	5.82	5.55	1.00	0.00	77.10	5.67	1.29	3.78	12.50	2.92	0.00	75.89	3.43	1.15	4.33	13.13	0.77	0.00	74.88	5.53
	C1	1.06	5.68	9.43	2.38	0.00	71.22	10.24	0.59	3.91	10.27	4.00	0.00	64.05	17.18	1.19	6.36	13.57	0.56	0.00	69.69	7.81
	C2	1.29	4.72	4.91	1.96	0.00	61.01	26.10	1.06	5.52	6.73	4.34	0.00	66.73	15.63	2.29	6.50	7.21	1.61	0.00	61.39	20.99
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C4	1.29	5.08	3.49	0.56	0.00	54.12	35.46	3.42	12.88	1.86	0.00	0.00	25.47	56.37	1.39	13.11	1.42	0.50	1.00	15.90	66.78
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C9	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C10	1.11	7.40	3.14	1.50	0.00	63.35	23.13	1.38	3.06	10.51	2.12	0.00	68.30	14.63	0.59	5.52	7.74	2.78	0.00	66.87	16.50
	C11	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C12	1.88	3.53	4.38	0.94	0.00	24.82	64.45	1.63	5.01	9.11	3.09	0.00	51.16	30.00	1.34	2.43	8.99	1.57	0.00	54.49	31.18
	C13	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	0.90	2.13	2.48	0.56	0.00	11.42	82.24	0.98	3.68	9.66	5.28	0.00	14.45	65.95	0.81	4.36	3.78	0.25	0.00	21.69	68.48
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	1.58	8.32	5.99	1.23	0.00	24.22	58.65	1.32	9.96	11.83	2.60	0.00	51.89	22.39	0.69	2.46	8.66	0.00	0.00	62.72	25.46
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	3.09	3.08	3.01	1.69	0.00	48.29	40.84	0.31	2.95	5.61	5.53	0.00	60.65	24.94	0.36	3.28	4.96	0.31	0.00	56.79	34.30
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	1.16	4.06	3.02	1.12	0.00	45.56	45.08	0.53	3.80	4.15	3.17	0.00	54.00	34.35	0.75	2.09	6.98	0.56	0.00	55.14	34.49
	C23	1.42	4.38	1.77	0.31	0.00	23.70	68.41	0.59	3.78	4.09	3.06	0.00	45.47	43.01	0.81	2.69	2.53	0.71	0.00	37.26	55.75
	C24	1.77	3.52	2.47	0.69	0.00	38.84	52.70	1.06	2.43	8.09	4.29	0.00	49.97	34.16	0.81	2.68	5.71	2.14	0.00	41.92	46.73
	C25	1.06	5.50	3.83	0.25	0.00	14.92	74.44	0.25	5.67	5.44	5.00	0.00	32.42	51.23	1.50	3.33	6.50	2.50	0.00	28.15	57.77

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		HBN3-CP																			
Functional Group		T1					T2					T3									
Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coralline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coralline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coralline, Turf, Bare	Sand	
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	2.03	3.89	1.79	2.19	0.00	49.58	40.03	1.11	4.86	8.00	4.76	0.00	57.87	22.81	1.18	3.31	10.16	0.56	0.00	48.89
	C28	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C30	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

*: Cyanobacteria found at the site –video analysis cannot differentiate between cyanobacteria and CTB, therefore CTB values may be higher than true CTB cover.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for HBNC1-CP.

Transect		HBNC1-CP																				
Functional Group		T1					T2					T3										
Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand		
Week Number	B4	1.43	17.85	4.53	0.00	0.33	73.68	0.95	0.00	24.28	11.45	0.00	0.41	63.05	0.48	0.38	22.69	7.39	0.00	0.00	68.46	0.79
	C1	0.98	24.75	3.81	0.00	0.31	44.97	24.58	0.28	25.03	6.80	0.00	0.50	40.22	26.62	0.00	28.32	1.81	0.00	0.28	45.61	23.67
	C2	1.56	26.34	1.67	0.00	0.00	47.14	22.35	0.67	35.54	2.33	0.00	0.31	31.81	29.34	0.42	29.69	4.19	0.00	0.25	33.32	32.14
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C4	0.71	12.56	3.13	0.00	0.69	50.00	32.91	0.00	15.76	2.38	0.00	0.00	55.47	26.40	0.28	21.80	2.85	0.00	0.50	46.66	27.92
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C8	1.22	24.95	2.88	0.00	0.63	42.50	27.83	0.00	25.61	2.53	0.00	0.36	49.99	21.52	0.28	23.40	4.12	0.00	0.36	41.92	29.92
	C9	0.28	20.80	5.13	0.00	0.28	50.96	22.28	0.59	25.56	5.38	0.00	1.44	41.12	25.60	0.31	20.73	2.90	0.00	0.31	41.88	33.55
	C10	0.25	13.34	1.28	0.00	0.28	59.36	24.78	0.31	19.00	1.37	0.00	0.00	53.62	25.45	0.25	17.48	2.28	0.00	0.00	57.44	22.55
	C11	2.67	20.71	2.29	0.00	0.00	41.79	32.54	0.00	19.26	5.01	0.00	0.25	43.88	31.60	0.59	16.25	1.87	0.00	0.31	51.38	29.60
	C12	1.59	24.81	1.40	0.00	0.00	32.31	39.89	0.53	14.92	0.78	0.00	0.00	33.78	49.99	0.31	17.95	2.12	0.00	0.00	31.76	47.59
	C13	0.59	18.31	1.55	0.00	0.00	55.93	23.63	0.31	19.76	1.57	0.00	0.00	38.84	39.51	0.00	17.10	2.56	0.00	0.00	37.23	42.33
	C14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	0.50	18.77	2.06	0.00	0.00	49.78	28.63	1.15	18.48	1.59	0.00	0.28	29.33	46.67	0.24	19.67	0.55	0.00	0.00	30.65	48.64
	C17	0.50	14.16	1.68	0.00	0.81	68.39	12.79	0.28	15.38	2.63	0.00	0.00	72.04	9.42	0.00	19.49	1.09	0.00	0.00	71.15	7.80
	C18	1.07	19.96	1.12	0.00	0.00	60.15	16.60	0.87	12.33	1.92	0.00	0.25	56.53	27.54	1.18	19.70	1.42	0.00	0.59	65.93	10.11
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	1.94	15.70	3.72	0.00	0.00	60.37	18.33	0.28	17.60	4.77	0.00	0.00	56.31	20.49	0.00	19.23	2.10	0.00	0.00	61.78	16.62
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C23	1.07	14.77	1.96	0.00	0.00	47.18	34.74	0.00	13.02	1.71	0.00	0.63	30.76	53.60	0.56	17.53	2.47	0.00	0.25	34.58	44.61
	C24	0.26	17.14	2.81	0.00	0.00	54.56	24.91	0.31	19.74	4.06	0.00	1.61	55.16	18.10	0.56	17.30	4.40	0.00	0.59	55.61	21.34
	C25	1.33	25.49	2.39	0.00	0.50	42.20	27.03	0.25	24.11	3.45	0.00	0.28	32.14	37.19	0.28	27.83	1.86	0.00	1.00	39.04	28.35

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		HBNC1-CP																				
		T1					T2					T3										
Functional Group	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	0.59	22.98	4.66	0.00	0.56	27.28	42.82	0.25	22.52	4.74	0.31	0.31	30.16	40.81	0.56	25.49	3.09	0.00	0.50	34.60	35.20
	C28	0.00	20.18	3.21	0.00	1.23	47.08	28.30	0.25	26.54	1.64	0.00	1.00	40.64	29.98	0.59	23.39	3.75	0.00	0.56	45.09	26.61
	C29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
C	C36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

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*: Cyanobacteria found at the site –video analysis cannot differentiate between cyanobacteria and CTB, therefore CTB values may be higher than true CTB cover.

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Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for HBS1-CP.

Transect		HBS1-CP																				
Functional Group		T1						T2						T3								
		Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand
Week Number	B4	2.90	1.50	5.20	0.90	0.00	87.80	1.10	0.88	9.10	7.50	0.40	0.00	78.90	3.00	2.80	1.80	5.40	1.00	0.00	87.50	1.00
	C1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C3	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	C4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C12	1.71	3.45	7.13	2.78	0.00	47.05	37.88	0.99	4.32	6.74	0.25	0.00	30.17	57.53	0.28	4.72	7.51	1.84	0.00	28.29	56.36
	C13	1.38	0.59	0.73	4.17	0.00	85.50	7.63	0.32	4.69	3.78	0.51	0.00	76.13	14.57	0.00	5.33	3.64	2.42	0.00	84.20	4.40
	C14	1.25	1.87	5.61	0.25	0.00	26.00	65.02	0.28	5.30	7.69	0.00	1.17	40.82	44.75	0.00	5.53	3.29	0.00	0.00	35.20	54.17
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	2.19	1.28	7.39	2.00	0.50	16.41	69.92	0.31	4.44	7.00	0.00	0.00	26.53	61.00	0.00	4.45	6.40	0.00	0.00	33.15	54.81
	C17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C18	0.58	0.91	8.70	3.19	0.26	75.69	10.68	1.75	5.66	6.05	0.00	0.00	75.16	11.37	1.79	3.51	8.72	0.31	0.00	77.45	7.90
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	1.70	2.19	6.64	4.82	0.91	69.39	14.35	0.28	2.73	7.28	0.00	0.53	66.55	22.64	0.28	2.98	7.58	0.25	0.42	65.74	22.76
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	1.11	0.59	5.88	4.64	0.28	68.50	19.04	0.50	3.54	4.47	0.00	0.00	77.34	13.59	0.36	2.73	5.51	0.00	0.28	75.91	14.90
	C23	0.00	5.13	10.68	2.56	0.31	60.21	20.84	0.36	4.10	5.20	0.00	0.00	64.40	25.80	0.00	3.32	7.51	0.00	0.28	65.86	23.04
	C24	0.59	1.98	10.07	4.60	0.86	68.20	12.90	0.67	1.44	6.30	0.59	0.28	73.19	17.04	0.67	4.67	7.31	0.50	0.00	71.59	15.26
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		HBS1-CP																				
Functional Group		T1					T2					T3										
Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand		
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	2.30	1.20	6.10	2.20	1.40	57.89	27.22	1.25	3.59	12.34	0.50	0.00	53.14	27.92	0.28	3.40	9.56	0.00	0.25	60.61	24.99
	C28	0.28	2.02	5.87	1.49	0.00	73.00	17.06	0.88	7.12	4.68	0.00	0.88	61.96	24.48	0.31	7.52	6.03	0.00	2.15	62.54	21.44
	C29	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C31	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

*: Cyanobacteria found at the site –video analysis cannot differentiate between cyanobacteria and CTB, therefore CTB values may be higher than true CTB cover.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for HBS2-CP.

Transect		HBS2-CP																				
Functional Group		T1					T2					T3										
		Scleractinians	Octocorals	Sponges	Zoanthsids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthsids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthsids	Macroalgae	Coraline, Turf, Bare	Sand
Week Number	B4	0.31	0.00	1.67	0.00	0.00	65.00	33.06	0.18	0.00	1.84	0.60	0.00	60.46	36.93	0.19	1.01	2.50	0.19	0.00	63.30	32.80
	C1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
	C11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C12	0.00	0.31	4.06	0.25	0.00	34.32	61.06	0.84	0.28	3.97	0.00	0.00	33.92	61.00	0.00	0.90	2.30	0.00	0.00	23.81	73.04
	C13	0.00	0.36	3.21	0.69	0.28	56.99	38.47	0.00	0.00	2.57	0.00	0.00	57.26	40.17	0.00	0.63	3.66	0.63	0.00	52.31	42.78
	C14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	0.31	0.00	4.27	0.00	0.00	18.85	76.57	0.28	0.28	6.33	0.00	0.00	19.36	73.48	0.00	0.83	3.58	1.11	0.00	18.32	76.16
	C17	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C18	0.00	0.63	4.10	0.00	0.00	48.90	46.42	0.25	0.00	6.16	0.00	0.00	45.33	48.26	0.00	0.50	6.81	0.00	0.00	46.25	46.16
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	0.56	1.41	6.20	0.50	0.00	28.10	62.44	1.38	0.91	8.32	0.31	0.00	33.66	55.16	0.56	1.12	6.63	0.00	0.00	42.86	48.59
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	0.31	0.61	5.22	0.50	1.74	48.83	42.79	0.42	0.88	5.76	0.00	0.00	55.78	37.16	0.00	2.10	5.24	0.31	0.00	32.15	60.30
	C23	0.00	0.28	4.82	0.36	0.00	41.16	52.50	0.91	1.40	4.71	0.00	0.00	47.14	45.16	0.00	1.92	4.64	0.00	0.00	43.83	49.61
	C24	0.28	0.56	5.40	0.00	0.00	41.79	52.03	0.56	0.00	3.70	0.31	0.00	47.34	47.83	0.00	0.90	3.93	0.00	0.00	32.43	62.74
	C25	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E

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Week 42 09/03/14-09/09/14 Dredge Activity
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Transect		HBS2-CP																				
Functional Group	Scleractinians	T1						T2						T3								
		Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C27	0.31	0.31	4.57	0.00	0.00	32.72	62.08	0.90	0.56	5.36	0.31	0.00	38.00	54.87	0.28	1.31	2.53	0.00	0.00	28.54	67.34
	C28	0.87	0.00	2.73	0.36	0.00	36.16	59.58	0.86	1.23	4.72	0.36	0.28	31.10	61.46	0.00	1.12	3.97	0.36	0.00	24.98	69.58
	C29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C34	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D		
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C41	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D		
	C42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

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*: Cyanobacteria found at the site –video analysis cannot differentiate between cyanobacteria and CTB, therefore CTB values may be higher than true CTB cover.

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Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for HBS3-CP.

Transect		HBS3-CP																				
Functional Group		T1					T2					T3										
		Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand
Week Number	B4	0.56	11.23	2.32	0.00	0.00	70.10	15.79	0.61	14.88	3.58	2.53	0.00	74.16	4.03	1.48	18.08	3.03	0.53	0.00	63.85	11.93
	C1	1.34	16.29	7.49	1.79	0.00	45.80	26.99	0.90	13.21	4.73	0.69	0.00	50.43	30.04	1.00	12.47	4.46	3.44	0.00	53.44	24.88
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C3	0.98	14.81	4.42	0.31	0.00	39.18	40.31	1.20	15.53	2.34	0.00	0.00	36.48	44.19	0.73	15.66	4.40	1.88	0.00	37.48	39.59
	C4	1.43	13.32	6.73	0.31	0.00	16.74	61.47	0.00	10.69	7.10	0.59	0.00	10.94	70.67	0.31	14.75	2.21	0.00	0.00	15.14	67.28
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	0.95	12.86	3.97	0.25	0.00	28.77	53.21	0.28	16.70	2.56	0.00	0.00	24.27	56.20	0.90	13.46	5.31	0.63	0.00	30.63	49.08
	C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
	C11	0.73	12.70	3.11	0.00	0.00	19.45	64.01	1.74	12.73	1.90	0.28	0.00	12.01	71.39	1.35	12.83	0.73	1.83	0.00	11.94	71.31
	C12	1.19	12.35	0.84	0.00	0.00	14.09	71.53	0.98	16.20	0.53	0.00	0.00	10.17	72.13	1.12	9.56	1.56	1.08	0.00	9.93	76.76
	C13	0.00	13.67	0.30	0.00	0.00	28.64	57.39	0.00	7.73	0.00	0.28	0.00	28.59	63.41	0.00	5.33	0.63	1.98	0.00	30.54	61.51
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	0.56	10.45	3.52	0.00	0.00	9.48	75.73	1.49	8.30	4.90	0.56	0.00	9.27	75.47	0.50	10.59	2.00	0.61	0.00	5.88	80.47
	C17	0.31	11.80	3.70	0.00	0.00	33.26	50.72	1.67	12.10	1.46	0.25	0.00	36.61	47.91	1.28	11.50	3.29	0.63	0.00	31.56	51.49
	C18	1.44	15.85	2.27	0.00	0.00	56.65	23.78	0.00	13.97	1.78	0.50	0.00	37.40	46.36	0.00	20.73	1.90	0.25	0.00	32.08	45.04
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	0.88	13.34	4.00	0.00	0.00	39.80	41.98	0.90	8.21	4.92	0.00	0.00	53.16	32.81	0.50	11.07	4.91	1.40	0.00	43.80	38.07
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	1.11	9.34	3.18	0.00	0.00	49.69	36.67	0.84	8.86	2.08	0.83	0.00	56.37	30.71	0.53	11.84	3.13	0.28	0.00	43.92	40.30
	C23	0.81	4.70	3.59	0.00	0.00	39.57	51.33	1.52	9.13	1.86	0.56	0.00	36.75	50.18	0.28	13.62	1.47	0.00	0.00	38.06	46.01
	C24	0.91	11.26	2.48	0.00	0.00	28.56	56.79	1.43	12.51	2.74	0.63	0.00	34.70	48.05	0.65	11.66	1.65	0.28	0.00	30.23	54.70
	C25	0.53	13.81	1.86	0.00	0.00	26.62	57.18	1.78	15.13	3.02	0.25	0.00	15.34	64.17	0.26	17.61	1.48	0.54	0.00	23.21	56.90

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Transect		HBS3-CP																				
		T1						T2						T3								
Functional Group	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C27	1.86	12.39	2.31	0.36	0.00	34.09	49.00	1.00	11.73	4.02	0.81	0.00	38.83	43.61	0.00	14.84	3.20	0.00	0.25	34.29	47.16
	C28	0.00	12.61	5.57	0.36	0.00	39.08	42.38	2.67	11.69	2.27	0.00	0.31	45.34	37.41	0.00	13.46	2.40	2.40	0.00	50.83	30.91
	C29	0.56	6.66	2.25	0.31	0.00	17.43	72.80	0.73	13.91	3.01	0.00	0.00	11.07	71.28	0.56	13.29	2.48	2.06	0.00	8.95	72.66
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

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Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for HBS4-CR.

Transect		HBS4-CR																				
Functional Group		T1						T2						T3								
		Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand
Week Number	B4	0.17	9.16	3.15	0.17	0.38	65.81	21.17	0.36	11.60	7.00	0.32	0.34	57.52	22.86	0.44	9.73	4.31	0.92	0.00	56.05	28.54
	C1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C3	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C8	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
	C11	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
	C12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C13	0.00	3.38	2.42	0.00	0.00	14.06	80.14	0.00	9.66	3.62	0.00	0.00	5.99	80.73	0.00	5.88	1.26	0.00	0.00	7.68	85.18
	C14	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	1.63	8.40	1.96	0.00	0.00	10.19	77.23	0.50	13.72	3.87	0.00	0.00	14.41	67.51	0.00	7.66	1.61	1.15	0.00	6.93	82.64
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	0.33	9.36	0.93	0.00	0.99	25.12	63.27	0.31	11.40	3.73	0.00	0.69	22.86	61.06	1.69	5.29	2.39	0.94	0.00	25.00	64.70
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C21	0.94	8.98	2.17	0.25	0.00	37.39	50.27	0.00	9.61	3.33	0.00	0.00	43.09	43.97	1.56	4.93	3.84	0.56	0.00	50.43	38.67
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C23	0.36	7.23	5.38	0.28	0.00	44.87	41.88	0.00	9.44	3.88	0.00	0.00	46.05	40.63	0.63	6.00	2.62	1.40	0.00	39.58	49.83
	C24	1.57	6.40	2.90	0.64	0.00	35.36	52.56	0.28	11.04	2.80	0.00	0.00	31.51	54.37	0.00	6.77	1.69	0.00	0.00	25.82	65.45
	C25	0.63	5.48	2.45	0.31	0.31	30.36	60.45	0.50	8.66	2.75	0.00	0.00	34.40	53.41	0.42	4.71	1.20	0.00	0.00	31.80	61.93

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		HBS4-CR																				
Functional Group	Scleractinians	T1					T2					T3										
		Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	
C	C26	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	0.31	8.39	2.24	0.00	0.00	12.30	76.76	0.31	12.52	2.33	0.00	0.28	10.94	73.62	0.94	7.94	1.98	0.94	0.00	10.24	77.69
	C29	0.00	3.61	2.03	0.00	0.31	24.37	69.68	0.59	7.71	2.59	0.00	0.00	12.99	75.84	0.00	4.92	1.15	0.63	0.00	18.68	74.63
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

*: Cyanobacteria found at the site –video analysis cannot differentiate between cyanobacteria and CTB, therefore CTB values may be higher than true CTB cover.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for HBSC1-CP.

Transect		HBSC1-CP																				
Functional Group		T1						T2						T3								
Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand		
Week Number	B4	9.28	9.52	3.51	0.00	0.66	66.17	10.86	0.64	8.44	2.09	0.00	2.73	79.96	5.46	0.33	7.85	2.77	0.00	4.47	75.27	8.95
	C1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C2	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C7	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C12	9.49	14.08	0.56	0.00	0.00	8.13	67.74	1.38	8.76	2.89	0.00	0.00	20.70	66.32	0.00	11.92	1.77	0.00	0.00	15.98	70.33
	C13	6.00	9.23	0.57	0.00	0.00	78.62	5.58	0.31	9.50	1.42	0.50	0.00	76.90	11.37	2.25	12.46	1.92	0.00	0.00	70.48	12.53
	C14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	9.60	13.01	0.98	0.28	37.73	30.38	5.94	0.83	10.64	4.36	0.00	53.95	21.33	7.66	0.81	8.69	5.10	0.00	58.01	20.14	5.93
	C17	8.63	11.51	0.56	0.00	0.53	74.25	2.42	0.36	9.88	1.35	0.25	1.23	84.54	0.53	0.81	9.50	2.80	0.00	1.84	80.89	1.13
	C18	4.64	6.48	4.12	0.00	0.28	49.35	34.27	1.46	9.92	2.85	0.00	0.90	55.70	28.94	1.39	9.98	1.74	0.00	1.65	60.16	23.77
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	5.75	9.37	3.60	1.18	0.56	65.95	11.93	1.27	5.33	2.92	0.83	1.50	85.67	1.87	1.11	5.01	2.49	0.00	3.84	83.14	3.63
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	6.28	7.46	2.65	0.00	4.28	76.42	1.75	1.16	9.63	1.80	0.00	4.69	81.79	0.67	0.50	7.15	2.54	0.00	6.32	82.55	0.94
	C23	4.31	9.08	2.35	0.56	1.13	81.12	0.56	0.90	7.21	2.36	0.00	9.60	78.13	0.63	0.31	8.29	5.00	0.00	8.73	75.14	2.21
	C24	6.54	12.28	1.43	0.00	15.49	60.22	2.62	0.53	10.20	0.56	0.31	14.73	71.33	2.03	0.31	6.38	1.99	0.00	19.08	69.10	1.96
	C25	5.40	14.59	1.12	0.00	10.00	65.25	2.59	0.75	9.48	0.53	0.50	16.93	71.04	0.53	0.25	13.51	1.25	0.25	15.01	66.17	2.53

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		HBSC1-CP																				
Functional Group	Scleractinians	T1					T2					T3										
		Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	
	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	4.96	11.01	2.39	0.00	0.53	59.43	18.21	2.20	11.31	4.11	0.31	0.98	66.77	12.82	1.68	8.69	6.20	0.25	1.65	69.10	12.20
	C28	7.79	11.70	1.75	0.00	0.28	70.82	7.40	2.09	10.40	1.89	0.00	1.51	68.17	15.65	1.40	10.60	1.99	0.00	2.25	78.37	5.38
	C29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for R2N1-RR.

Transect		R2N1-RR																				
Functional Group		T1					T2					T3										
		Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand
Week Number	B4	0.18	15.67	3.76	0.00	0.00	77.88	0.76	0.85	15.29	2.12	0.00	0.00	79.01	2.06	2.91	16.67	1.52	0.00	0.00	77.92	0.77
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	0.90	13.96	0.94	0.00	0.00	33.12	51.09	1.69	15.01	4.43	0.28	0.00	50.13	27.96	3.84	14.39	2.13	0.00	0.28	43.90	35.47
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C21	0.25	16.45	1.37	0.00	0.00	24.99	56.95	1.50	14.36	1.06	0.00	0.00	25.61	57.48	1.95	13.99	2.18	0.00	0.00	19.09	62.80
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C23	1.06	15.41	0.98	0.00	0.00	11.63	70.92	0.56	8.77	0.97	0.00	0.00	25.53	64.17	2.50	13.94	0.87	0.00	0.00	23.32	59.38
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		R2N1-RR																			
Functional Group		T1					T2					T3									
Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

*: Cyanobacteria found at the site –video analysis cannot differentiate between cyanobacteria and CTB, therefore CTB values may be higher than true CTB cover.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for R2N2-LR.

Transect		R2N2-LR																				
Functional Group		T1					T2					T3										
		Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand
Week Number	B4	0.62	1.22	2.94	0.23	0.00	79.57	15.21	0.56	2.17	4.00	0.60	0.19	64.04	28.23	0.43	1.07	4.93	1.33	0.00	74.28	17.97
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C21	0.31	1.62	1.46	0.00	0.00	49.61	47.00	0.25	1.03	2.10	0.00	0.00	40.95	55.67	0.28	0.75	2.55	0.28	0.00	47.30	48.84
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C23	0.31	0.00	1.93	0.00	0.00	67.35	30.40	0.00	0.28	1.99	0.00	0.00	52.22	45.51	0.00	0.98	3.84	1.00	0.00	54.17	40.01
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		R2N2-LR																			
Functional Group		T1					T2					T3									
Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

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*: Cyanobacteria found at the site –video analysis cannot differentiate between cyanobacteria and CTB, therefore CTB values may be higher than true CTB cover.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for R2NC1-LR.

Transect		R2NC1-LR																				
Functional Group		T1					T2					T3										
		Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand
Week Number	B4	1.56	2.89	2.02	5.25	0.17	63.92	23.86	0.61	6.92	2.81	0.00	0.00	70.41	17.97	4.50	8.38	1.63	3.04	0.18	54.12	25.38
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	1.42	1.73	1.40	5.25	0.00	43.09	47.11	0.00	2.23	1.15	0.00	0.00	57.86	38.45	0.84	3.38	0.59	0.90	0.00	55.91	38.38
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C21	2.03	2.50	0.56	7.30	0.00	43.17	44.45	1.58	3.72	0.28	0.00	0.00	47.14	47.28	1.48	3.76	3.03	2.85	0.00	51.20	37.44
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		R2NC1-LR																			
Functional Group		T1					T2					T3									
Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

*: Cyanobacteria found at the site –video analysis cannot differentiate between cyanobacteria and CTB, therefore CTB values may be higher than true CTB cover.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for R2NC2-RR.

Transect		R2NC2-RR																											
Functional Group		T1						T2						T3															
		Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand							
Week Number	B4	1.56	19.68	0.85	0.00	0.38	77.07	0.46	2.49	19.45	2.82	0.00	0.00	75.24	0.00	6.97	17.56	1.29	0.00	0.00	74.18	0.00							
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C21	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		R2NC2-RR																			
Functional Group		T1					T2					T3									
Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

-: Designates weeks that have yet to be analyzed.

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Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for R2S1-RR.

Transect		R2S1-RR																											
Functional Group		T1						T2						T3															
		Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand							
Week Number	B4	0.94	5.89	3.15	0.00	0.00	88.49	0.21	0.57	3.77	3.45	0.00	0.00	92.20	0.00	0.33	5.25	3.40	0.49	0.00	89.94	0.41							
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E		
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E		
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C9	0.99	5.89	1.06	0.00	0.00	11.03	81.02	1.39	2.58	0.59	0.00	0.00	5.74	89.70	0.28	3.00	1.53	0.63	0.00	10.84	83.73							
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C21	1.48	5.19	1.31	0.00	0.00	18.92	73.12	1.47	2.15	1.18	0.00	0.00	13.29	81.92	0.59	3.40	1.04	0.00	0.00	20.48	74.48							
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	C23	1.15	1.90	0.75	0.00	0.25	25.84	70.11	3.76	1.06	0.56	0.00	0.00	9.39	85.24	0.00	4.19	1.47	0.00	0.28	16.20	77.86							
	C24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		R2S1-RR																			
Functional Group		T1					T2					T3									
Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

*: Cyanobacteria found at the site –video analysis cannot differentiate between cyanobacteria and CTB, therefore CTB values may be higher than true CTB cover.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for R2S2-LR.

Transect		R2S2-LR																											
Functional Group		T1						T2						T3															
		Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand							
Week Number	B4	1.44	8.32	3.39	0.00	0.00	86.69	0.00	1.04	9.11	3.40	0.00	0.00	86.27	0.00	2.04	18.81	8.13	0.00	0.00	70.64	0.00							
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E			
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C21	1.94	4.81	0.25	0.53	0.00	7.15	85.32	0.63	9.76	1.44	0.00	0.00	10.13	78.05	1.33	13.60	1.31	0.00	0.00	15.93	67.83							
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		R2S2-LR																			
Functional Group		T1					T2					T3									
Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for R2SC1-RR.

Transect		R2SC1-RR																				
Functional Group		T1					T2					T3										
		Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand
Week Number	B4	0.95	19.40	3.97	7.52	0.00	64.32	3.85	0.76	31.88	3.45	12.51	0.00	50.63	0.37	1.11	16.14	5.33	10.66	0.00	63.97	2.80
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	3.06	10.51	1.98	0.00	0.00	13.68	70.76	5.14	11.86	1.73	0.25	0.00	15.88	65.15	1.71	10.78	2.32	0.00	0.00	14.37	70.82
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C21	3.62	5.53	1.70	0.00	0.00	65.26	23.89	2.69	4.03	0.84	0.25	0.00	72.08	20.10	1.84	7.15	1.08	1.46	0.00	71.46	17.01
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C23	1.90	5.04	0.88	0.25	0.00	74.81	17.12	1.50	6.69	3.73	0.00	0.00	78.29	9.78	0.56	7.45	1.11	0.00	0.00	77.05	13.83
	C24	2.62	7.01	2.06	0.00	0.00	83.96	4.36	3.65	7.13	4.17	1.06	0.00	80.83	3.15	2.21	6.44	3.97	0.31	0.00	83.44	3.63
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		R2SC1-RR																		
Functional Group		T1						T2						T3						
Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

*: Cyanobacteria found at the site –video analysis cannot differentiate between cyanobacteria and CTB, therefore CTB values may be higher than true CTB cover.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for R2SC2-LR.

Transect		R2SC2-LR																				
Functional Group		T1					T2					T3										
		Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand
Week Number	B4	1.17	19.28	3.56	8.12	0.00	64.86	3.02	0.19	32.52	4.54	13.95	0.19	47.75	0.87	0.33	13.81	4.90	12.00	0.00	65.91	3.06
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C6	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C21	0.88	16.90	4.06	5.12	0.00	69.83	2.65	0.31	26.16	5.55	10.02	0.00	57.12	0.53	1.06	17.29	6.20	7.83	0.00	66.03	0.28
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		R2SC2-LR																		
Functional Group		T1						T2						T3						
Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

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Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for R3N1-LR.

Transect		R3N1-LR																											
Functional Group		T1						T2						T3															
		Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand							
Week Number	B4	0.70	9.18	8.59	0.00	0.36	68.22	12.14	0.17	3.70	6.31	0.42	0.85	77.71	10.65	1.12	4.83	6.62	0.00	0.60	71.73	15.11							
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		R3N1-LR																				
Functional Group	Scleractinians	T1					T2					T3										
		Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C34	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C39	0.87	10.16	4.85	0.00	0.00	7.29	76.82	1.31	2.56	3.00	0.28	0.50	5.93	86.42	2.26	4.00	3.25	0.00	0.00	5.63	84.87
	C40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

*: Cyanobacteria found at the site –video analysis cannot differentiate between cyanobacteria and CTB, therefore CTB values may be higher than true CTB cover.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for R3NC1-LR.

Transect		R3NC1-LR																													
Functional Group		T1					T2					T3																			
		Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand									
Week Number	B4	0.19	19.26	9.21	0.00	1.56	62.52	6.69	0.21	15.11	8.01	0.00	0.19	65.11	10.80	1.69	14.95	7.54	0.00	1.33	68.52	5.81									
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A									

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Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		R3NC1-LR																				
Functional Group		T1					T2					T3										
Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand		
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C34	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C39	0.00	8.38	4.01	0.00	0.00	63.82	23.79	0.63	7.81	3.33	0.00	0.00	58.39	29.84	0.00	8.43	3.40	0.00	0.00	70.11	18.06
	C40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

-: Designates weeks that have yet to be analyzed.

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Transect		R3S1-CP																											
Functional Group		T1						T2						T3															
		Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand							
Week Number	B4	0.00	4.55	2.75	0.00	0.00	56.32	32.30	0.00	5.77	2.03	0.00	0.00	64.55	24.28	0.44	6.07	1.55	0.00	0.00	58.43	22.34							
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		R3S1-CP																				
Functional Group		T1					T2					T3										
Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand		
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C34	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
D	C38	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C39	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C40*	0.00	1.22	0.84	0.00	0.00	41.06	30.19	0.25	3.11	1.18	0.00	0.00	38.24	26.87	0.36	3.50	0.56	0.00	0.00	51.33	35.72
	C41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

*: Cyanobacteria found at the site –video analysis cannot differentiate between cyanobacteria and CTB, therefore CTB values may be higher than true CTB cover.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for R3S2-LR.

Transect		R3S2-LR																							
Functional Group		T1						T2						T3											
		Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand			
Week Number	B4	1.03	12.40	3.99	0.00	0.63	75.56	3.99	0.42	13.79	1.99	0.17	1.45	76.27	1.84	0.41	13.09	4.03	1.09	0.00	79.80	0.70			
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		R3S2-LR																				
Functional Group		T1					T2					T3										
Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand		
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C34	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C35	0.25	10.53	1.89	0.00	0.00	21.39	65.94	0.00	7.21	0.31	0.31	0.00	28.19	63.97	0.00	13.30	1.15	0.25	0.00	16.98	68.32
C	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C38	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C39	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C40*	1.72	3.37	1.90	0.00	0.00	43.33	47.54	0.31	15.67	2.75	0.00	0.00	36.76	39.46	0.59	14.45	1.22	0.00	0.00	68.67	11.96
	C41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

*: Cyanobacteria found at the site –video analysis cannot differentiate between cyanobacteria and CTB, therefore CTB values may be higher than true CTB cover.

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for R3S3-SG.

Transect		R3S3-SG																				
Functional Group		T1					T2					T3										
		Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand
Week Number	B4	1.21	4.89	4.19	0.21	0.00	88.76	0.54	1.66	18.44	3.53	0.17	0.00	75.37	0.28	1.41	13.90	1.57	0.47	0.64	80.93	1.08
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		R3S3-SG																				
Functional Group		T1					T2					T3										
Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand		
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C34	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C35	0.56	5.30	1.82	0.00	0.00	90.49	1.58	1.08	14.62	4.08	0.00	0.00	76.07	3.87	0.63	11.96	3.67	0.00	0.56	82.24	0.94
C	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C38	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C39	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	C40*	1.72	3.37	1.90	0.00	0.00	43.33	47.54	0.31	15.67	2.75	0.00	0.00	36.76	39.46	0.59	14.45	1.22	0.00	0.00	68.67	11.96
	C41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

-: Designates weeks that have yet to be analyzed.

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Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for R3SC1-CP.

Transect		R3SC1-CP																				
Functional Group		T1					T2					T3										
		Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand
Week Number	B4	0.21	10.48	4.56	0.42	0.00	69.82	6.66	0.94	4.10	4.37	0.00	0.00	73.16	13.05	0.38	7.76	5.34	0.00	0.00	59.61	13.73
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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Transect		R3SC1-CP																				
Functional Group	Scleractinians	T1					T2					T3										
		Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C34	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C35	0.91	9.83	3.49	0.94	0.00	77.33	7.50	1.43	3.10	5.53	0.00	0.31	78.06	11.57	0.61	5.83	4.28	0.00	0.36	79.65	8.96
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C40*	0.63	5.86	6.97	0.31	0.00	77.05	8.36	0.88	1.75	2.82	0.00	0.00	80.08	12.61	0.25	3.43	5.54	0.00	0.00	73.91	8.55
	C41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

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Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
FDEP Permit #0305721-001-BI – Port of Miami Phase III Federal Channel Expansion Project
Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for R3SC2-LR.

Transect		R3SC2-LR																				
Functional Group		T1					T2					T3										
		Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand
Week Number	B4	1.51	10.77	6.61	0.42	0.00	77.55	2.06	1.06	5.49	9.76	0.54	0.00	81.73	1.00	1.30	14.98	6.98	1.47	0.00	74.84	0.00
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Weekly Offshore Coral Stress and Sediment Block Compliance Report 42
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Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Transect		R3SC2-LR																				
Functional Group	Scleractinians	T1					T2					T3										
		Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coraline, Turf, Bare	Sand	
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C34	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C40*	2.21	9.34	6.31	0.36	0.28	76.45	2.90	2.54	3.80	6.55	0.00	0.00	82.96	3.79	1.04	4.33	6.77	5.57	0.00	80.15	2.14
	C41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

-: Designates weeks that have yet to be analyzed.

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Week 42 09/03/14-09/09/14 Dredge Activity
Appendix A Updated 9/12/14

Weekly functional group analysis results for R3SC3-SG.

Transect		R3SC3-SG																				
Functional Group		T1					T2					T3										
		Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanthids	Macroalgae	Coraline, Turf, Bare	Sand
Week Number	B4	0.65	10.32	12.93	0.00	0.00	74.93	0.00	0.42	7.23	10.88	0.00	0.00	78.70	1.30	0.50	17.21	15.17	0.00	0.00	65.75	0.48
	C1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C21	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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Transect		R3SC3-SG																				
Functional Group		T1						T2						T3								
Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coralline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coralline, Turf, Bare	Sand	Scleractinians	Octocorals	Sponges	Zoanths	Macroalgae	Coralline, Turf, Bare	Sand		
C	C26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C34	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	
	C35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	C36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C40*	2.34	11.90	2.38	0.63	0.28	81.42	0.78	1.58	7.80	5.79	0.31	0.42	81.10	2.44	1.77	10.30	8.83	0.63	0.00	78.10	0.00
	C41	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	C42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

-: Designates weeks that have yet to be analyzed.

E: Designates weeks when surveys were not conducted due to adverse environmental conditions, such as weather, currents, and visibility.

N/A: Data not collected because no dredge activity occurred within 750m of the site in compliance with the FDEP permit.

M: Video camera malfunction prevented data collection and analysis.

D: Designates weeks in which no data could be collected due to unsafe proximity of dredging equipment to the site.

*: Cyanobacteria found at the site –video analysis cannot differentiate between cyanobacteria and CTB, therefore CTB values may be higher than true CTB cover.