

EXHIBIT D



June 15, 2021

Edward Fontanin
Brevard County Utility Services Department
2725 Judge Fran Jamieson Way Bldg A-213
Melbourne, Florida 32940-6605
Edward.Fontanin@brevardfl.gov

Reference: BCUD South Central WWTF
DW Facility ID # FL0102679
OGC Case #21-0180
Response to Order 5. a)

Dear Mr. Fontanin:

On March 25, 2021 a consent order was entered into between the Florida Department of Environmental Protection (DEP) and Brevard County. The consent order identified water quality exceedances at the South Central Regional Wastewater Treatment Facility (SC WWTF) (the Site). The following water quality exceedances were identified at the SC WWTF:

- The outfall of the wetlands in the Northwest corner of Cell 4 to the canal leading to the Saint Johns River (WEP-1)
 - Total Nitrogen (TN)
 - Carbonaceous Biological Oxygen Demand (CBOD)
 - Total Suspended Solids (TSS)
- Discharge from the SC WWTF to the holding ponds (EFB-2)
 - Fecal Coliforms
 - TSS
- Two monitoring wells adjacent to the holding ponds, located to the north of the wetlands (MWC-5-SOD and MWC-6-SOD)
 - Fecal Coliform

The consent order, in Order 5. a), required Brevard County to complete an evaluation to discover the cause or causes of the violations. The evaluation is to contain recommended corrective actions, including applicable design modifications. Order 5 b) will require an application to the DEP within 60 days of the evaluation in 5 a) for design modifications to address the causes identified in Order 5 a). Order 5 c) required the construction of the permitted system outlined in Order 5 b) within 545 days of receipt of the permit.

Tetra Tech has been asked to provide the required assessment outlined in Order 5 a) of the consent order limited to the following:

- Discover the cause or causes of the violations
- Develop a list of recommended corrective actions

Tetra Tech, Inc.

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Conversations with Brevard County Utilities Department identified a spray event used to control cattails (*Typha* sp.) in the wetlands as a potential source of nitrogen and increased BOD. The cattails and other vegetation were left in place and created decaying material, particularly within Cells 3 and 4. This conversation also identified that a temporarily failed filter screen caused the exceedances at EFB-2, and investigation of the EFB-2 exceedance will not be required.

Water Sampling and Analysis:

WEP-1 Effluent Sampling and Analysis

On May 4, 2021, a sample was collected at the weir prior to discharging from Cell 4 of the wetland (WEP-1) to evaluate the conditions and nutrient concentrations compared to previous sampling events. A manual grab sample was collected in accordance with FDEP Standard Operating Procedures (SOPs), FS 2400 (FDEP, 2017). Groundwater samples were delivered to Pace Laboratories in Pompano Beach, Florida, under proper chain of custody protocol, for analysis of TSS, BOD, cBOD, total nitrogen, total Kjeldahl nitrogen (TKN), and nitrogen as NO₂ and NO₃.

WEP-1 Effluent Sampling Results

BOD was detected at 2.4 mg/L, total nitrogen was detected at 1.6 mg/L, which are less than the permit limits. TSS was detected at 4.6 mg/L, which exceeds the monthly average, but not the single sample limit, which is the applicable limit. No analytes sampled on May 4, 2021 exceeded the permit limits for a single sample.

The location of WEP-1 is provided on Figure 1. A summary of the analytical results compared to the historic analytical results collected since 2018 and the permit limits is provided in Table 1. Laboratory analytical results are provided in Attachment 1.

Groundwater

On May 4, 2021, groundwater samples were collected from monitoring wells MWC-5-SOD and MWC-6-SOD to evaluate the concentration and source of fecal coliforms detected in previous sampling events. Monitoring well purging and sampling activities were conducted in accordance with FDEP SOP, FS 2200 (FDEP, 2017). Groundwater samples were delivered to Pace Laboratories in Ormond Beach, Florida, under proper chain of custody protocol, for analysis of fecal coliforms. In addition, groundwater samples were delivered to Source Molecular Laboratories in Miami Lakes, Florida, under proper chain of custody protocol, for detection and quantification of the fecal host associated gene biomarker by quantitative Polymerase Chain Reaction (qPCR) DNA analytical technology. Specifically, markers for human, ruminant and birds were analyzed.

Groundwater Sampling Results

Fecal coliforms were detected in the samples sent to Pace Laboratories at 172 most probable number/100 ml in MWC-5-SOD and were not detected in MWC-6-SOD. Fecal coliform tracing completed in the samples sent to Source Molecular detected bird biomarkers in MWC-5-SOD and MWC-6-SOD but below the limit of quantitation. Human and Ruminant biomarkers were not detected in either sample.

The monitoring well locations are provided on Figure 1. A summary of the groundwater analytical results compared to the historic analytical results collected since 2018 and the permit limits is provided in Table 2. Laboratory analytical results are provided in Attachment 1. Monitoring well sampling forms and calibration logs are provided as Attachment 2.

Survey of Cell 4 and Muck Presence

Oceanside Solutions of Satellite Beach, Florida provided surveying and muck probing services to identify the presence or absence of muck in the accessible open water areas of Cell 4. On April 27, 2021, Oceanside Solutions arrived on site to collect muck thickness data from a small shallow draft boat. Survey grade RTK GPS Equipment was used to identify the vertical and horizontal location of the hard bottom. A 1-inch diameter graduated PVC push rod was used to identify the top of the muck and was pushed to the hard-bottom depth to determine the muck thickness.

Data were collected from a total of 119 points in Cell 4. Muck thickness ranged from 0.05 to 1.4 feet thick, with an average thickness of 0.32 feet. An algal mat was apparent on the bottom in four locations and was not detectable with the probe. The presence of the algal mat could only be determined in areas where the water was relatively shallow and clear to identify the presence by sight. A summary of the survey data is provided in Table 3. The locations of the survey points, and maps summarizing the relative thickness of the muck are provided as Attachment 3. Based on the collected data, a total of 6,571 cubic yards of muck is present in the open water area in the western portion of Cell 4.

Biological Walkdown:

On May 5, 2021, Tetra Tech mobilized to the site to conduct a biological walkdown at Cells 3 and 4 of the SC WWTF.

The original planting plan outlined the herbaceous species that were to be installed on-site; however, it is unclear whether those plants were available for use from nurseries during the planting event. The table below details the planting list from the original planting plan. Those observed during the biological walkdown are denoted by an asterisk.

Scientific Name	Common Name
<i>Pontederia cordata</i> *	Pickerelweed
<i>Sagittaria lancifolia</i> *	Duck potato
<i>Sagittaria latifolia</i>	Arrowhead
<i>Scirpus validus</i> *	Soft-stem bulrush
<i>Cyperus articulatus</i>	Jointed flatsedge
<i>Scirpus olneyi</i>	Olney's three square
<i>Zizania aquatica</i> *	Wild rice
<i>Thalia geniculata</i>	Fire flag
<i>Eleocharis</i> spp.	Spikerush
<i>Cladium jamaicense</i>	Sawgrass
<i>Najas guadalupensis</i>	Bushy pondweed
<i>Ceratophyllum demersum</i>	Coontail

Other species in the table may have been present in the deeper water areas but were not observed from the bermed path locations.

The Dominant Vegetative Cover is provided as Figure 2, depicts the vegetative composition of the cells based on observations made during the biological walkdown. Cells 3 and 4 were observed from the bermed paths surrounding each of the cells. Twenty-four total photo stations were

established on the bermed perimeter of the collective cells and documented via GPS. Fourteen photo stations (Dominant Vegetative Cover Map, PS 1-14) were established at Cell 4 and ten (Dominant Vegetative Cover Map, PS 15-24) were established at Cell 3. A vegetative assessment was then conducted at each photo station to determine the approximate percent coverage of each species, contributing to the Dominant Vegetative Cover Figure enclosed with this memo. The dominant species observed included cattail (*Typha* sp.), duck potato, and pickerelweed. Cattail dominated both cells, with both living and dead plants observed. The dead cattail covered approximately 12% of Cell 3 and 11% of Cell 4. Mixed and monotypic stands of cattail were observed in Cell 4, whereas the cattails in Cell 3 were solely monotypic stands. The green algae-like species was determined to be filamentous algae, observed in mats in the areas of open water in both cells. The increased presence of algae is likely due to the decaying material produced by the dead cattails. One area (approximately 0.7 acres) of torpedo grass (*Panicum repens*) was observed in Cell 4. According to the Florida Exotic Pest Plant Council Invasive Plant List, torpedo grass is considered a Category I invasive species.

During the biological walkdown, evidence of listed species was observed within the site. The tricolored heron (*Egretta tricolor*) and the little blue heron (*Egretta caerulea*) were observed on-site, both of which are State-designated as Threatened. The Federally-designated Threatened (due to similarity of appearance) American alligator (*Alligator mississippiensis*) was also observed. Other wildlife observed on-site can be found in Table 4.

Photos from the biological walkdown are provided as Attachment 4.

Conclusions

The project was divided into three focus areas water sampling, biological walkdown, and sediment evaluation for the purpose of data collection and evaluation of the wetlands system. The water, sediment, and biology of the wetlands system are interconnected and require a balance for a healthy system that provides the desired effluent water quality.

The assumption entering the project was the spraying of the cattails and leaving them in the system to decay was the root cause of the effluent water quality exceedances at WEP-1. The spray event occurred on May 11, 2020.

Review of the historical effluent sampling data identified permit exceedances immediately following the spray event. The highest cBOD result in the sample set was in July and September 2020, with cBOD results exceeding the 3.75 mg/L monthly average permit limit in WEP-1 at concentrations of 5.15 and 4.11 mg/L, respectively. Total nitrogen results slightly exceeded the 2.0 mg/L monthly average permit limit at a concentration of 2.1 mg/L. These water data indicate an increase in the cBOD and nitrogen two and four months following the herbicide spraying event, and likely was the result of the decaying plant material. The presence or absence of filamentous algae is not known prior to the spray event; however, the presence of this algae is likely a response to the increase in nutrients in the system. The algae grow and take up the excess nutrients. This may be creating the rebalancing of nitrogen after September 2020, as the plants continue to degrade and input nitrogen the algae grow and take up that nitrogen. At some point in time the algae will die off and sink to the bottom creating muck. A history of this practice has resulted in muck forming at the bottom of the open water area of Cell 4. Other areas of the wetlands were not evaluated for the presence or absence of muck.

When water quality is good, sediments are a sink for nutrients. When water quality degrades, muck will flux nutrients into the water column and may be a source for nutrients. One of the main drivers for this is dissolved oxygen. Generally dissolved oxygen should maintain a level

above 2 mg/L. Dissolved oxygen in the water column, as measured at WEP-1, remains well above the 2 mg/L threshold; however, dissolved oxygen at the sediment water interface, particularly overnight when oxygen is consumed and photosynthesis is not adding oxygen to the system, may dictate the role of the sediments to be a source for nutrients. While the volume of muck in the system is relatively low, the presence of muck throughout the measured area of Cell 4 is a potential for nutrient flux into the water column under poor water quality conditions.

The presence of fecal coliforms in MWC-5-SOD does not appear to be an issue with the water treatment. Fecal coliforms were detected in MWC-5-SOD at 172 most probable number/100 mL and not detected in MWC-6-SOD; however, source tracing identified bird markers and no human markers for fecal coliforms. In March 2021 a large flock of White Pelicans (*Pelecanus erythrorhynchos*) was observed on the north side of the lake. White Pelicans will fish in these lakes by surrounding fish and “herding” them into the flock to scoop out of the water. White Pelicans are among the largest bird species in North America and migrate to Florida for the late winter months. The source tracing data suggest that bird species such as the White pelican and other bird species that frequent these ponds throughout the year may be the primary source of fecal coliforms in the monitoring wells.

Proposed Corrective Actions

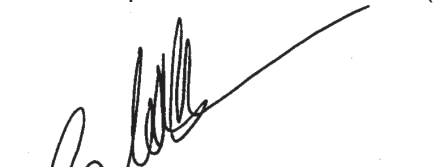
Based on our understanding of the system and the data collected to date, Tetra Tech recommends the following remediation and mitigation options:

- Cease spraying of herbicide on cattail stands;
- Remove dead, decaying cattail stands;
- Herbicide spray monotypic areas of torpedo grass, allow to die back, then remove dead vegetation and underlying organic material;
- Adopt a mechanical removal plan for excess filamentous algae, cattails, dead vegetation, and underlying organic material. This may include cutting of plant material and should include removal and disposal of all cut or observed floating or sinking detritus;
- If nutrient exceedances continue, prepare a plan for the removal of muck from Cell 4, and evaluate the presence or absence of muck in Cells 1, 2, and 3. After completion of the above tasks, replant these areas with planting-zone appropriate and available vegetation from the original “Planting Plan”.
- There are no recommended actions for fecal coliforms in MWC-5-SOD or MWC-6-SOD, since no human markers for fecal coliforms were identified, and bird markers were confirmed.

Should you have any questions or require additional information, please contact me at (321) 636-6470.

Sincerely,


Matthew Shelton
Project Manager


William Musser, P.E., P.H., CFM
Vice-President

Attachments

FIGURES



LEGEND

- Monitoring Well Location
- Effluent Sampling Location

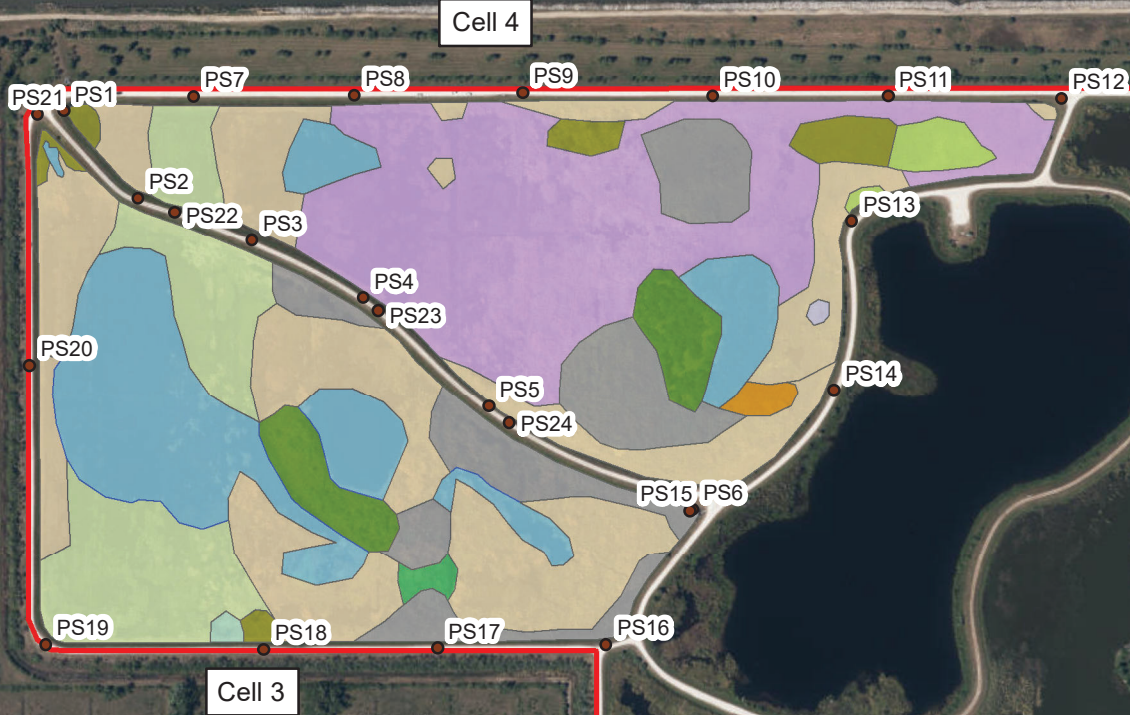
DRAWN BY	DATE
M. SHELTON	6/2/2021
CHECKED BY	DATE
SCALE AS NOTED	



TETRA TECH

Water Sample Location Map
Brevard Wastewater Treatment Facility
Brevard County, Florida

CONTRACT NUMBER	
100-WTR-T41397.01	
APPROVED BY	DATE
FIGURE NO.	
1	



LEGEND

- Photo Stations
- Site Boundary

Vegetative Cover

- Dead Typha sp. (11.38%)
- Open Water (16.36%)
- Pontederia cordata (0.10%)
- Pontederia cordata and Typha sp. (0.48%)
- Sagittaria lancifolia (2.29%)
- Sagittaria/Typha/Pontederia (24.47%)
- Sagittaria and Pontederia (11.96%)
- Sagittaria and Salix caroliniana (0.44%)
- Scirpus validus (0.21%)
- Panicum repens (1.18%)
- Tree Island (4%)
- Typha sp. (27.14%)



Percent coverage and vegetative boundaries are an estimate based on limited ground truthing using the methods described in the Scope of Work.

DRAWN BY	DATE
N. BOTS	5/18/2021
CHECKED BY	DATE
R. HEILMAN	5/18/2021
SCALE AS NOTED	



Dominant Vegetative Cover
Brevard Wastewater Treatment Facility
Brevard County, Florida

CONTRACT NUMBER	
100-WTR-T41397.01	
APPROVED BY	DATE
H. CAROLAN	5/18/2021
FIGURE NO. 2	

TABLES

TABLE 1 - WEP-1 EFFLUENT SAMPLING RESULTS

Brevard County Utility Services - South Central Regional WWTF

Sample	DO	BOD, 5 day	CBOD	TSS	TOTAL Nitrogen	Nitrogen, Kjeldahl, Total	Nitrogen, NO2 plus NO3	Ammonia	TOTAL Phosphorus
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Avg. July 2018	NA	NA	2.4	3.74	1.93	NA	NA	NS	0.086
2019 - No Discharge									
Avg. July 2020	4.06	NA	5.15	1.58	2.10	NA	NA	0.17	0.06
Avg. September 2020	3.83	NA	4.11	2.33	1.44	NA	NA	0.19	0.05
Avg. October 2020	3.53	NA	3.15	2.25	1.30	NA	NA	0.24	0.05
Avg. January 2021	5.54	NA	1.32	0.77	1.40	NA	NA	0.18	0.05
Avg. February 2021	5.34	NA	1.84	2.43	1.65	NA	NA	0.26	1.20
Avg. March 2021	5.73	NA	1.99	1.20	1.64	NA	NA	0.1	0.07
Grab - May 4, 2021	NA	2.4	2.000 U	4.6	1.6	1.5	0.033 U	0.1	NA

Permit Limits

Single Sample	-	-	6	6	3.2	-	-	-	0.32
Monthly Average	-	-	3.75	3.75	2	-	-	-	0.2

Notes:

Average discharge results provided for months where discharges occurred from 2018 through 2021.

Bold results indicate exceedance of permit limits.

mg/L - milligrams per liter

DO - dissolved oxygen

BOD - Biological Oxygen Demand

cBOD - carbonaceous BOD

TSS - total suspended solids

U - not detected at the noted method detection limit

NA - not analyzed

TABLE 2 - GROUNDWATER SAMPLING RESULTS

Brevard County Utility Services - South Central Regional WWTF

Sample	Date	Water Elevation	Fecal Coliforms
		(feet NGVD)	(MPN/100mL)
MWC-5-SOD	2/8/2018	20.57	<1
	4/10/2018	20.33	1
	7/16/2018	5.22	<1
	10/22/2018	20.73	9
	1/21/2019	20.52	<1
	4/10/2019	20.88	1
	7/2/2019	20.75	<1
	10/8/2019	19.87	43
	1/16/2020	21.29	3
	6/22/2020	20.32	<1
	9/28/2020	21.08	9
	12/8/2020	20.68	1
	3/4/2021	21.22	2
	5/4/2021	23.45	172

MWC-6-SOD	2/8/2018	22.61	<1
	4/10/2018	21.86	1
	7/16/2018	21.86	<1
	10/22/2018	21.86	<1
	1/21/2019	21.86	<1
	4/10/2019	21.86	1
	7/2/2019	21.86	<1
	10/8/2019	21.86	16
	1/16/2020	21.86	<1
	6/22/2020	21.86	<1
	9/28/2020	21.86	<1
	12/8/2020	21.86	8
	3/4/2021	21.86	<1
	5/4/2021	21.86	1 U

Permit limit	4
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Notes:

Bold values exceed the permit limits.

feet NGVD - elevation in feet above National Geodetic Vertical Datum

MPN/100ml - most probable number per 100 milliliters

< - less than noted value

TABLE 3 - MUCK PROBING AND SURVEY RESULTS

Brevard County Utility Services - South Central Regional WWTF

Point No.	Easting	Northing	Elevation of Hard-Bottom (feet NAVD88)	Muck Thickness (Feet)
P1	730891.11	1416095.16	20.03	0.35
P2	730983.4	1416066.41	20.14	0.15
P3	731038.12	1416073.48	20.31	0.2
P4	731081.06	1416035.92	19.75	0.25
P5	731154.21	1416006.05	20.57	0.45
P6	731202.92	1415981.8	20.49	0.1
P7	731222.42	1415955.51	20.59	0.1
P8	731239.55	1415932.9	20.37	0.3
P9	731227.71	1415912.02	20.26	0.1
P10	731193.53	1415886.01	20.4	0.1
P11	731179.05	1415860.16	20.28	0.1
P12	731154.24	1415819.99	20.15	0.2
P13	731144.15	1415790.01	21.36	0.5
P14	731161.55	1415764.85	20.16	0.35
P15	731176.18	1415770.45	19.27	0.8
P16	731218.08	1415773.41	19.7	0.45
P17	731257.66	1415777.95	20.55	0.2
P18	731265.89	1415816.33	20.89	0.25
P19	731287.68	1415847.17	20.39	0.2
P20	731301.83	1415856.74	20.69	0.1
P21	731317.34	1415841.31	20.97	0.15
P22	731351.79	1415816.65	20.78	0.4
P23	731395.56	1415776.18	20.68	0.1
P24	731414.45	1415751.84	20.95	0.35
P25	731338.89	1415772.93	20.38	0.25
P26	731256.79	1415779.59	20.09	0.4
P27	731211.31	1415774.82	19.76	0.25
P28	731145.64	1415768.21	20.36	0.2
P29	731096.5	1415765.94	19.72	0.65
P30	731085.03	1415651.34	20.41	1
P31	731072.68	1415698.3	20.15	0.55
P32	731072.43	1415734.87	20.3	0.4
P33	731060.32	1415770.87	19.64	0.75
P34	731023.79	1415771.81	19.31	0.55
P35	730976.11	1415783.39	20.09	0.2
P36	730948.61	1415778.07	20.27	0.15
P37	730951.16	1415730.14	19.98	0.15
P38	730992.39	1415734.68	20.47	0.05
P39	730973.27	1415707.71	20.13	0.2
P40	730958.4	1415680.51	20.23	0.6
P41	730990.27	1415662.36	20.32	0.25
P42	730961.53	1415635.24	20.17	0.35
P43	730968.96	1415559.74	19.66	0.3
P44	730953.91	1415585.5	19.35	0.15
P45	730931.07	1415665.48	20.08	0.1

Point No.	Easting	Northing	Elevation of Hard-Bottom (feet NAVD88)	Muck Thickness (Feet)
P46	730926.6	1415781.97	20.33	0.6
P47	730892.02	1415781.91	19.84	0.75
P48	730893.86	1415742.61	19.89	0.3
P49	730922.55	1415716.71	19.97	0.25
P50	730887.62	1415693.23	19.89	0.25
P51	730886.74	1415629.65	19.64	0.30 {0.75 ALGAE MAT}
P52	730855.96	1415664.85	19.82	0.20 {0.50 ALGAE MAT}
P53	730813.95	1415679.08	19.79	0.40 {0.55 ALGAE MAT}
P54	730826.09	1415714.79	20.23	0.5
P55	730781.37	1415696.26	19.82	0.15
P56	730730.71	1415727.6	19.61	0.2
P58	730703.51	1415741.01	20.06	0.15 {0.50 ALGAE MAT}
P59	730655.08	1415759.51	19.89	0.35
P60	730616.94	1415777.44	19.89	0.15
P61	730577.07	1415798.73	19.58	0.1
P62	730584.58	1415825.37	20.59	0.3
P63	730524.19	1415812.59	20.4	0.15
P64	730589.77	1415868.47	20.17	0.2
P65	730559.75	1415904.62	20.15	0.55
P66	730553.58	1415936.07	20.25	0.2
P67	730549.5	1415972.74	20.13	0.2
P68	730521.11	1415999.66	20.15	0.7
P69	730513.09	1415962.54	20.81	0.8
P70	730473.16	1415956.89	20.63	0.3
P71	730440.57	1415905.81	20.19	0.4
P72	730445.41	1415860.95	20.18	0.1
P73	730474.48	1415835.45	20.12	0.15
P74	730413.99	1415867.32	20.02	0.25
P75	730380.33	1415873.98	19.95	0.2
P76	730346.16	1415892.53	19.75	0.15
P77	730391.1	1415902.79	20.39	0.4
P78	730439.5	1415940.24	20.5	0.9
P79	730428.84	1415992.09	20.43	1
P80	730406.09	1416038	19.88	0.2
P81	730380.66	1416074.81	19.5	0.1
P82	730325.04	1416075.17	19.41	0.4
P83	730435.47	1416086.45	20.28	0.25
P84	730502.48	1416092.09	19.63	1.4
P86	730544.31	1416079.11	20.45	0.65
P87	730607.21	1416054.59	19.81	0.3
P88	730655.52	1416066.26	20.01	0.4
P89	730698.71	1416079.9	19.61	0.1
P90	730755.77	1416074.32	20.17	0.35
P91	730811.09	1416095.01	20.2	0.1

Point No.	Easting	Northing	Elevation of Hard-Bottom (feet NAVD88)	Muck Thickness (Feet)
P92	730853.67	1416091.69	19.79	0.05
P93	730899.11	1416043.77	19.58	0.05
P94	730899.54	1416000.34	20.13	0.15
P95	730897.9	1415998.53	19.83	0.2
P96	730860.85	1415992.62	20.1	0.25
P97	730900.1	1415946.62	19.71	0.1
P98	730859.83	1415937.4	20.24	0.15
P100	730828.77	1415973.56	19.94	0.2
P101	730808.18	1416007.99	20.04	0.2
P102	730781.88	1416004.98	20.49	0.25
P103	730776.84	1415970.63	20.3	0.15
P104	730768.18	1415922.43	20.23	0.25
P105	730724.8	1415887.03	20.35	0.2
P106	730722.46	1415954.91	20.03	0.3
P107	730727.26	1415999.87	19.56	0.5
P108	730662.7	1416023.33	19.96	0.2
P109	730642.91	1415968.57	19.89	0.25
P110	730660.82	1415912.18	20.06	0.15
P111	730578.68	1416002.49	19.41	0.2
P112	730520.22	1416001.42	20.58	0.45
P113	730480.92	1416027	20.78	0.55
P114	730153.12	1416004.7	20.49	0.4
P115	730134.35	1416040.52	19.45	0.4
P116	730101.04	1416090.85	19.65	0.55
P117	730117.75	1416067.95	19.43	0.35
P118	730146.47	1416063.65	19.8	0.2
P119	730154.33	1416075.26	19.58	0.3
			Average	0.32

Notes:

Average muck thickness does not include apparent algal mat, which was only identified by sight.

Data collected by:

OCEANSIDE SOLUTIONS LLC

Professional Hydrographic Survey Consultants

Surveyed - April 27, 2021

Datum - NAD83-FL East 0901 and NAVD88- G12B

NAD83-FL East 0901 - North American Datum of 1983, State Plane Florida East

NAVD88 - North American Vertical Datum of 1988

TABLE 4 - OBSERVED WILDLIFE SPECIES TABLE

Brevard County Utility Services - South Central Regional WWTF

Birds	
Anhinga	<i>Anhinga anhinga</i>
Boat-tailed Grackle	<i>Quiscalus major</i>
Glossy Ibis	<i>Plegadis falcinellus</i>
Great Blue Heron	<i>Ardea herodias</i>
Great Egret	<i>Ardea alba</i>
Little Blue Heron (ST)	<i>Egretta caerulea</i>
Osprey	<i>Pandion haliaetus</i>
Red-shouldered Hawk	<i>Buteo lineatus</i>
Red-wing Blackbird	<i>Agelaius phoeniceus</i>
Tricolored Heron (ST)	<i>Egretta tricolor</i>
White Ibis	<i>Eudocimus albus</i>
Mammals	
Marsh Rabbit	<i>Sylvilagus palustris</i>
Reptiles	
American Alligator (FT)	<i>Alligator mississippiensis</i>

Notes:

ST - State Threatened

FT - Federally Threatened (similar appearance)

ATTACHMENT 1
Laboratory Analytical Results

May 11, 2021

Mr. Matt Shelton
Tetra-Tech Cocoa
11 Riverside Drive
Ste 204
Cocoa, FL 32922

RE: Project: Brevard County
Pace Project No.: 35630343

Dear Mr. Shelton:

Enclosed are the analytical results for sample(s) received by the laboratory on May 04, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Ormond Beach

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Lori Palmer
lori.palmer@pacelabs.com
813-855-1844
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Brevard County

Pace Project No.: 35630343

Pace Analytical Services Ormond Beach

8 East Tower Circle, Ormond Beach, FL 32174

Alaska DEC- CS/UST/LUST

Alabama Certification #: 41320

Arizona Certification# AZ0819

Colorado Certification: FL NELAC Reciprocity

Connecticut Certification #: PH-0216

Delaware Certification: FL NELAC Reciprocity

Florida Certification #: E83079

Georgia Certification #: 955

Guam Certification: FL NELAC Reciprocity

Hawaii Certification: FL NELAC Reciprocity

Illinois Certification #: 200068

Indiana Certification: FL NELAC Reciprocity

Kansas Certification #: E-10383

Kentucky Certification #: 90050

Louisiana Certification #: FL NELAC Reciprocity

Louisiana Environmental Certificate #: 05007

Maryland Certification: #346

Michigan Certification #: 9911

Mississippi Certification: FL NELAC Reciprocity

Missouri Certification #: 236

Montana Certification #: Cert 0074

Nebraska Certification: NE-OS-28-14

New Hampshire Certification #: 2958

New Jersey Certification #: FL022

New York Certification #: 11608

North Carolina Environmental Certificate #: 667

North Carolina Certification #: 12710

North Dakota Certification #: R-216

Ohio DEP 87780

Oklahoma Certification #: D9947

Pennsylvania Certification #: 68-00547

Puerto Rico Certification #: FL01264

South Carolina Certification: #96042001

Tennessee Certification #: TN02974

Texas Certification: FL NELAC Reciprocity

US Virgin Islands Certification: FL NELAC Reciprocity

Virginia Environmental Certification #: 460165

West Virginia Certification #: 9962C

Wisconsin Certification #: 399079670

Wyoming (EPA Region 8): FL NELAC Reciprocity

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Brevard County
Pace Project No.: 35630343

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35630343001	SCWWTF-WEP-1-050421	Water	05/04/21 09:25	05/04/21 15:15
35630343002	SCWWTF-MWC-5-SOD-050421	Water	05/04/21 10:45	05/04/21 15:15
35630343003	SCWWTF-MWC-6-SOD-050421	Water	05/04/21 11:55	05/04/21 15:15

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Brevard County

Pace Project No.: 35630343

Lab ID	Sample ID	Method	Analysts	Analytes Reported
35630343001	SCWWTF-WEP-1-050421	SM 2540D	RAK	1
		SM 5210B	MCD	1
		SM 5210B	EM2	1
		TKN+NO _x Calculation	NMT	1
		EPA 351.2	CHP	1
		EPA 353.2	CLL	1
35630343002	SCWWTF-MWC-5-SOD-050421	Colilert/Quani-Tray	MEB	1
35630343003	SCWWTF-MWC-6-SOD-050421	Colilert/Quani-Tray	MEB	1

PASI-O = Pace Analytical Services - Ormond Beach

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: Brevard County

Pace Project No.: 35630343

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
35630343001	SCWWTF-WEP-1-050421					
SM 2540D	Total Suspended Solids	4.6	mg/L	1.0	05/09/21 15:12	
SM 5210B	BOD, 5 day	2.4	mg/L	2.0	05/10/21 16:18	
TKN+NOx Calculation	Total Nitrogen	1.6	mg/L	0.50	05/10/21 14:46	
EPA 351.2	Nitrogen, Kjeldahl, Total	1.5	mg/L	0.50	05/07/21 11:55	
35630343002	SCWWTF-MWC-5-SOD-050421					
Colilert/Quani-Tray	Fecal Coliforms	172	MPN/100mL	1.0	05/05/21 11:31	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Brevard County

Pace Project No.: 35630343

Sample: SCWWTF-WEP-1-050421 **Lab ID:** 35630343001 Collected: 05/04/21 09:25 Received: 05/04/21 15:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
2540D Total Suspended Solids									
Analytical Method: SM 2540D									
Initial Volume/Weight: 1000 mL Final Volume/Weight: 1000 mL									
Pace Analytical Services - Ormond Beach									
Total Suspended Solids	4.6	mg/L	1.0	1.0	1		05/09/21 15:12		
5210B BOD, 5 day									
Analytical Method: SM 5210B									
Initial Volume/Weight: 300 mL Final Volume/Weight: 300 mL									
Pace Analytical Services - Ormond Beach									
BOD, 5 day	2.4	mg/L	2.0	2.0	1	05/05/21 13:13	05/10/21 16:18		
5210B cBOD, 5 day									
Analytical Method: SM 5210B Preparation Method: SM 5210B									
Initial Volume/Weight: 300 mL Final Volume/Weight: 300 mL									
Pace Analytical Services - Ormond Beach									
Carbonaceous BOD, 5 day	2.0 U	mg/L	2.0	2.0	1	05/06/21 09:24	05/11/21 07:20		
Total Nitrogen Calculation									
Analytical Method: TKN+NOx Calculation									
Pace Analytical Services - Ormond Beach									
Total Nitrogen	1.6	mg/L	0.50	0.086	1		05/10/21 14:46		
351.2 Total Kjeldahl Nitrogen									
Analytical Method: EPA 351.2 Preparation Method: EPA 351.2									
Initial Volume/Weight: 20 mL Final Volume/Weight: 20 mL									
Pace Analytical Services - Ormond Beach									
Nitrogen, Kjeldahl, Total	1.5	mg/L	0.50	0.086	1	05/06/21 12:37	05/07/21 11:55	7727-37-9	
353.2 Nitrogen, NO2/NO3 pres.									
Analytical Method: EPA 353.2									
Initial Volume/Weight: 50 mL Final Volume/Weight: 50 mL									
Pace Analytical Services - Ormond Beach									
Nitrogen, NO2 plus NO3	0.033 U	mg/L	0.050	0.033	1		05/08/21 12:35		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Brevard County

Pace Project No.: 35630343

Sample: SCWWTF-MWC-5-SOD-050421 **Lab ID:** 35630343002 Collected: 05/04/21 10:45 Received: 05/04/21 15:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
MBIO Fecal Coliforms									
Analytical Method: Colilert/Quani-Tray Preparation Method: Colilert/Quani-Tray									
Initial Volume/Weight: 100 mL Final Volume/Weight:									
Pace Analytical Services - Ormond Beach									
Fecal Coliforms	172	MPN/100mL	1.0	1.0	1	05/04/21 16:51	05/05/21 11:31		

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ANALYTICAL RESULTS

Project: Brevard County

Pace Project No.: 35630343

Sample: SCWWTF-MWC-6-SOD-050421 **Lab ID:** 35630343003 Collected: 05/04/21 11:55 Received: 05/04/21 15:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
MBIO Fecal Coliforms									
Analytical Method: Colilert/Quani-Tray Preparation Method: Colilert/Quani-Tray									
Initial Volume/Weight: 100 mL Final Volume/Weight:									
Pace Analytical Services - Ormond Beach									
Fecal Coliforms	1.0 U	MPN/100mL	1.0	1.0	1	05/04/21 16:51	05/05/21 11:31		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Brevard County

Pace Project No.: 35630343

QC Batch: 726798

Analysis Method: Colilert/Quani-Tray

QC Batch Method: Colilert/Quani-Tray

Analysis Description: FCOLMPN MBIO Fecal Coliform

Laboratory: Pace Analytical Services - Ormond Beach

Associated Lab Samples: 35630343002, 35630343003

METHOD BLANK: 3961204

Matrix: Solid

Associated Lab Samples: 35630343002, 35630343003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fecal Coliforms	MPN/100mL	1.0 U	1.0	1.0	05/05/21 11:31	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Brevard County

Pace Project No.: 35630343

QC Batch: 727660

Analysis Method: SM 2540D

QC Batch Method: SM 2540D

Analysis Description: 2540D Total Suspended Solids

Laboratory: Pace Analytical Services - Ormond Beach

Associated Lab Samples: 35630343001

METHOD BLANK: 3966956

Matrix: Water

Associated Lab Samples: 35630343001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Suspended Solids	mg/L	1.0 U	1.0	1.0	05/09/21 15:11	

LABORATORY CONTROL SAMPLE & LCSD: 3966957

3966960

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	100	96.0	100	96	100	90-110	4	10	

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QUALITY CONTROL DATA

Project: Brevard County

Pace Project No.: 35630343

QC Batch: 726625	Analysis Method: SM 5210B
QC Batch Method: SM 5210B	Analysis Description: 5210B BOD, 5 day
	Laboratory: Pace Analytical Services - Ormond Beach

Associated Lab Samples: 35630343001

METHOD BLANK: 3960266 Matrix: Water
Associated Lab Samples: 35630343001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
BOD, 5 day	mg/L	2.0 U	2.0	2.0	05/10/21 15:16	

LABORATORY CONTROL SAMPLE: 3960268

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
BOD, 5 day	mg/L	199	170	85	85-115	

SAMPLE DUPLICATE: 3960269

Parameter	Units	35630435001 Result	Dup Result	RPD	Max RPD	Qualifiers
BOD, 5 day	mg/L	298	307	3	20	

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QUALITY CONTROL DATA

Project: Brevard County
Pace Project No.: 35630343

QC Batch: 726940	Analysis Method: SM 5210B
QC Batch Method: SM 5210B	Analysis Description: 5210B cBOD, 5 day
	Laboratory: Pace Analytical Services - Ormond Beach

Associated Lab Samples: 35630343001

METHOD BLANK: 3961945 Matrix: Water
Associated Lab Samples: 35630343001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Carbonaceous BOD, 5 day	mg/L	2.0 U	2.0	2.0	05/11/21 07:12	

LABORATORY CONTROL SAMPLE: 3961947

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Carbonaceous BOD, 5 day	mg/L	199	178	90	85-115	

SAMPLE DUPLICATE: 3961948

Parameter	Units	35630315001 Result	Dup Result	RPD	Max RPD	Qualifiers
Carbonaceous BOD, 5 day	mg/L	125	128	2	20	

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QUALITY CONTROL DATA

Project: Brevard County
Pace Project No.: 35630343

QC Batch: 726898	Analysis Method: EPA 351.2
QC Batch Method: EPA 351.2	Analysis Description: 351.2 TKN
	Laboratory: Pace Analytical Services - Ormond Beach

Associated Lab Samples: 35630343001

METHOD BLANK: 3961781 Matrix: Water
Associated Lab Samples: 35630343001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	0.086 U	0.50	0.086	05/07/21 11:26	

LABORATORY CONTROL SAMPLE: 3961782

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	20	20.6	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3961784 3961783

Parameter	Units	35629428001		3961783		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Nitrogen, Kjeldahl, Total	mg/L	0.41 I	20	20	20.6	20.7	101	102	90-110	0	20

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3961786 3961785

Parameter	Units	35629428003		3961785		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Nitrogen, Kjeldahl, Total	mg/L	0.64	20	20	21.2	21.2	103	103	90-110	0	20

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Brevard County
Pace Project No.: 35630343

QC Batch: 727572	Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2	Analysis Description: 353.2 Nitrate + Nitrite, preserved
	Laboratory: Pace Analytical Services - Ormond Beach

Associated Lab Samples: 35630343001

METHOD BLANK: 3966076 Matrix: Water
Associated Lab Samples: 35630343001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	0.033 U	0.050	0.033	05/08/21 12:16	

LABORATORY CONTROL SAMPLE: 3966077

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2	2.2	108	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3966079 3966078

Parameter	Units	35628916003		3966078		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Nitrogen, NO2 plus NO3	mg/L	0.073	2	2	2.1	2.1	102	102	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3966081 3966080

Parameter	Units	35628883002		3966080		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result							
Nitrogen, NO2 plus NO3	mg/L	1.2	2	2	2.8	1.4	84	13	90-110	67	20	J(M1), J(R1)

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Brevard County

Pace Project No.: 35630343

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

U Compound was analyzed for but not detected.

J(M1) Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

J(R1) Estimated Value. RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Brevard County

Pace Project No.: 35630343

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35630343002	SCWWTF-MWC-5-SOD-050421	Colilert/Quani-Tray	726798	Colilert/Quani-Tray	726799
35630343003	SCWWTF-MWC-6-SOD-050421	Colilert/Quani-Tray	726798	Colilert/Quani-Tray	726799
35630343001	SCWWTF-WEP-1-050421	SM 2540D	727660		
35630343001	SCWWTF-WEP-1-050421	SM 5210B	726625	SM 5210B	727867
35630343001	SCWWTF-WEP-1-050421	SM 5210B	726940	SM 5210B	728062
35630343001	SCWWTF-WEP-1-050421	TKN+NO _x Calculation	727932		
35630343001	SCWWTF-WEP-1-050421	EPA 351.2	726898	EPA 351.2	727192
35630343001	SCWWTF-WEP-1-050421	EPA 353.2	727572		

REPORT OF LABORATORY ANALYSIS

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Document Name:
Sample Condition Upon Receipt Form
Document No.:
F-FL-C-007 rev. 13

Document Revised:
May 30, 2018
Issuing Authority:
Pace Florida Quality Office

Sample Condition Upon Receipt Form (SCUR)

WO#: 35630343

Project #
Project Manager:
Client:

PM: LAP Due Date: 05/11/21
CLIENT: TETCO

Date and Initials of person:
Examining contents:
Label: ICAT
Deliver: _____
pH: _____

Thermometer Used: T-338 Date: 5/4/21 Time: 1525 Initials: KMF

State of Origin: _____ For WV projects, all containers verified to ≤6 °C

Cooler #1 Temp. °C 2.9 (Visual) +0.1 (Correction Factor) 3.0 (Actual) Samples on ice, cooling process has begun
 Cooler #2 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual) Samples on ice, cooling process has begun
 Cooler #3 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual) Samples on ice, cooling process has begun
 Cooler #4 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual) Samples on ice, cooling process has begun
 Cooler #5 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual) Samples on ice, cooling process has begun
 Cooler #6 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual) Samples on ice, cooling process has begun

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Shipping Method: First Overnight Priority Overnight Standard Overnight Ground International Priority
 Other _____

Billing: Recipient Sender Third Party Credit Card Unknown

Tracking # _____

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No Ice: Wet Blue Dry None

Packing Material: Bubble Wrap Bubble Bags None Other _____

Samples shorted to lab (If Yes, complete) Shorted Date: 5/4/21 Shorted Time: 1530 Qty: 2SPST

Comments:

Chain of Custody Present	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Preservation Information: Preservative: _____ Lot #/Trace #: _____ Date: _____ Time: _____ Initials: _____
Chain of Custody Filled Out	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Relinquished Signature & Sampler Name COC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples Arrived within Hold Time	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Rush TAT requested on COC	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient Volume	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct Containers Used	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Sample Labels match COC (sample IDs & date/time of collection)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing acid/base preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
All Containers needing preservation are found to be in compliance with EPA recommendation: Exceptions: VOA, Coliform, TOC, O&G, Carbamates	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Headspace in VOA Vials? (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____

Comments/ Resolution (use back for additional comments): _____

Project Manager Review: _____ Date: _____

Laboratory Comments

Submitter: Tetra Tech

Report Generated: May 17, 2021

Non-Detect Results

In sample(s) classified as non-detect, the host-associated fecal gene biomarker(s) was either not detected in test replicates, one replicate was detected at a cycle threshold greater than 35 and the other was not, or one replicate was detected at a cycle threshold less than 35 and the other was not after repeated analysis.

Detected Results

In sample(s) classified as detected, the host-associated fecal gene biomarker(s) was detected in both test replicates suggesting that the host's fecal contamination is present in the sample(s). Copy number measurements reported are relative, not absolute, quantification.

Detected Not Quantified (DNQ) Results

In sample(s) classified as Detected Not Quantified (DNQ), the host-associated fecal biomarker was detected in both test replicates but in quantities below the limit of quantification. This result indicates that fecal indicators associated with the respective host was present in the sample(s) but in low concentrations.

Fecal Reference Samples

The client is encouraged to submit fecal samples from suspected sources in the surrounding area in order to gain a better understanding of the concentration of the host-associated biomarker with the regional population. A more precise interpretation would be available to the client with the submittal of such baseline samples.

Result Interpretations

The presence of the biomarker does not signify the presence or absence of that form of fecal pollution conclusively. The most reliable way to accurately test for contamination is to combine genetic testing with scientifically sound and adequate study design appropriate for the water quality questions to be answered or issues to be resolved.

Additional Testing

A portion of all samples has been frozen and will be archived for 3 months. The client is encouraged to perform additional tests on the sample(s) for other hosts suspected of contributing to the fecal contamination.

Limitation of Damages – Repayment of Service Price

It is agreed that in the event of breach of any warranty or breach of contract, or negligence of Source Molecular Corporation, as well as its agents or representatives, the liability of the company shall be limited to the repayment, to the purchaser (submitter), of the individual analysis price paid by him/her to Source Molecular Corp. The company shall not be liable for any damages, either direct or consequential. Source Molecular Corp. provides analytical services on a PRIME CONTRACT BASIS ONLY. Terms are available upon request. The sample(s) cited in this report may be used for research purposes after an archiving period of 3 months from the date of this report. Research includes, but is not limited to internal validation studies and peer-reviewed research publications. Anonymity of the sample(s), including the exact geographic location will be maintained by assigning an arbitrary internal reference. These anonymous samples will only be grouped by state / province of origin for research purposes. The client must contact Source Molecular in writing within 10 days from the date of this report if he/she does not wish for their submitted sample(s) to be used for any type of future research.

DNA Analytical Method Explanation

Water Samples: Each submitted water sample is filtered through 0.45 micron membrane filter(s). Each filter is placed in a separate, sterile 2ml disposable tube containing a unique mix of beads and lysis buffer. The sample is homogenized for 1min and the DNA extracted using the Generite DNA-EZ ST1 extraction kit (GeneRite, NJ), as per manufacturer's protocol. Deviations to these procedures may occur at the client's request.

Non-Water Samples: Each non-water sample submitted by the client is processed as per internal laboratory extraction procedures. An extracted DNA sample is proceed directly to PCR analysis. Details available upon request.

Amplifications to detect the target gene biomarker were run on an Applied Biosystems StepOnePlus real-time thermal cycler (Applied Biosystems, Foster City, CA) in a final reaction volume of 20ul sample extract, forward primer, reverse primer, probe and an optimized buffer. All assays are run in duplicate. Quantification is achieved by extrapolating target gene copy numbers from a standard curve generated from serial dilutions of known gene copy numbers.

For quality control purposes, a positive control and a negative control, were run alongside the sample(s) to ensure a properly functioning reaction and reveal any false negatives or false positives.



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 Email: info@sourcemolecular.com

Chain Of Custody Record

Revision 1.2
 Effective Date 8/20/2018

Sample ID	Analysis Requested (see pg 2)	Mark Copiers with X	Human Proce... ID: Rec	Bird Feat ID ID: Trngt-1	Company Name	Contact Name(s)	Send Results To (email)	Phone	Address	City/State/Zip	Billing Info	PO#	Comments (i.e. special requests, # of containers)	Collection Date	Collection Time
														Will call with credit card	
SCWWT F-MWC-5-50D-050421	X	X			Tetra Tech, Inc	Math Shelton	math.shelton@tetratech.com	321-961-5027	11 Riverside Dr. Suite 204	Cocoa FL 32940				5-4-21	09:00
SCWWT F-MWC-6-50B-050421	X	X												5-4-21	1150
/															

Completed by Client:
 Relinquished By: Melissa Bennett
 Signature: [Signature]
 Date/Time: 5-4-21 1515

Completed by Source Molecular:
 Temperature: 1.16 Received/Filtered: Amisha
 Thermometer: 001 Signature: [Signature]
 Cooler Number: RS062 Date/Time: 5/3/21; 10:12 AM

To protect confidentiality, confirmation and results will only be sent to email address provided or authorized by contact provided. Signed form indicates agreement with the test limitations on the back of this form and the company's terms of use found here: sourcemolecular.com/about-sourcemolecular/privacy_statement/.

ATTACHMENT 2
Monitoring Well Sampling Forms and Calibration Logs

ATTACHMENT 3
Cell 4 Muck Maps

TOP MUCK CONTOURS OVERLAYED ON
HARD BOTTOM CONTOURS

1 2 3 4 5



Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
VOLUME	1.000	1.000	495757.79 Sq. Ft.	653.69 Cu. Yd.	7224.76 Cu. Yd.	6571.07 Cu. Yd. <Fill>
Totals			495757.79 Sq. Ft.	653.69 Cu. Yd.	7224.76 Cu. Yd.	6571.07 Cu. Yd. <Fill>

NOTE: MUCK PROBE SURVEY
PERFORMED BY OCEANSIDE
SOLUTIONS LLC ON 27, APRIL 2021

VIERA WASTE TREATMENT
CELL 4
VIERA, FL



11 RIVERSIDE DRIVE
SUITE 204
COCOA, FL 32940
TEL: 321.636.6470 EXT. 4378098

As Shown	
Scale	
Design File No.	
TOTAL HOURS VS WORK HRS LHM	
Reviewed By	
Checked By	
Drawn By	
11 RIVERSIDE DRIVE	
SUITE 204	
COCOA, FL 32940	
TEL: 321.636.6470 EXT. 4378098	

REV	DESCRIPTION	CHK	APP	DATE
0	SITE PLAN	ETC	RC	06/21/21

Sheet Reference:

Sheet 1 of 5

HARD BOTTOM CONTOUR MAP IN FEET
(NAVD88)



NOTE: MUCK PROBE SURVEY
PERFORMED BY OCEANSIDE
SOLUTIONS LLC ON 27, APRIL
2021

As Shown	Scale	Drawn By: R. C. ALPINSKI	Checked By: R. C. ALPINSKI	Drawn By: R. C. ALPINSKI	DATE: 06/04/21
As Shown	Scale	Drawn By: R. C. ALPINSKI	Checked By: R. C. ALPINSKI	Drawn By: R. C. ALPINSKI	DATE: 06/04/21
As Shown	Scale	Drawn By: R. C. ALPINSKI	Checked By: R. C. ALPINSKI	Drawn By: R. C. ALPINSKI	DATE: 06/04/21
As Shown	Scale	Drawn By: R. C. ALPINSKI	Checked By: R. C. ALPINSKI	Drawn By: R. C. ALPINSKI	DATE: 06/04/21
As Shown	Scale	Drawn By: R. C. ALPINSKI	Checked By: R. C. ALPINSKI	Drawn By: R. C. ALPINSKI	DATE: 06/04/21
As Shown	Scale	Drawn By: R. C. ALPINSKI	Checked By: R. C. ALPINSKI	Drawn By: R. C. ALPINSKI	DATE: 06/04/21
As Shown	Scale	Drawn By: R. C. ALPINSKI	Checked By: R. C. ALPINSKI	Drawn By: R. C. ALPINSKI	DATE: 06/04/21
As Shown	Scale	Drawn By: R. C. ALPINSKI	Checked By: R. C. ALPINSKI	Drawn By: R. C. ALPINSKI	DATE: 06/04/21
As Shown	Scale	Drawn By: R. C. ALPINSKI	Checked By: R. C. ALPINSKI	Drawn By: R. C. ALPINSKI	DATE: 06/04/21
As Shown	Scale	Drawn By: R. C. ALPINSKI	Checked By: R. C. ALPINSKI	Drawn By: R. C. ALPINSKI	DATE: 06/04/21

VERA, FL
CELL 4
MERA WASTE TREATMENT



11 REDWOOD DRIVE
SUITE 204
COOK, FL 32940
TEL: 321.626.6470 EXT. 6378099

Drawn By: R. C. ALPINSKI
Checked By: R. C. ALPINSKI
Scale: 1" = 100'
Date: 06/04/21

Sheet Reference:
Sheet 2 of 5

1 2 3 4 5

HARD BOTTOM POINT ELEVATIONS IN FEET
(NAVD88)



SOURCE: BOB WOOD, OCEANSIDE ENGINEERING CONSULTANTS (INTERMEDIATE), USGS, USGS, FORT WALTON BEACH, FLORIDA, USER COMMUNITY

NOTE: MUCK PROBE SURVEY
PERFORMED BY OCEANSIDE
SOLUTIONS LLC ON 27, APRIL 2021

VIERA WASTE TREATMENT
CELL 4
VIERA, FL



VIERA TECH
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Revised By:	CLAYTON
Drawn By:	CLAYTON
Checked By:	CLAYTON
Design No.:	11-RIVERSIDE
Design Date:	04/27/21
Design Scale:	AS SHOWN
Design No.:	11-RIVERSIDE
Design Date:	04/27/21
Design Scale:	AS SHOWN

REV	DESCRIPTION	CHK	APP	DATE
0 <td>SITE PLAN <td>RC <td>RC <td>04/27/21 </td></td></td></td>	SITE PLAN <td>RC <td>RC <td>04/27/21 </td></td></td>	RC <td>RC <td>04/27/21 </td></td>	RC <td>04/27/21 </td>	04/27/21

Sheet Reference:
Sheet 3 of 5

ATTACHMENT 4
Biological Walkdown Photo Log

Photo Page Exhibit



Pickerelweed and duck potato in equal distribution at Cell 4, Photo Station 2; facing north.



Open water and algal mats at Cell 4, Photo Station 3; facing northwest.



Living and dead cattails (from the spraying event) at Cell 4, Photo Station 5; facing northwest.



Living and dead cattails (from the spraying event) at Cell 4, Photo Station 9;
facing south.



Invasive torpedo grass at Cell 4, Photo Station 11; facing south.



Dead and decaying cattails at Cell 3, Photo Station 24; facing south.