

Biological Assessment of

Hurlburt Field Advanced Wastewater Treatment Plant

Okaloosa County

NPDES # FL0003174

Sampled September 15, 2014

May 2015

Biology Section

Bureau of Laboratories

Division of Environmental Assessment and Restoration

2014 FDEP Bureau of Laboratories Quality Manual

NELAC Certification No. E31780

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Facility Overview

The Hurlburt Field Advanced Wastewater Treatment Plant is a Domestic Wastewater Treatment Facility. The effluent is discharged continuously into a receiving wetland in East Bay Swamp, a Class III Fresh Water (see map Appendix A). The permitted capacity of the wastewater system is 1.00 million gallons per day (MGD). The annual average monthly flow for September 2013 to August 2014 was 0.733 MGD. The flow measured during this survey was 0.516 MGD.

Biological assessments are prepared by FDEP staff to provide information for review of NPDES permit renewal applications. Biological assessments, in conjunction with other information concerning the subject facility and its receiving-water body, are used to determine appropriate permit conditions.

See the Facility Summary (Appendix B) for a description of the facility, summary of permit limits and Discharge Monitoring Report (DMR) information.

Methods

The purpose of this investigation was to determine the discharge's effects on the biota of the receiving waters. Chemical and biological comparisons were made between a Control Wetland and a Test Wetland, located 400 meters (m) northeast and 1,000 m west-southwest of the point of discharge, D-001, respectively (see map). Effluent samples were taken as grab and composite samples from monitoring location EFF-01, prior to dechlorination. The effluent composite sample was composited over 24 hours, although for some parameters the effluent permit limits require a 16-hour flow proportioned composite (FPC) sample. However, compliance with the permit limits for those parameters is determinable (see Table 2 and Appendix B).

All field and laboratory biological methods followed Bureau of Laboratories and Biology Section Standard Operating Procedures (see http://www.dep.state.fl.us/labs/library/lab_sops.htm and http://www.dep.state.fl.us/water/sas/sop/sops.htm for details) and met DEP quality assurance/quality control standards (see http://www.dep.state.fl.us/water/sas/qa/index.htm). Explanations of specific methods and measurements can be found in Appendix C.

The following were involved in this investigation: Nathan Mulkey, Frank Butera, Rick Abad, and Shelley Alexander (FDEP Northwest District Office, Pensacola), and FDEP Central Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Mike Tanski and Andrew Tintle).

Results

Physical and Chemical Parameters (See Table 1 and Appendices D, E and F)

- The pH (Standard Units) and specific conductance (µmhos/cm) of the effluent, Control Site, and Test Site complied with Class III Freshwater Quality Criteria (62-302.530, F.A.C.) and effluent permit limits, though the measured values in the effluent were higher than in either Wetland. The dissolved oxygen (DO, % saturation and mg/L) of the effluent complied with the Class III Freshwater Quality Criteria (62-302.530, F.A.C.) and/or effluent permit limits, but the DO of the Test and Control Wetlands did not. The low DO at both wetland sites may be a natural phenomenon in wetlands of the area, where the breakdown of detritus and plant matter can result in naturally low DO amounts in the water.

Organic Constituents (See Table 2 and Appendix F)

- Sucralose was detected in the effluent grab sample, in an amount approximately 18 times higher than what was detected in the Test Site sample. A small amount of sucralose was detected between the method detection limit (MDL) and the practical quantitation limit (PQL) at the Control Site, and it was not detected in the field blank.
- 1,4 dioxane was detected in the effluent grab sample and in the field blank, and was detected between the MDL and the PQL in both the Test and Control Wetland samples.

Nutrients (See Table 2 and Appendix F)

- Effluent nutrient levels complied with permit limits.
- Ortho-phosphate, total phosphorus, and nitrate plus nitrite were found in the effluent composite and/or grab samples in amounts much higher than in the Test or Control Wetland samples. Total ammonia, total

Kjeldahl nitrogen, organic nitrogen, and total organic carbon amounts were higher in the Test Wetland samples than in the effluent grab and/or composite samples and Control Wetland samples.
- No nutrients were detected in the field blank.

Analytical Water Chemistry (See Table 2 and Appendix F)
- Chlorophyll *a* (corrected) was not detected in the effluent sample, and was detected at a low level in both the Control and Test Wetland samples.
- Carbonaceous Biochemical Oxygen Demand (CBOD; mg/L) and Total Suspended Solids (TSS; mg/L) were not detected in the effluent composite samples, complying with effluent permit limits, and were detected at low levels, between the MDL and the PQL, in the Test and Control Wetlands. The turbidity, alkalinity, and fluoride amounts in all of the samples complied with the Class III Freshwater Quality Criteria (62-302.530, F.A.C.).
- The total residual chlorine (TRC) levels recorded by the facility on the day of sampling for both chlorination tanks (1.65 mg/L and 1.45 mg/L) and for after dechlorination (0.004 mg/L) complied with the effluent permit limits.
- None of these analytes were detected in the field blank.

Microbiology (See Table 2 and Appendix F)
- Fecal coliforms were not detected in the effluent grab sample, and thus complied with Class III Freshwater Quality Criterion (62-302.530(6), F.A.C.) and effluent permit limits. They were detected in both the Control and Test Site samples at levels that complied with Class III Freshwater Quality Criterion (62-302.530(6), F.A.C.). Analyses were performed using Standard Method 9222-D by the University of West Florida, Pensacola, Florida.

Toxicity Whole Effluent Test (See Table 2)
- Tests were performed September 16 through September 23, 2014. Due to the known toxicity of total residual chlorine in concentrations present in the effluent to the test species, a decision was made in advance of the collection event, in conjunction with and approval by the Northwest District, not to perform bioassay tests with effluent as collected (chlorinated). Toxicity tests were performed with aliquots of effluent which were dechlorinated in the laboratory.
- The effluent composite sample IC25 for the water flea, *Ceriodaphnia dubia*, and the IC25 for the fish, *Pimephales promelas*, were greater than 100% effluent, and thus complied with effluent permit limits.

Metals (See Table 3 and Appendix F)
- Cadmium (0.37 µg/L) detected in the effluent grab sample and iron (2,180 µg/L) detected in the Control Wetland sample exceeded Class III Freshwater Quality Criteria (62-302.530(15 and 38, respectively), F.A.C.). Cadmium was not detected in either wetland sample. Iron was detected in the effluent grab sample between the MDL and the PQL, and the Test Wetland sample amount was approximately three times lower than what was found in the Control Site sample. Lead was detected in the Test Wetland sample at a value that exceeds the Class III Freshwater Quality Criteria (0.73 I ug/L; 62-302.530(39), F.A.C.) but was detected between the MDL and PQL. Lead was also detected between the MDL and the PQL in the effluent grab sample and the Control Wetland sample, each in an amount approximately half what was detected at the Test Site. All other metals detected in all of the samples complied with the Class III Freshwater Quality Criteria (62-302.530, F.A.C.).
- No metals were detected in the field blank.

Algal Growth Potential (See Table 4 and Appendix F)
- Raschke and Shultz (1987) determined that AGP values above 5.0 mg dry weight/L, which represents a "problem" threshold for fresh receiving waters, imply nutrient enrichment. The AGP value in the effluent sample using the freshwater species, *Pseudokirchneriella subcapitata,* was approximately 13.4 times greater than the problem threshold value. The analytical chemistry suggests that the effluent is nitrogen-limited. The AGP was measured at a level between the MDL and the PQL for both the Test and Control Wetlands, well below the problem threshold. The analytical chemistry suggests that the Test Wetland is

phosphorus-limited. For the Control Wetland, non-detects of nutrients used in the calculation of the total nitrogen to total phosphorus (N:P) ratio make nutrient-limitation indeterminable at that site.

Bioassessment

Florida Wetland Condition Index – Vegetation (WCI-V) (See Table 5 and Appendix C)

- WCI-V sampling was conducted September 15, 2014.
- The Florida Wetland Condition Index (FWCI) is used to examine the ecological integrity of a vascular plant community. Because the method requires additional data for validation in certain regions and for wetland types not included in the original development dataset, it is used by FDEP in an exploratory manner. The FWCI scores for the Hurlburt Test Wetland and Control Wetland were similar, with the Test Wetland (44.3) scoring higher than the Control Wetland (39.6). The Hurlburt Test and Control Wetlands also have been compared with the mean values and scores for the original FWCI method development sites. For comparative purposes, the method development sites have been divided into two groups based on Landscape Development Intensity (LDI): sites with low LDI (LDI <2) and sites with high LDI (LDI ≥2). The FWCI scores for both the Test and Control Wetlands were closest to the mean score for the isolated forested development sites in the Panhandle (50.3) with low LDI scores. The metric scores for all six metrics were similar between the Control and Test Wetlands. For tolerant species, average Coefficient of Conservatism (CC) score, exotic species, native perennial species, and species with wetland status, both sites were closer to the mean value of lower LDI method development sites than to higher LDI (more human disturbance) method development sites. For sensitive taxa, both the Control and Test wetlands were closest to the mean value for sites with higher LDIs. The Test site had 25 total taxa, while the Control site had 39 total taxa.

Conclusion

The dissolved oxygen measured at both the Test and Control Wetland was below the Class III Freshwater Quality Criterion (62-302.530(30), F.A.C), although this may be natural. Effluent grab sample cadmium, Test Wetland sample lead, and Control Wetland sample iron exceeded Class III Freshwater Quality Criteria (62-302.530(15, 39, and 38, respectively), F.A.C.), although the Test Wetland lead values was between the MDL and PQL. The effluent had amounts of ortho-phosphate, total phosphorus, and nitrate plus nitrite that were elevated over the amounts of each detected in either Test or Control Wetland. The AGP of the effluent was approximately 13.5 times higher than the problem threshold. Overall WCI-V and individual metric scores were similar between the Test and Control Wetlands. The overall WCI-V scores and most individual metric scores for both the Test and Control sites were similar to method development sites with low human disturbance.

Literature Cited

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Reiss, K.C. and M.T. Brown. 2005. The Florida Wetland Condition Index (FWCI): Developing Biological Indicators for Isolated Depressional Forested Wetlands. Howard T. Odum Center for Wetlands. University of Florida. 168 pp.

Stevenson, R. J. and L. L. Bahls. 1999. Periphyton protocols. Pp. 6.1-6.22 in: Rapid bioassessment protocols for use in wadeable streams and rivers. 2nd edition. By: M. T. Barbour, J. Gerritsen, B. D. Snyder and J. B. Stribling. EPA 841-B-99-002. U. S. Environmental Protection Agency, Office of Water, Washington, D.C.

Stevenson, R. J. and J. P. Smol. 2003. Use of algae in environmental assessments, pp. 775-803, in: Freshwater algae of North America, edited by J. D. Wehr and R. G. Sheath, Academic Press, San Diego. 918 pp.

USEPA. 2000. Nutrient Criteria Technical Guidance Manual – River and Streams. EPA-822-B-00-002.

Table 1. Effluent limits, Class III Freshwater Criteria and field parameters

Hurlburt Field AWWTP	Units	Class III Criteria	Effluent Permit Limits	Effluent (Grab)	Test Wetland	Control Wetland
Sample Depth	m	-	-	0.15	0.15	0.10
Temperature	C	-	-	29.26	26.08	26.27
pH	SU	6.0 - 8.5	6.0 - 8.5	7.53	6.46	6.67
Specific Conductance	µmhos/cm	≤ 1,275	Report	633	131	130
Salinity	ppth	-	-	0.28 c	0.06 c	0.1 c
Dissolved Oxygen	% saturation	≥ 67	-	99.94	33.71 e	6.57 e
Dissolved Oxygen	mg/L	-	Report	7.64	2.73	0.53

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
e - Value exceeds the Class III Water Quality Criteria or permit limits
c - Value is calculated

Table 2. Effluent limits, Class III Freshwater Criteria, analytical water chemistry, microbiology, and toxicity data

Hurlburt Field AWWTP	Units	Class III Criteria	Effluent Permit Limits	Effluent (24-hour composite)	Effluent (Grab)	Test Wetland	Control Wetland
Analytical organic and pesticide data							
Sucralose	µg/L	-	-	-	45	2.6	0.034 IJ
1,4-Dioxane	µg/L	-	-	-	0.36	0.023 I	0.060 I
Analytical water chemistry data							
Ortho-phosphate	mg P/L	-	-	-	0.58	0.008 I	0.004 U
Total Phosphorus	mg P/L	-	≤ 2.0 p	0.74	0.66	0.045	0.033
Total Ammonia	mg N/L	-	≤ 4.0 p	0.022	0.007	0.064	0.006
Un-ionized Ammonia (calculated salinity)	mg N/L	≤ 0.02 s	-	-	< 0.02 c	< 0.02 c	< 0.02 c
Nitrate and Nitrite	mg N/L	-	-	1.5	1.1	0.012	0.004 U
Total Kjeldahl Nitrogen	mg N/L	-	-	0.50	0.47	1.6	0.68
Organic Nitrogen	mg N/L	-	-	0.48 c	0.46 c	1.5 c	0.67 c
Total Nitrogen	mg N/L	-	≤ 6.0 p	2 c	1.6 c	1.6 c	0.68 c[1]
Total Organic Carbon	mg C/L	-	-	-	4.0 A	32	11
Chlorophyll *a* - Corrected	µg/L	-	-	-	0.55 U	4.3	9.5
Phaeophytin	µg/L	-	-	-	0.40 U	0.57 I	1.3 U
CBOD, 5 day, N - inhibited	mg/L	-	≤ 10.0 p	0.20 U	-	1.3 I	1.6 I
Hardness	mg $CaCO_3$/L	-	-	-	46.6 c	16 c	46.3 c
Total Suspended Solids	mg/L	-	≤ 10.0 p	2 U	-	7 I	9 I
Turbidity	NTU	< 29 t	-	-	0.85	2.6	6.5
Color (true)	PCU	-	-	-	3.7 I	500	91
Alkalinity	mg CaCO3/L	≥ 20	-	-	134 A	22	40 A
Chloride	mg Cl/L	-	-	-	89	22	11
Fluoride	mg F/L	≤ 10.0	-	-	0.73	0.054 I	0.038 I
Sulfate	mg SO4/L	-	-	-	29	0.89	2.4
Total Residual Chlorine (for disinfection) [2]	mg/L	-	≥ 0.5	-	1.65, 1.45	-	-
Total Residual Chlorine (after dechlorination) [2]	mg/L	-	≤ 0.01	-	0.004	-	-
Microbiology							
Fecal Coliforms	cfu/100 mL	≤ 400 sx	800 s	-	2 U	108	104
Toxicity (IC-25 Chronic Definitive)							
Bioassay - Water flea *(Ceriodaphnia dubia)*	-	-	-	100 L	-	-	-
Bioassay – Fish *(Pimephales promelas)*	-	-	-	100 L	-	-	-

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
c - Value is calculated
p - 16 hour flow proportioned composite
r - Annual average
s - Single sample
t - Shall not exceed 29 NTUs above background
x - If 10 or fewer samples are taken within a month, the single sample limit is 400 CFU (62-302.530(6), F.A.C.)
A - Value reported is the mean of two or more determinations
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J - Estimated value
L - Actual value is known to be greater than value given
U - Material analyzed for but not detected; value reported is the method detection limit
1 - Value is calculated using half the MDL value of the analyte(s) that were not detected.
2 - Value(s) reported recorded by facility meter. Total Residual Chlorine (for disinfection) were recorded for the facility's two chlorine contact chambers.

Table 3. Effluent limits, Class III Freshwater Criteria and analytical metals data

Hurlburt Field AWWTP	Units	Effluent (Grab) Class III Criteria	Effluent (Grab)	Test Wetland Class III Criteria	Test Wetland	Control Wetland Class III Criteria	Control Wetland
Hardness	mg $CaCO_3$/L	46.6 c	-	16 c	-	46.3 c	-
Aluminum	µg/L	-	97	-	601	-	66
Arsenic	µg/L	≤ 50	0.39 I	≤ 50	1.44	≤ 50	2.06
Cadmium	µg/L	≤ 0.154 b	0.37 e	≤ 0.1 b	0.050 U	≤ 0.153 b	0.050 U
Calcium	mg/L	-	13.5	-	4.99	-	16.2
Chromium, Total [g]	µg/L	≤ 46.1 b	0.30 U	≤ 28 b	0.66 I	≤ 45.9 b	0.30 U
Copper	µg/L	≤ 4.86 b	2.50	≤ 2.9 b	0.66 I	≤ 4.83 b	0.50 U
Iron	µg/L	≤ 1,000	34 I	≤ 1,000	630	≤ 1,000	2,180 e
Lead	µg/L	≤ 1.2 b	0.24 I	≤ 0.54 b	0.73 I	≤ 1.2 b	0.29 I
Magnesium	mg/L	-	3.14	-	0.97	-	1.43
Nickel	µg/L	≤ 27.4 b	1.07	≤ 16 b	0.58 I	≤ 27.2 b	0.30 I
Potassium	mg/L	-	10.7	-	2.3	-	2.0
Selenium	µg/L	≤ 5.0	0.20 U	≤ 5.0	0.20 U	≤ 5.0	0.20 U
Silver	µg/L	≤ 0.07	0.025 U	≤ 0.07	0.025 U	≤ 0.07	0.025 U
Sodium	mg/L	-	115	-	22.6	-	9.0
Zinc	µg/L	≤ 62.8 b	24	≤ 37 b	5.0 U	≤ 62.4 b	5.0 U

A dash (-) indicates sample/measurement was not collected or criterion/limit does not exist.
b - Value is calculated based on hardness, (62-302.530(3))
e - Value exceeds the Class III Water Quality Criteria or permit limits
c - Value is calculated
g - Class III Freshwater Quality Criterion (62-302.530(19)(a), F.A.C.) is for chromium-III
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
U - Material analyzed for but not detected; value reported is the method detection limit

Table 4. Measured and predicted algal growth potential (AGP; mg dry weight/L) for total soluble inorganic nitrogen (TSIN), ortho-phosphate (OP), total nitrogen (TN) and total phosphorus (TP) limitation and ratios of nitrogen to phosphorus

Hurlburt Field AWWTP								
Location	**Test Species**	**AGP (measured)**	**Predicted AGP (TSIN) ± 20%**	**Predicted AGP (OP) ± 20%**	**Predicted AGP (TN) ± 20%**	**Predicted AGP (TP) ± 20%**	**Inorganic N:P ratio**	**Total N:P ratio**
Effluent (Grab)	*Pseudokirchneriella subcapitata*	67.2 A	42.1 ± 8.4	not applicable [3]	59.7 ± 11.9	not applicable [3]	1.9	2.4
Test Wetland	*Pseudokirchneriella subcapitata*	0.720 I	not applicable [4]	3.4 ± 0.7	not applicable [4]	19.4 ± 3.9	9.5	35.8
Control Wetland	*Pseudokirchneriella subcapitata*	0.779 I	not applicable [5]	not applicable [4]	not applicable [5]	14.2 ± 2.8	not applicable [5]	not applicable [5]

Pseudokirchneriella subcapitata – freshwater species

A - Value reported is the mean of two or more determinations

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

3 - not applicable to nitrogen-limited freshwaters

4 - not applicable to phosphorus-limited freshwaters

5 - non-detect in the analytical chemistry; predictions could not be made and N:P ratios could not be calculated.

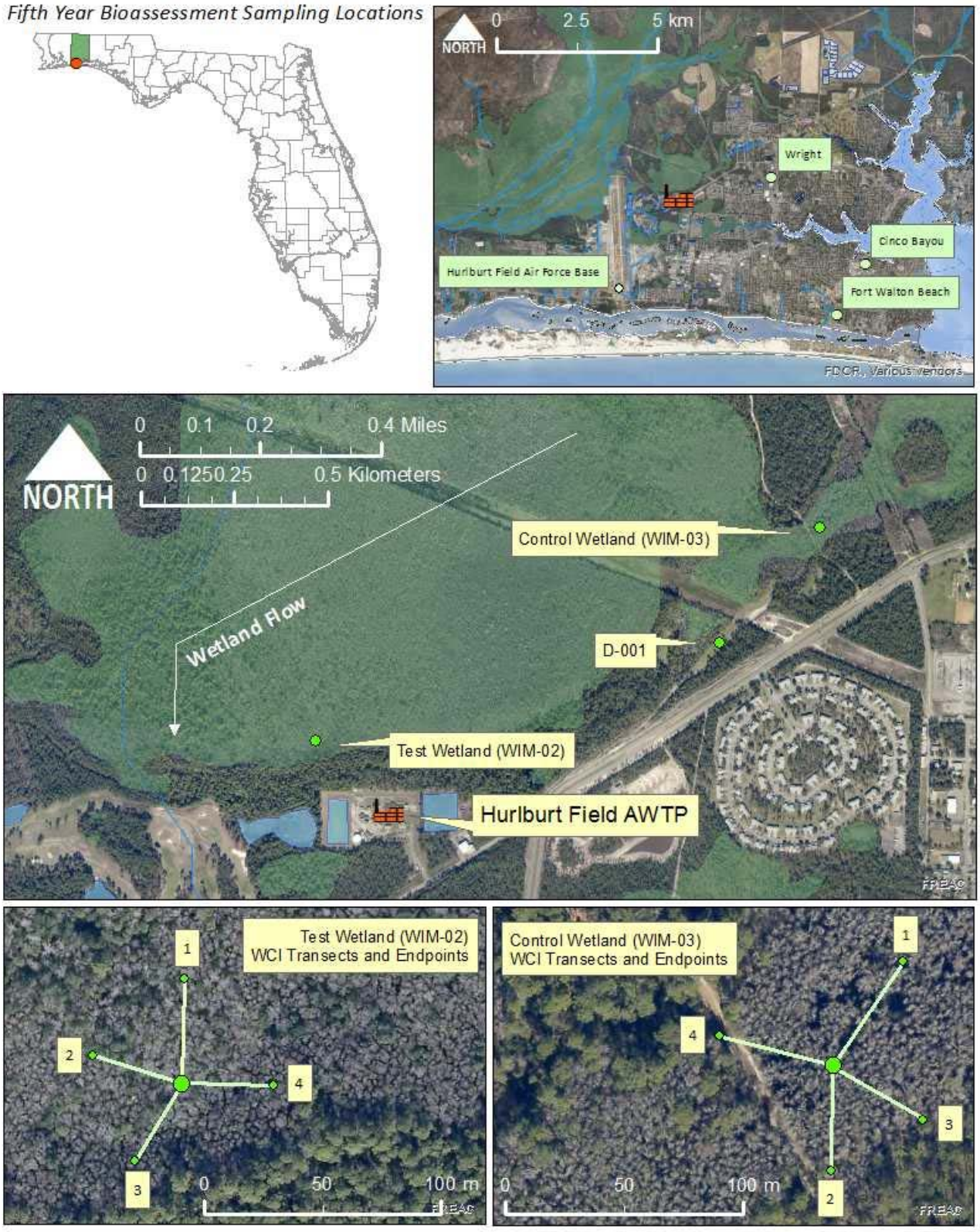
Table 5. Florida Wetland Condition Index – Vegetation (WCI-V)

Hurlburt Field AWWTP	Test Wetland	Control Wetland	Low LDI (≤2) [6]	High LDI (>2) [6]
FWCI score	44.3	39.6	50.3	20.4
% Tolerant metric score	8.2	8.8	8.1	2.1
% Sensitive metric score	3.0	1.2	8.8	2.5
Average CC# metric score	6.7	5.1	8.5	3.2
% Exotic metric score	10.0	6.9	9.3	4.0
% Native Perennial metric score	8.8	8.4	8.6	5.2
% Wetland Status metric score	7.7	9.3	7.0	3.3

6 - Values represent the mean for development sites in each Landscape Development Index (LDI) group.
CC=Coefficient of Conservatism. Described on pgs. 27-28 of the document: The Florida Wetland Condition Index (FWCI): Developing Biological Indicators for Isolated Depressional Forested Wetlands (http://publicfiles.dep.state.fl.us/dear/sas/library/docs/wet_depf.pdf)
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Appendix A

Map of Facility



Appendix B

Facility Summary

State of Florida

Department of Environmental Protection

Facility Introduction & Summary

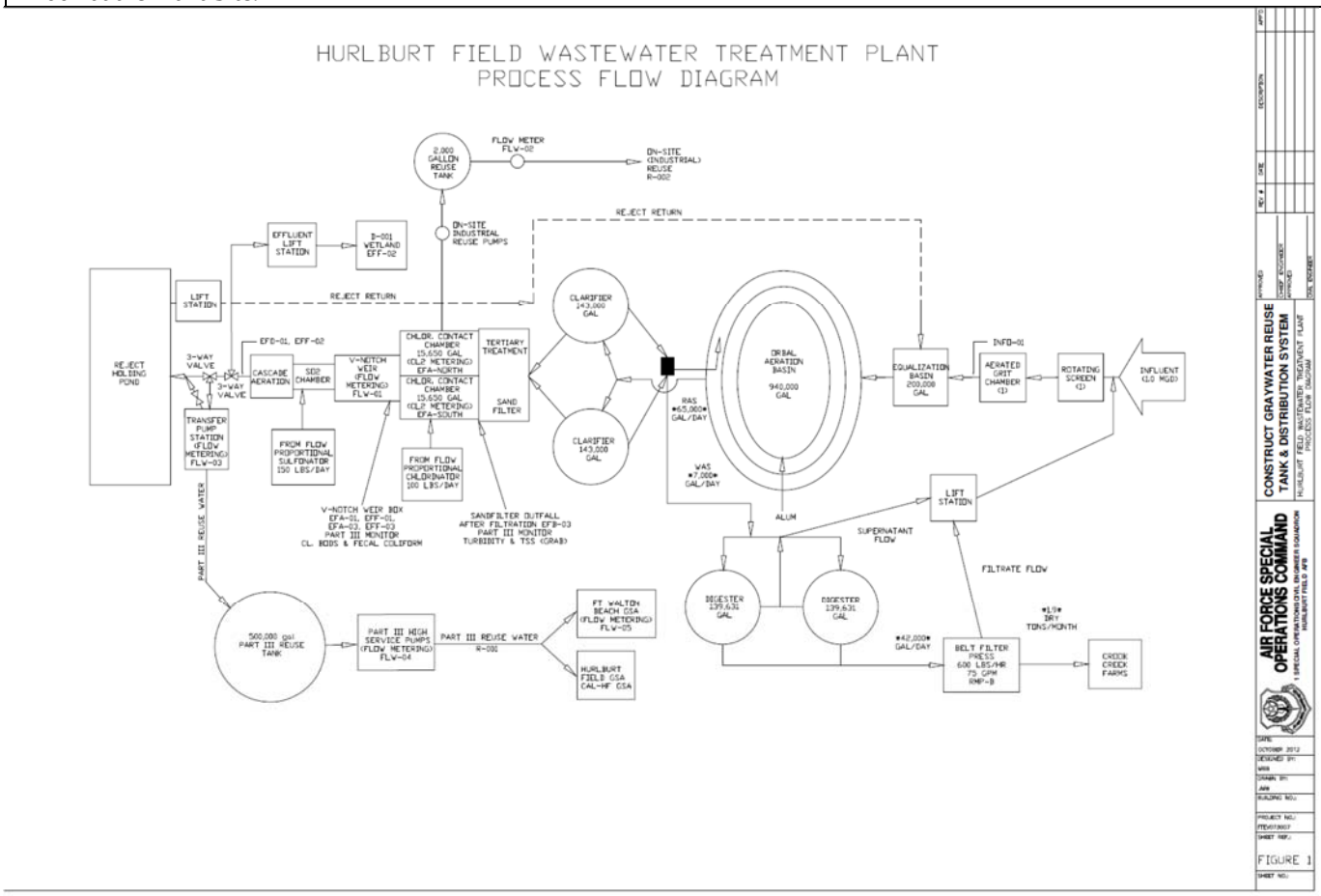
PART I: Information gathered prior to sampling event	
Prepared By: ShelleyAlexander	**Contact Number:** 850-595-0677
Facility Name (as it appears on permit): Hurlburt Field AWTP	**Former Names:**
NPDES Permit Number: **FL0003174**	**Permit Expiration Date:** **May 17, 2015**
Physical Address: 301 Heritage Rd.	
District: NWD	**County:** Okaloosa
Function of Facility: Domestic Wastewater Treatment	
Facility Type: DW	**Permitted Capacity (MGD):** 1.00
Mean Flow for previous 12 months for all EXTERNAL outfalls listed in permit (list date range including months): **0.611 MGD 01/01/2013-01/31/2014**	
If applicable, Mean Flow for previous 12 months for REUSE outfall(s) (list date range including months): 0.589 MGD 10/1/2012-09/30/2013	
Description of type of Discharge: ☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**	

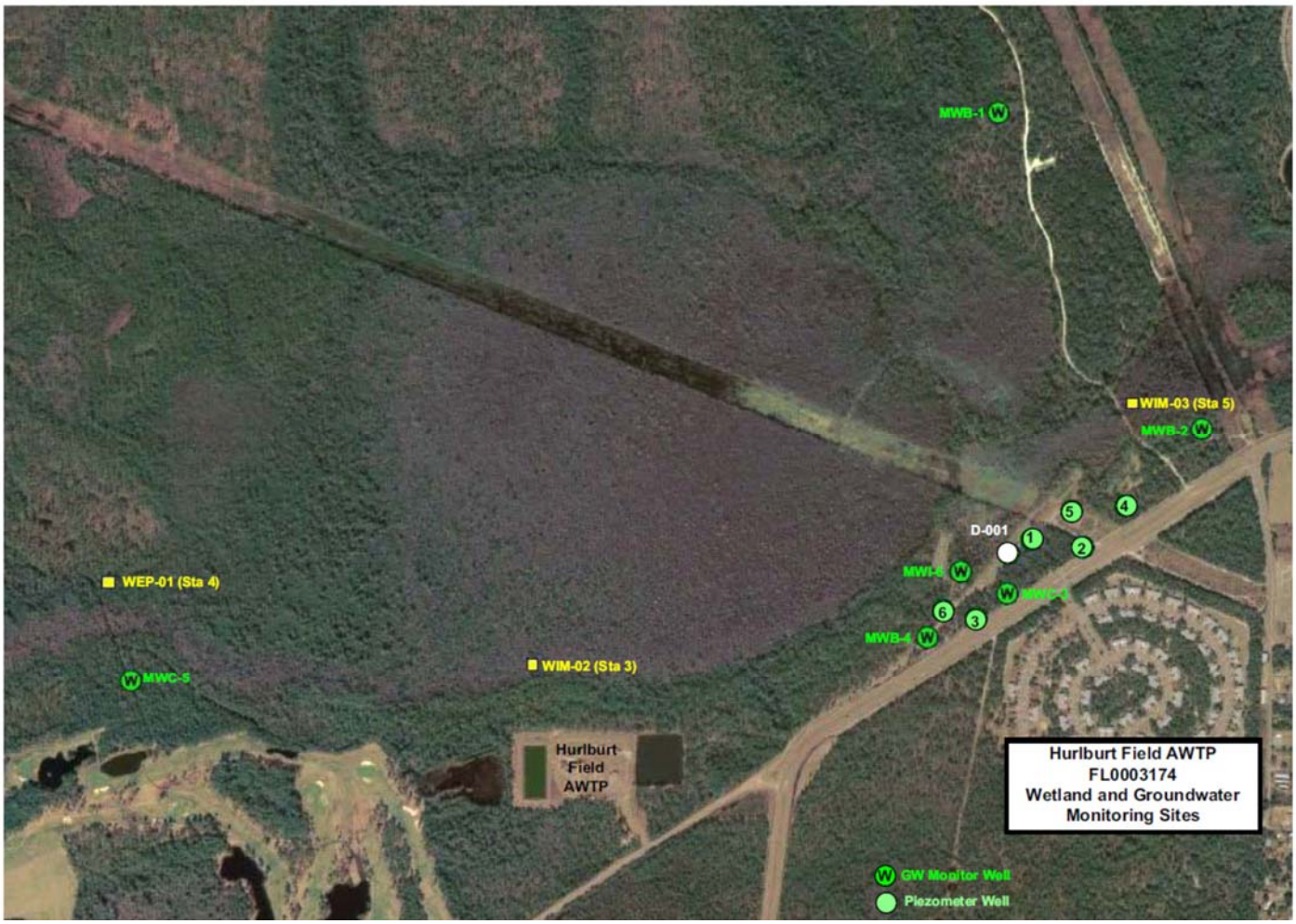
Description of Sampling Location(s) - actual permit designation of permitted sampling point(s):

Monitoring Site Number	Description of Monitoring Site
CAL-FLOWET	FLW-01 (Flow at V-notch weir) - FLW-03 (Flow to Reuse R-001)
FLW-02	Flow Meter to Part VII On-Site Reuse – in line after hydro pneumatic storage tank
FLW-01	Effluent Flow Meter at V-Notch Weir After Chlorine Contact Chamber
EFF-01	V-Notch Weir Box After Chlorine Contact Chamber
EFA-NORTH	Chlorine Meter in Northern Chlorine Contact Chamber
EFA-SOUTH	Chlorine Meter in Southern Chlorine Contact Chamber
EFD-01	Bottom End of Cascade Aeration
EFF-02	Bottom End of Cascade Aeration

Description of Permitted Outfall(s):

During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge effluent from Outfall D-001 to a receiving wetland in East Bay Swamp and to Industrial Reuse R-002 at the Plant Site.




MWB-1
WIM-03 (Sta 5)
MWB-2
D-001
1
2
3
4
5
6
MWI-6
MWC-1
MWB-4
WEP-01 (Sta 4)
MWC-5
WIM-02 (Sta 3)
Hurlburt Field AWTP
Hurlburt Field AWTP
FL0003174
Wetland and Groundwater Monitoring Sites
GW Monitor Well
Piezometer Well

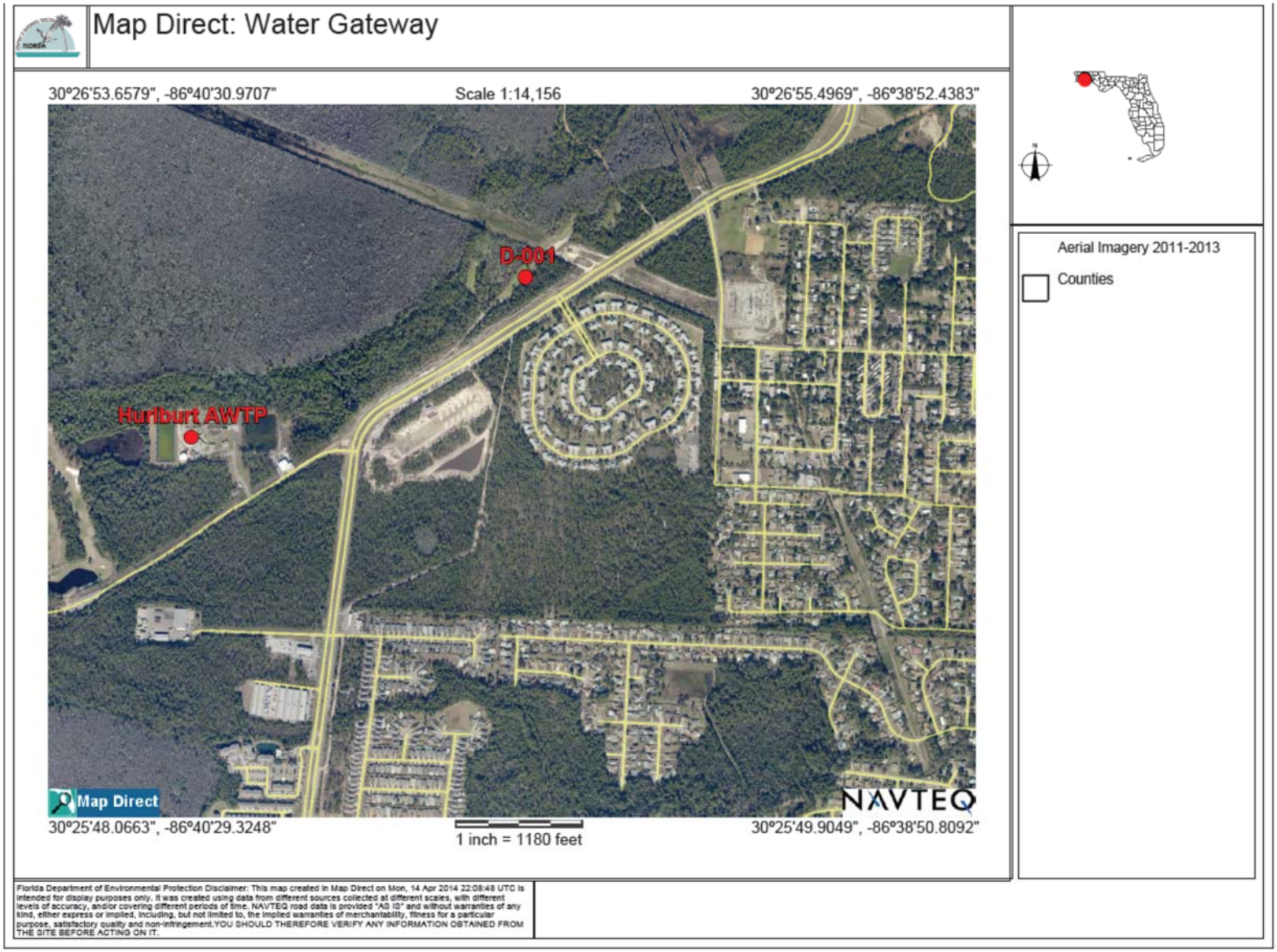
Description of Treatment Process (if multiple discharge points, include a detailed map or diagram of facility):

An existing 1.00 MGD annual average daily flow (AADF) advanced wastewater treatment plant. The plant employs an activated
sludge biological nutrient removal process designed for nitrogen and phosphorus removal producing reclaimed water that meets 5,5,3,1 CBOD5, TSS, Total Nitrogen and Total Phosphorus annual average requirements defined under section 403.086(2), F.S.
Treatment includes screening and grit removal, nitrification and denitrification for nitrogen removal and the addition of aluminum sulfate for phosphorus removal; this is followed by secondary clarification and tertiary filtration with sand filters. Reclaimed water is reused in a public access reuse system or discharged to a receiving wetland. Effluent for use in a Part III Public Access Reuse General Service Area is disinfected to high-level disinfection requirements and effluent that is discharged to the receiving wetland requires disinfection to basic standards and it is dechlorinated with sulfur dioxide prior to discharge. Residuals are aerobically digested, dewatered and transferred for land application.
Treatment plant facilities include Rotating Screens, an Aerated Grit Chamber, a 200,000-gal Equalization Basin, followed by a 940,000-gal three-stage Orbal Aeration Basin, two 143,000-gal secondary Clarifiers, a Sand Filter, two 15,650-gal Chlorine Contact Chambers, a Sulfur Dioxide Chamber for dechlorination and a final Aeration Cascade. An Effluent Lift Station pumps effluent from the Aeration Cascade to a receiving wetland, unnamed section of East Bay Swamp (Class III waters). An Industrial Reuse Pump station transfers reclaimed water from the Chlorine Contact Chambers to a 2,000-gal Reuse Tank for onsite reuse in plant operations. A Part III Reuse Pump Station sends reclaimed water from the Chlorine Contact Chambers to a 10,000-gal Part III Reuse Tank for use in the Public Access Reuse System. Substandard effluent can be directed to a lined 1.0 MG Reject Holding Pond where it can be stored until it is returned to the head of the plant for retreatment.
Two 139,631-gal Aerobic Digesters and a 600 lbs/hr Belt Filter Press produce Class B residuals; residuals are land applied at various permitted agricultural sites in Okaloosa and Walton Counties.
Part III reclaimed water is reused in a slow-rate Part III public access general service area (GSA) comprised of the Hurlburt Field GSA and a portion of the City of Fort Walton Beach GSA. Reclaimed water is reused in the Hurlburt Field GSA for landscape irrigation, street sweeper water and aircraft and equipment rinsing and washing facilities. Hurlburt Field AWTP will also direct reclaimed water to the City of Fort Walton Beach for use within its GSA via a new, as yet to be constructed, transmission line. The City of Fort Walton Beach will manage and control the reuse of the Part III reclaimed water within the City's public access reuse GSA pursuant to permit number FLA101923.

REUSE OR DISPOSAL:
Surface Water Discharge D-001: An existing 1.0 MGD annual average daily flow discharge to receiving wetlands, an unnamed section of East Bay Swamp (Class III waters). Effluent is discharged to the receiving wetland via a series of low velocity flow distribution structures. The permittee restricts public access to the receiving wetland. The central location of the distribution structures is approximately at latitude 30° 26' 39" N, longitude 86° 39' 40" W. A Map of lat and long site is included in form.
Land Application R-001: A previously permitted, new 1.587 MGD annual average daily flow permitted capacity slow-rate public access system. R-001 is a reuse system which consists of slow-rate Part III public access general service area (GSA) comprised of the Hurlburt Field GSA and a portion of the City of Fort Walton Beach GSA. The center of the general service area is located approximately at latitude 30° 25'51.9" N, longitude 86° 40'59.9" W.
Treated drinking water may be used to augment the supply of reclaimed water.
Industrial Reuse R-002: An existing 0.045 MGD annual average daily flow industrial reuse system (R-002). R-002 consists of reclaimed water that is used for on-site plant operations including foam control, plant wash down and belt filter press operation.

PART I: Continued

List <u>current</u> Effluent Limits of Outfall(s) to be Sampled: This should include any AO or CO limits the facility may be under
(Leave cell blank if not applicable)



I. RECLAIMED WATER AND EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Surface Water Discharges

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee is authorized to discharge effluent from Outfall D-001 to a receiving wetland in East Bay Swamp and to Industrial Reuse R-002 at the Plant Site. Such discharge shall be limited and monitored by the permittee as specified below and reported in accordance with Permit Condition I.D.8.:

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/ Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site	Notes
Flow (to receiving wetland)	MGD	Max Max	1.0 Report	Annual Average Monthly Average	Continuous	Recording Flow Meter with Totalizer	FLW-01	See I.A.4
Flow (to on-site reuse for plant operations R-002)	MGD	Max Max	Report Report	Annual Average Monthly Average	Continuous	Recording Flow Meter with Totalizer	FLW-02	
BOD, Carbonaceous 5 day, 20C	mg/L	Max Max Max Max	5.0 6.25 7.5 10.0	Annual Average Monthly Average Weekly Average Single Sample	Weekly	16-hr FPC	EFF-01	
Solids, Total Suspended	mg/L	Max Max Max Max	5.0 6.25 7.5 10.0	Annual Average Monthly Average Weekly Average Single Sample	Weekly	16-hr FPC	EFF-01	
Nitrogen, Total	mg/L	Max Max Max Max	3.0 3.75 4.5 6.0	Annual Average Monthly Average Weekly Average Single Sample	Weekly	16-hr FPC	EFF-01	
Phosphorus, Total (as P)	mg/L	Max Max Max Max	1.0 1.25 1.5 2.0	Annual Average Monthly Average Weekly Average Single Sample	Weekly	16-hr FPC	EFF-01	
Coliform, Fecal	#/100mL	Max Max Max	200 200 800	Annual Average Monthly Geo.Mean Single Sample	Weekly	Grab	EFF-01	See I.A.5
pH	s.u.	Min Max	6.5 8.5	Single Sample Single Sample	Continuous	Meter	EFF-01	See I.A.3
Chlorine, Total Residual (For Disinfection)	mg/L	Min	0.5	Single Sample	Continuous	Meter	EFA-01	See I.A.3 and I.A.6
Chlorine, Total Residual (For Dechlorination)	mg/L	Max	0.01	Single Sample	Daily; 24 hours	Grab	EFD-01	
Oxygen, Dissolved (DO)	mg/L	Min	Report	Single Sample	Daily; 24 hours	Grab	EFF-02	
Nitrogen, Ammonia, Total (as N)	mg/L	Max Max Max	2.0 2.0 4.0	Annual Average Monthly Average Single Sample	Weekly	16-hr FPC	EFF-01	
Specific Conductance	umhos/cm	Max	Report	Single Sample	Quarterly	Grab	EFF-01	

2. Effluent samples shall be taken at the monitoring site locations listed in Permit Condition I.A.1. and as described

[62-600.440(4)(b), (5)(b), and (6)(b)]

B. Wetlands Monitoring

1. During the period beginning on the issuance date and lasting through the expiration date of this permit, the permittee shall monitor water quality in the receiving wetlands at Wetlands Stations 3, 4 and 5. Wetlands monitoring shall be performed as specified below and reported in accordance with condition I.D.8.:

			Effluent Limitations		Monitoring Requirements			
Parameter	Units	Max/ Min	Limit	Statistical Basis	Frequency of Analysis	Sample Type	Monitoring Site	Notes
Nitrogen, Total	mg/L	Max	3.0	Annual Average	Annually	Grab	WEP-01	See I.B.2 & I.B.3
Nitrogen, Ammonia, Total unionized (as N)	mg/L	Max	0.02	Annual Average	Annually	Calculated		
Phosphorus, Total (as P)	mg/L	Max	0.2	Annual Average	Annually	Grab		
Nitrogen, Ammonia, Total (as N)	mg/L	Max	Report	Single Sample	Annually	Grab	WEP-01 WIM-02 WIM-03	
Solids, Total Suspended	mg/L	Max	Report	Single Sample	Annually	Grab		
Coliform, Fecal	#/100mL	Max	Report	Single Sample	Annually	Grab		
BOD, Carbonaceous 5 day, 20C	mg/L	Max	Report	Single Sample	Annually	Grab		
pH	s.u.	Max	Report	Single Sample	Annually	Field Probe		
Temperature (C), Water	Deg C	Max	Report	Single Sample	Annually	Field Thermometer		
Nitrogen, Kjeldahl, Total (as N)	mg/L	Max	Report	Single Sample	Annually	Grab		
Specific Conductance	umhos/cm	Max	Report	Single Sample	Annually	Field Probe		
Phosphorus, Total (as P)	mg/L	Max	Report	Single Sample	Annually	Grab		
Nitrite plus Nitrate, Total 1 det. (as N)	mg/L	Max	Report	Single Sample	Annually	Grab		
Sulfate, Total (as S)	mg/L	Max	Report	Single Sample	Annually	Grab		
Chlorophyll A, Phytoplankton Flourometric Method	ug/L	Max	Report	Single Sample	Annually	Grab		
Oxygen, Dissolved (DO)	mg/L	Max	Report	Single Sample	Annually	Field Probe		
Sulfide (as S)	mg/L	Max	Report	Single Sample	Annually	Sediment		
Stage (Water Depth) at sample collection time	ft	Max	Report	Single Sample	Every 2 weeks	Stage Recorder/ Staff Gauge	WEP-01	
					Annually	Staff Gauge	WIM-02 WIM-03	
Herbaceous Vegetation	-	-	Report	-	Annually	-	WEP-01 WIM-02 WIM-03	See I.B.2 & I.B.4
Fish	-	-	Report	-	Annually	-		
Woody Vegetation	-	-	Report	-	Annually	-		
Threatened & Endangered Plant & Animal Species List	-	-	Report	-	Annually	-		

Wetland monitoring samples shall be taken at the monitoring site locations listed in Permit Condition I.B.1. and as described below:
Monitoring Site Description of Monitoring Site
WEP-01 Wetland Exit Point - Wetlands Monitoring Plan Station 4 (fka WER-4)
WIM-02 Wetlands Monitoring Plan Station 3 (fka WER-3)
WIM-03 Wetlands Monitoring Plan Station 5 (fka WER-5)

PART I: Continued

Receiving Waters: **Receiving wetland in East Bay Swamp**	**Classification (indicate whether fresh or marine):** **Class III fresh water**

Toxicity Test Requirements (routine and/or additional test language, test species, salinity adjustment, etc.):

NA

Administrative or Consent Orders (date executed, specific requirements, interim limit dates-if applicable, etc.):

Facility Mixing Zone Details (if applicable):

List Permit Violations (DMR data) and plant upsets that occurred at the plant within the last year:

Date	Parameter and Units	Limit	Result
None			

Describe previous FYI and WQBEL study:

Describe previous or current Enforcement Actions (including WLs):

Describe any violations or problems noted in previous inspection:

Discuss whether DMR trends within previous five years are improving or declining:

Additional Comments (this should include a trend of the Effluent, i.e. if the facility is now Reuse):

Facility discharges continuously into wetland; intermittantly to reuse when water treatment/effluent water quality allows.

PART II: Sampling Event Information

Date(s) sample collected: **9/15/14**	**Date(s) sample collected:** **9/15/14**
Temperature (Deg C): **29.26**	**Temperature (Deg C):** **29.26**
Dissolved Oxygen (mg/L): **7.64**	**Dissolved Oxygen (mg/L):** **7.64**
Total Residual Chlorine (mg/L): **1.65, 1.45**	**Total Residual Chlorine - after Disinfection (mg/L):** **0.004**
Method of Chlorination:	**Method of Chlorination:**

Flow During Sample Collection for each outfall(MGD): **516,000**
Mean Flow for each outfall for previous 12 months based on sampling date (If samples are taken on more than one day, indicate Mean Flow for each day): **0.733 MGD (09/2013-08/2014)**
Describe Discharge during Sampling Event: ☒ **Continuous** ☐ **Intermittent** ☐ **Seasonal** ☐ **Rainfall Dependent** ☐ **Other, please specify**
Describe any conditions, difficulties or abnormal events that occurred during the sample collection and any other additional comments here:

Appendix C

Explanation of Measurements

(1) Quality Assurance and Quality Control

FDEP's quality assurance requirements for analytical laboratories and field activities are codified in Chapter 62-160, F.A.C., Quality Assurance (QA Rule) and in internal Standard Operating Procedures (FDEP SOPs). Methods for all analyses are on file at the FDEP Central Laboratory in Tallahassee and may be viewed on the web at http://www.dep.state.fl.us/labs/library/lab_sops.htm and/or http://www.dep.state.fl.us/water/sas/qa/index.htm.

(2) Chemical Analyses of the Effluent

The effluent was analyzed for nutrients, metals, organic constituents (base, neutral, and acid extractables) and pesticides following FDEP SOPs. The results from these analyses were compared with Water Quality Criteria (62-302, F.A.C.) and facility permit limits.

(3) Toxicity Bioassays

Greater than 50% mortality in an acute toxicity test may constitute an exceedance of 62-302.500(1)a and/or a potential violation of facility permit limits. A 25% inhibition concentration (IC25) is the effluent concentration causing a 25% reduction in a biological response such as biomass or reproduction when compared to a control population. An IC25 of less than 100% in a chronic test may constitute exceedances of 62-302.530(20), 62-302.530(61) and/or a potential violation of facility permit limits. A no observed effect concentration (NOEC) less than 100% effluent in a chronic test may constitute an exceedance of 62-302.530(61) and/or a potential violation of facility permit limits. Standard reference toxicant (SRT) tests are conducted monthly to ensure quality in toxicity testing.

(4) Bacteriological Testing

High levels of fecal coliform bacteria may constitute an exceedance of 62-302.530(6) and/or a potential violation of facility permit limits. Fecal coliform and enterococci results often are based on colony counts outside the acceptable range (B-qualifier). The dilutions performed on the sample did not yield results within the method acceptable range of 20- 60 colony forming units per plate. The B-qualifier does not affect data quality.

(5) Habitat Assessment

Habitat assessment is used to evaluate the physical structure and extent of disturbance in a waterbody. Eight aspects are ranked, with 20 possible points for each aspect (QA Rule SOP FT 3100). The Habitat Assessment score includes types and amounts of benthic substrates, water velocity, amount of sand or silt accumulation, extent of artificial channelization, bank stability, and riparian zone width and vegetation type. All scores are summed to yield an overall Habitat Assessment score. Habitat Assessment score ranges from 11-160 and overall habitat quality is assigned to one of four categories: Optimal (120-160 points), Suboptimal (80-119 points), Marginal (40-79 points), and Poor (11-39 points).

(6) Algal Growth Potential (AGP)

The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. Raschke and Shultz (1987) found that an AGP above 5.0 mg dry weight/L represents a “problem” threshold for fresh receiving waters, implying nutrient enrichment. High AGP values may constitute exceedances of 62-302.530(46), F.A.C., 62-302.530(47)(a), F.A.C. and/or 62-302.530(47)(b), F.A.C..

The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP under the assumption that other required nutrients (e.g. silicon, micronutrients) are present in excess (Miller *et al*. 1978). The expected amount of production is calculated as 38 times the total soluble inorganic nitrogen (nitrate and nitrite plus ammonia) under nitrogen limitation or 430 times the ortho-phosphate (OP) concentration under phosphorus limitation with an error of $\pm$ 20%. When the ratio of nitrogen to phosphorus (N: P) is less than 10:1, nitrogen limitation of algal production is likely. When the N: P ratio is 20:1 or greater, phosphorus limitation is likely (USEPA 2000). For ratios in-between, co-limitation may occur. Production of lower biomass than expected may be evidence of growth inhibition related to toxic compounds present in the water sample tested and may constitute an exceedance of 62-302.530(61), F.A.C.

(7) Algal Phytoplankton and Periphyton Assemblages

Qualitative periphyton are sampled by taking subsamples of algae from natural substrates throughout the sample reach. Phytoplankton were sampled from the water column using a 1 L grab sample. Periphyton were subsampled and identified to the lowest practical level, usually species. Wet taxa and diatoms are identified separately. In the wet taxa analysis, soft algae are identified to the lowest practical level, and diatoms are identified only to order level (diatom). In the diatom analysis, diatoms are identified to the lowest practical level.

Chlorophyll *a* Content: Chlorophyll *a* content is an estimate of algal biomass . High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may be constitute exceedances of 62-302.530(46), F.A.C., 62-302.530(47)(a) F.A.C. and/or 62-302.530(47)(b) F.A.C..

Algal Density: Algal density is estimated as number of natural units/ml for phytoplankton samples. Although algal density of a single site is highly variable and depends on a number of factors, comparison of algal density at a control site to algal density at a related test site gives a partial comparison of algal biomass at the two sites (Stevenson and Smol 2003).

Taxa richness: Taxa richness is the number of distinct algal taxa present in a sample. Extreme nutrient enrichment tends to reduce the number of different types of algae present in a sample because a few tolerant taxa tend to reproduce rapidly and constitute the majority of the cells present. However, moderate nutrient enrichment of nutrient poor waters may sometimes be correlated with increased algal taxa richness (Stevenson and Bahls 1999) as the algal community begins to respond to the increased input of nutrients.

Community Composition: Shifts in relative proportions of major groups of algae downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Stevenson and Bahls 1999) and may constitute exceedances of 62-302.530(46) F.A.C., 62-302.530(47)(a) F.A.C., 62-302.530(47)(b) F.A.C. and/or 62-302.530(61) F.A.C.

(8) Benthic Macroinvertebrate Assemblages

Benthic macroinvertebrates were collected using two methods. Quantitative samples were collected from Hester-Dendy multi-plate samplers incubated for 28 days. Qualitative collections are made using 20 dipnet sweeps (QA Rule SOP FS7420). Benthic macroinvertebrates were sorted and identified to the lowest practical taxonomic level, usually species.

Taxa richness: Taxa richness is the number of distinct macroinvertebrate taxa present in a sample. Stress, habitat destruction and pollution tend to reduce the number of different types of organisms present (Karr and Chu 1998). Decreases in taxa richness related to a facility's effluent may constitute exceedances of 62-302.530(46), F.A.C., 62-302.530(47)(a), F.A.C., 62-302.530(47)(b), F.A.C. and/or 62-302.530(61), F.A.C..

Percent Contribution of Dominant Taxon: Percent contribution of the dominant taxon is calculated by dividing the number of individuals in the most abundant taxa by the total number of individuals counted. Percent contribution of the dominant taxon tends to increase with increasing perturbation (Plafkin *et al*., 1989). Increases in the percent contribution of the dominant taxon related to a facility's effluent may constitute exceedances of 62-302.530(46), F.A.C., 62-302.530(47)(a), F.A.C. and/or 62-302.530(47)(b), F.A.C..

Community Composition: Shifts in proportions of major groups of organisms downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Fore et. al. 2007, Karr and Chu 1998). Shifts in community composition related to a facility's effluent may constitute exceedances of 62-302.530(46) F.A.C., 62-302.530(47)(a), F.A.C., 62-302.530(47)(b), F.A.C. and/or 62-302.530(61), F.A.C.

Functional Feeding Groups: Environmental degradation may differentially affect groups of invertebrates based on how the group feeds (e.g. predators, deposit feeders, etc.). In Florida, pollution may be responsible for reducing the numbers of filter feeders and shredders (Fore et. al. 2007). Changes in the proportions of functional feeding groups related to a facility's effluent may constitute exceedances of 62-302.530(46), F.A.C., 62-302.530(47)(a), F.A.C., 62-302.530(47)(b), F.A.C. and/or 62-302.530(61), F.A.C..

Shannon-Weaver Diversity Index: This index is specified in the Florida Administrative Code 62-302 as a measure of biological integrity. Low diversity scores are undesirable. Where diversity is low, only a few taxa are abundant as compared to an area where many taxa are present in equitable abundance among taxa (Magurran 1988). A difference of 25% in Shannon-Weaver diversity between results from Hester-Dendy multiplate samplers incubated for 28 days at test and control sites constitute exceedances of 62-302.530(10), F.A.C..

The Stream Condition Index (SCI): The SCI is a composite macroinvertebrate metric developed for Florida (Fore et. al. 2007). This Index was revised in 2007 using data from qualitative dipnet samples. The SCI now assigns points to ten parameters; depending on how closely each parameter approaches an expected value (QA Rule SOP LT 7200). Points are assigned according to in which bioregion (Panhandle, Northeast, or Peninsula) the sampling location exists -and summed to yield a final SCI score (range 0-100). Included in the calculation of SCI are taxa richness, number of Ephemeroptera taxa, number of Trichoptera taxa, percent contribution of the dominant taxon, number of

sensitive taxa, number of clinger taxa, number of long-lived taxa, percent contribution of Tanytarsini, percent contribution of very tolerant, and the percent contribution of suspension and filter feeders. As human disturbance increases, it is expected that taxa richness, the number of Ephemeroptera taxa, Trichoptera taxa, sensitive taxa, clinger taxa, long-lived taxa, and the percent contribution of Tanytarsini and suspension and filter feeders will decrease while percent contribution of dominant taxon, and percent contribution of very tolerant taxa will increase.

Scores are broken into three categories (1, 2, and 3). Sites in Category 1 are described as having higher diversity than Category 2 sites, particularly for Ephemeroptera and Trichoptera. A Category 1 site may have several more clinger and sensitive taxa, a higher proportion of Tanytarsini, and a lower percent of a dominant taxon than a site in Category 2. The site will also have a very small percentage of very tolerant individuals, if any.

Sites in Category 2 are described as having an average of 30 species with several different taxa of Ephemeroptera and Trichoptera. A Category 2 site also has several different long-lived taxa and, on average, 5 clinger and 6 sensitive taxa. There is a slight increase in dominance by a single taxon relative to sites in Category 1. Very tolerant taxa represent a small percentage of individuals but are noticeably increased as compared to sites in Category 1.

Sites in Category 3 are described as having a notable loss in taxonomic diversity, and Ephemeroptera, Trichoptera, long-lived, clinger and sensitive taxa are uncommon or rare. Filter feeders are reduced by at least 50%. The site is dominated by a tolerant taxon, and very tolerant individuals represent a large proportion of the individuals collected.

SCI 2007 categories are from Table LT 7200-2 of DEP-SOP-002/01 as referenced in Draft Quality Assurance Rule (62-160, F.A.C.), December 3, 2008. A decrease in ordinal SCI score from the Control to the Test site may be evidence of degradation related to a facility's effluent. An SCI score in Category 3, if it is shown to be related to a facility's effluent, may constitute exceedances of 62-302.530(46), F.A.C., 62-302.530(47)(a), F.A.C., 62-302.530(47)(b), F.A.C., or of 62-302.530(61).

(9) Definition of Qualifiers

A - Value reported is the mean of two or more determinations
B - Results based on colony counts outside the acceptable range.
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J - Estimated value
K - Actual value is known to be less than value given
L - Actual value is known to be greater than value given
N - Presumptive evidence of presence of material.
O - Sampled, but analysis lost or not performed.
Q - Sample held beyond normal holding time.
T - Value reported is less than the criterion of detection.
U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
V - Analyte was detected in both sample and method blank.
X - Too few individuals to calculate SCI value.
Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate
Z - Colonies were too numerous to count (TNTC)

(10) Florida Wetland Condition Index-Vegetation

The Florida Wetland Condition Index-Vegetation (WCI-VI) for isolated, forested wetlands is a biological assessment of wetland health conducted by sampling vascular plants along transects, identifying them to the species level, and calculating metric values based on attributes of the plant community that change predictably along an independent gradient of human disturbance. The index is calculated based on 6 metrics: percent tolerant indicator species, percent sensitive indicator species, percent exotic macrophyte species, average Coefficient of Conservatism (CC) score, percent native perennial species, and percent wetland status species. These metrics are calibrated for 4 ecoregions within the state including the Panhandle, North, Central, and South regions. The score is based on a 0-60 scale, with 60 representing high biological integrity. This current index is based on the Florida Wetland Condition Index (FWCI) developed by Reiss and Brown (2005) to provide a quantitative measure of the biological integrity of a wetland system.

Appendix D

Chain of Custody

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2014-05-05-17
FYI Hurlburt Field AWTP Sampling Inspection

Customer: NW-DIST
Project ID: FYI5
PMAS: 1143

Requester: Adrienne E. Pennington
Collected By: Nathan MulKey / Shelly Marsh
Sampling Agency:
Field Report Prepared By: N. MulKey
Send Final Report To: Kim Allen

Lab ID *	Location	Field ID	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Latitude	Longitude	Comp / Grab	Collection (comp begin or grab) Eastern Date Time	Composite end Eastern Date Time	Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	Sample Depth m / ft	Salinity (PPTh)	Sp Conductance (umho/cm)	NPDES Number	Comments	Bottle Group(s)**
	Effluent Hurlburt Field	EFF-1 Effluent	Wastewater	29.26	7.53	dd / dms	dd / dms	Grab	Date 9/15/14 Time 1050 Central			7.64		.15 m	0.30	633			A
	Field Blank Hurlburt Field	↓	Deionized H_2O			dd / dms	dd / dms	Grab	Date 9/15/14 Time 1125 Central										SA SA A D E
	Hurlburt Field	TOX	Wastewater			dd / dms	dd / dms	Comp	Date 9/14/14 Time 0605 Central	Date 9/15/14 Time 0612 Central									B
	Hurlburt FIELD TEST WETLAND	Test Wetland	Wastewater	26.06	6.46	dd / dms	dd / dms	Grab	Date 9/15/14 Time 1240 Central			2.73		.15 m		131			SA A C

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	9/15/14	Fed Ex		9-16-14 0900				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

2 13:0 assay Bottles
John Marshall
9-16-14 1003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2014-05-05-17
FYI Hurlburt Field AWTP Sampling Inspection

Customer: NW-DIST
Project ID: FYI5
PMAS: 1143

Requester: Adrienne E. Pennington
Collected By:
Sampling Agency:
Field Report Prepared By:
Send Final Report To: Kim Allen

Lab ID *	Location	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
	Hurlburt Field Control Wetland	☐ Comp ☑ Grab Date 9/15/14 Time 1335	Date Time	SA AC
	Field ID	Tot Res Chlorine (mg/L) / Diss Oxygen (mg/L) 0.53	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc) Fresh / Temp (C) 26.27 / pH 6.67	Sample Depth ☒ m ☐ ft 0.1 / 0.06 / 130	☒ Salinity (PPTh) ☒ Sp Conductance (umho/cm)	NPDES Number
	Latitude ☐ dd ☐ dms / Longitude ☐ dd ☐ dms	Comments		

Lab ID *	Location	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab Date Time	Date Time	
	Field ID	Tot Res Chlorine (mg/L) / Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc) / Temp (C) / pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude ☐ dd ☐ dms / Longitude ☐ dd ☐ dms	Comments		

Lab ID *	Location	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab Date Time	Date Time	
	Field ID	Tot Res Chlorine (mg/L) / Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc) / Temp (C) / pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude ☐ dd ☐ dms / Longitude ☐ dd ☐ dms	Comments		

Lab ID *	Location	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
		☐ Comp ☐ Grab Date Time	Date Time	
	Field ID	Tot Res Chlorine (mg/L) / Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc) / Temp (C) / pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number
	Latitude ☐ dd ☐ dms / Longitude ☐ dd ☐ dms	Comments		

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	9/15/14	Fed Ex		9-16-14 0900				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2014-05-05-17
FYI Hurlburt Field AWTP Sampling Inspection

Requester: Adrienne E. Pennington
Collected By: Shelley Alexander
Sampling Agency: FDEP

Field Report Prepared By:
Send Final Report To: Kim Allen

Customer: NW-DIST
Project ID: FYI5
PMAS: 1143

Lab ID *	Location			☒ Comp ☐ Grab	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
	Field ID: 70X2			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	B
	Matrix (include type e.g. Salt, Fresh, etc): Effluent WW	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments: FLOW THRU PLANT 0.638 MGD			
	Collection: Date 9/16/14 Time 0636				Composite end: Date 9/17/14 Time 0631		

Lab ID *	Location			☐ Comp ☐ Grab	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments			
	Collection: Date Time				Composite end: Date Time		

Lab ID *	Location			☐ Comp ☐ Grab	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments			
	Collection: Date Time				Composite end: Date Time		

Lab ID *	Location			☐ Comp ☐ Grab	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments			
	Collection: Date Time				Composite end: Date Time		

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Shelley Alexander	9/17/14 1230	FED EX	JR	9/18/14 9:25am				

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

9.18.14 1003
2 bioassay bottles

Page 1 of 5

Cassidy Reichert 850 245-8194

Florida Department of Environmental Protection

Central Laboratory Sample Submittal Form

Event ID *

Request Number: RQ-2014-05-05-17
FYI Hurlburt Field AWTP Sampling Inspection

Requester: Adrienne E. Pennington
Field Report Prepared By:

Customer: NW-DIST
Project ID: FY15
PMAS: 1143

Collected By:
Sampling Agency: FDEP
Send Final Report To: Kim Allen

Lab ID *	Location			Comp / Grab	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
	Hurlburt Field			☑ Comp ☐ Grab	Date 9/18/14 Time 0612	Date 9/19/14 Time 0604	B
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	TOK3						
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Effluent						
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments 0.592 MGD			

Lab ID *	Location			Comp / Grab	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
				☐ Comp ☐ Grab	Date Time	Date Time	
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments			

Lab ID *	Location			Comp / Grab	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
				☐ Comp ☐ Grab	Date Time	Date Time	
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments			

Lab ID *	Location			Comp / Grab	Collection (comp begin or grab) Eastern Central	Composite end Eastern Central	Bottle Group(s)**
				☐ Comp ☐ Grab	Date Time	Date Time	
	Field ID			Tot Res Chlorine (mg/L)	Diss Oxygen (mg/L)	Storet Station Number	
	Matrix (include type e.g. Salt, Fresh, etc)	Temp (C)	pH	Sample Depth ☐ m ☐ ft	☐ Salinity (PPTh) ☐ Sp Conductance (umho/cm)	NPDES Number	
	Latitude ☐ dd ☐ dms	Longitude ☐ dd ☐ dms		Comments			

Relinquished By:	Date/Time	Shipping Method:	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Shelly Alvarado	9/19/14 1100	FED EX	R. Walters	9/20/14 0905			SK	9.20.14/11.00

* Shaded Areas for Lab use only.

** Please see reverse side for Bottle Group information.

last revised October 1, 2003

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Red cooler ☐ 2 jugs = 1.7°C
Red cooler ☐ 1 Jug 0.1°C

850 245 8194

Appendix E

Physical/Chemical and Habitat Assessment field sheets

Department of Environmental Protection
Water Quality Report Form

Nelac Lab ID: E31887	Water Collection Depth: ☐0.15m(0.5') ☐Other:		General Bottles Triple Rinsed ☐
Agency 21FLPNS	Station	Date 9/15/14	Time of Grab Sample 1050 ☑ CST ☐ EST

Water (check as appropriate)			Soils/Sediment		Tissue		Collection Mode	
Surface Water	☐	Equip Blank ☐	Terrestrial	☐	Fish	☐	by Foot ☑	☐ by Boat
Ground Water	☐	Field Blank ☐	Freshwater Sed	☐	Shellfish	☐	Wading ☐	☐ Canoe
Waste Water	☒	Trip Blank ☐	Marine Sed	☐	Other	☐	On Shore ☐	☐ Gas Motor
Other:		Duplicate ☐	Sludge	☐				

Parameter Suite	Parameter(s)/Method	Preservation	Acid Lot/Exp	Check pH	# Bottles
Preserved Nutrients	☐TKN ☐TP ☐NO2NO3 ☐NH3 ☐TOC ☐Other:	☐Ice ☐H2SO4 2ml		☐ <2 pH	
Metals	☐W-ICP ☐W-FIAS ☐W-ICPMS ☐W-ICP-Tr	☐HNO3 1ml		☐ <2 pH	
Filtered Nutrients	☐PO4 ☐Field Filtered .45 um filter	☐Ice			
All Other Samples unless otherwise noted	☐Other:	☐Ice			

Biological Sample Collected: Macroinvertebrates ☐ Phytoplankton ☐ Periphyton ☐ AGP ☐

Meter ID Num: 132237	**Equipmt Used:** Sample Container ☐ Pole ☐ Syringe ☑ Van Dorn ☐ Other ☐	**Equipmt ID Num:**	☐ Field Cleaned

Remarks: Module number: 1306
Effluent sampling for FYI
Field Blank taken 1125CST

LOCATION Hurlburt Field WWTF
24hr. Composite 9/14/14 0605CST - 9/15/14 0612CST
Lat: N 516,000 Long: W

Parameter	Unit	Code	Field Value	Parameter	Unit	Code	Lab Request
Field Identity	Number	29	EFF-1	Conductivity Lab	umhos/cm	95	
Temp. Water	°C	10	29.26	pH Lab	Std. Unit	403	
Temp. Air	°C	20		Turbidity, HACH	NTU	76	
Precipitation (24hr)	Inches	45		Color	PT-CO	80	
Cloud Cover	Percent	32		BOD, 5 Day	mg/L	310	
Wind Velocity	MPH	35		NFLT Residue	mg/L	530	
Wind Dir. From	Degrees	36		N-NH3, Total	mg/L	610	
Tide Stage	Code	67		Un-Ionized NH3	mg/L	619	
Water Depth, Max	Meters	82903		N-TKN	mg/L	625	
Secchi	Meters	78		N-NO2 +NO3	mg/L	630	
Meter Sample Depth	Meters	98		Phos-Total	mg/L	665	
Conductivity Field	umhos/cm	94	633	Enterococcus	#/100mL	31649	
Salinity	PPTH	480	0.30	Total Coliform	#/100mL	31501	
DO Probe	mg/L	299	7.64	Fecal Coliform	#/100mL	31616	
DO % Saturation	Percent	301	100.0	Chlorophyll A	UG/L	32210	
pH Field	Std. Unit	400	7.53	Chlorophyll A	Corrected	32211	

Sample Taken By:	NM	Report Verified By:	
Report Prepared By:	NM	( ) CHANGE	Date Submitted

DEP NWD form, 10-25-2006 version

Department of Environmental Protection

Water Quality Report Form

Nelac Lab ID: E31887	Water Collection Depth: ☒0.15m(0.5') ☐Other:	General Bottles Triple Rinsed ☐
Agency 21FLPNS / Station	Date 9/15/14	Time of Grab 1235 SA ☒ CST / Sample 1240 ☐ EST

Water (check as appropriate)		Soils/Sediment		Tissue		Collection Mode	
Surface Water ☒	Equip Blank ☐	Terrestrial	☐	Fish	☐	by Foot ☐	☐ by Boat
Ground Water ☐	Field Blank ☐	Freshwater Sed	☐	Shellfish	☐	Wading ☒	☐ Canoe
Waste Water ☐	Trip Blank ☐	Marine Sed	☐	Other	☐	On Shore ☐	☐ Gas Motor
Other:	Duplicate ☐	Sludge	☐				

Parameter Suite	Parameter(s)/Method	Preservation	Acid Lot/Exp	Check pH	# Bottles
Preserved Nutrients	☐TKN ☐TP ☐NO2NO3 ☐NH3 ☐TOC ☐Other:	☐Ice ☐H2SO4 2ml		☐ <2 pH	
Metals	☐W-ICP ☐W-FIAS ☐W-ICPMS ☐W-ICP-Tr	☐HNO3 1ml		☐ <2 pH	
Filtered Nutrients	☐PO4 ☐Field Filtered .45 um filter	☐Ice			
All Other Samples unless otherwise noted	☐Other:	☐Ice			

Biological Sample Collected: Macroinvertebrates ☐ Phytoplankton ☐ Periphyton ☐ AGP ☐

Meter ID Num: 132237	Equipmt Used: Sample Container ☐ Pole ☐ Syringe ☐ Van Dorn ☐ Other ☐	Equipmt ID Num: ☐ Field Cleaned

Remarks: WCI — Module number: 1306

LOCATION Hurlburt Field Test Wetland

Lat: N Long: W

Parameter	Unit	Code	Field Value	Parameter	Unit	Code	Lab Request
Field Identity	Number	29		Conductivity Lab	umhos/cm	95	131 SA
Temp. Water	°C	10	26.08	pH Lab	Std. Unit	403	
Temp. Air	°C	20		Turbidity, HACH	NTU	76	
Precipitation (24hr)	Inches	45		Color	PT-CO	80	
Cloud Cover	Percent	32		BOD, 5 Day	mg/L	310	
Wind Velocity	MPH	35		NFLT Residue	mg/L	530	
Wind Dir. From	Degrees	36		N-NH3, Total	mg/L	610	
Tide Stage	Code	67		Un-Ionized NH3	mg/L	619	
Water Depth, Max	Meters	82903	0.2 SA m/.3m	N-TKN	mg/L	625	
Secchi	Meters	78	VOB	N-NO2 +NO3	mg/L	630	
Meter Sample Depth	Meters	98	0.2m	Phos-Total	mg/L	665	
Conductivity Field	umhos/cm	94	131	Enterococcus	#/100mL	31649	
Salinity	PPTH	480	0.06	Total Coliform	#/100mL	31501	
DO Probe	mg/L	299	2.73	Fecal Coliform	#/100mL	31616	
DO % Saturation	Percent	301	33.6	Chlorophyll A	UG/L	32210	
pH Field	Std. Unit	400	6.46	Chlorophyll A	Corrected	32211	

Sample Taken By: NM	Report Verified By:
Report Prepared By: NM	( ) CHANGE Date Submitted

DEP NWD form, 10-25-2006 version

Department of Environmental Protection

Water Quality Report Form

Nelac Lab ID: E31887	Water Collection Depth: ☒0.15m(0.5') ☐Other:	General Bottles Triple Rinsed ☐
Agency 21FLPNS / Station	Date 9/15/14	Time of Grab Sample 1335 ☒ CST ☐ EST

Water (check as appropriate)			Soils/Sediment		Tissue		Collection Mode	
Surface Water	☒	Equip Blank ☐	Terrestrial	☐	Fish	☐	by Foot ☐	☐ by Boat
Ground Water	☐	Field Blank ☐	Freshwater Sed	☐	Shellfish	☐	Wading ☒	☐ Canoe
Waste Water	☐	Trip Blank ☐	Marine Sed	☐	Other	☐	On Shore ☐	☐ Gas Motor
Other:		Duplicate ☐	Sludge	☐				

Parameter Suite	Parameter(s)/Method	Preservation	Acid Lot/Exp	Check pH	# Bottles
Preserved Nutrients	☐TKN ☐TP ☐NO2NO3 ☐NH3 ☐TOC ☐Other:	☐Ice ☐H2SO4 2ml		☐ <2 pH	
Metals	☐W-ICP ☐W-FIAS ☐W-ICPMS ☐W-ICP-Tr	☐HNO3 1ml		☐ <2 pH	
Filtered Nutrients	☐PO4 ☐Field Filtered .45 um filter	☐Ice			
All Other Samples unless otherwise noted	☐Other:	☐Ice			

Biological Sample Collected: Macroinvertebrates ☐ Phytoplankton ☐ Periphyton ☐ AGP ☐

Meter ID Num: 132237	**Equipmt Used:** Sample Container ☐ Pole ☐ Syringe ☐ Van Dorn ☐ Other ☐	**Equipmt ID Num:** ☐ Field Cleaned

Remarks: WCI — Module number: 1306

LOCATION Hurlburt Field Control Wetland

Lat: N Long: W

Parameter	Unit	Code	Field Value	Parameter	Unit	Code	Lab Request
Field Identity	Number	29		Conductivity Lab	umhos/cm	95	~~130~~ SA
Temp. Water	°C	10	26.27	pH Lab	Std. Unit	403	
Temp. Air	°C	20		Turbidity, HACH	NTU	76	
Precipitation (24hr)	Inches	45		Color	PT-CO	80	
Cloud Cover	Percent	32		BOD, 5 Day	mg/L	310	
Wind Velocity	MPH	35		NFLT Residue	mg/L	530	
Wind Dir. From	Degrees	36		N-NH3, Total	mg/L	610	
Tide Stage	Code	67		Un-Ionized NH3	mg/L	619	
Water Depth, Max	Meters	82903	0.3	N-TKN	mg/L	625	
Secchi	Meters	78	VOB	N-NO2 +NO3	mg/L	630	
Meter Sample Depth	Meters	98	0.1	Phos-Total	mg/L	665	
Conductivity Field	umhos/cm	94	130	Enterococcus	#/100mL	31649	
Salinity	PPTH	480	0.06	Total Coliform	#/100mL	31501	
DO Probe	mg/L	299	0.53	Fecal Coliform	#/100mL	31616	
DO % Saturation	Percent	301	6.4	Chlorophyll A	UG/L	32210	
pH Field	Std. Unit	400	6.67	Chlorophyll A	Corrected	32211	

Sample Taken By: NM	Report Verified By:
Report Prepared By: NM	( ) CHANGE Date Submitted

DEP NWD form, 10-25-2006 version

Appendix F

Chemical analysis of effluent and receiving water

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
9/15/2014 7:12	Effluent Comp	TOX 1	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	0.20 U	mg/L	0.2	2
9/15/2014 7:12	Effluent Comp	TOX 1	Toxicology	Bioassay-Chron-Def-FW-Fish, IC25	100 L	IC25		
9/15/2014 7:12	Effluent Comp	TOX 1	Toxicology	Bioassay-Chron-Def-FW-C.dubia, IC25	100 L	IC25		
9/15/2014 7:12	Effluent Comp	TOX 1	Toxicology	Bioassay-Chron-Def-FW-C.dubia, NOEC	100	NOEC		
9/15/2014 7:12	Effluent Comp	TOX 1	Toxicology	Bioassay-Chron-Def-FW-Fish, NOEC	100	NOEC		
9/15/2014 7:12	Effluent Comp	TOX 1	Nutrients	TSS	2 U	mg/L	2	10
9/15/2014 7:12	Effluent Comp	TOX 1	Nutrients	NO2NO3-N	1.5	mg N/L	0.04	0.1
9/15/2014 7:12	Effluent Comp	TOX 1	Nutrients	Kjeldahl Nitrogen	0.50	mg N/L	0.08	0.2
9/15/2014 7:12	Effluent Comp	TOX 1	Nutrients	Ammonia-N	0.022	mg N/L	0.002	0.005
9/15/2014 7:12	Effluent Comp	TOX 1	Nutrients	Total-P	0.74	mg P/L	0.005	0.05
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	AGP/LN	Algal Growth Potential	67.2 A	mg DryWt/L	0.3	0.9
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.40 U	ug/L	0.4	1.2
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	0.55 U	ug/L	0.55	1.7
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Overflow	Fecal Coliforms-Membrane Filter	2 U	cfu/100 mL	2	2
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Metals	Silver	0.025 U	ug/L	0.025	0.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Metals	Cadmium	0.37	ug/L	0.05	0.2
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Metals	Iron	34 I	ug/L	30	120
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Metals	Chromium	0.30 U	ug/L	0.3	1.2
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Metals	Aluminum	97	ug/L	5	20
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Metals	Calcium	13.5	mg/L	0.075	0.3
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Metals	Lead	0.24 I	ug/L	0.2	0.8
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Metals	Arsenic	0.39 I	ug/L	0.25	1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Metals	Zinc	24	ug/L	5	20
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Metals	Magnesium	3.14	mg/L	0.04	0.16
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Metals	Selenium	0.20 U	ug/L	0.2	0.8
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Metals	Nickel	1.07	ug/L	0.25	1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Metals	Sodium	115	mg/L	0.5	2
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Metals	Potassium	10.7	mg/L	0.3	1.2
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Metals	Copper	2.50	ug/L	0.5	1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Nutrients	Color (true)	3.7 I	PCU	2.5	6
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Nutrients	Ammonia-N	0.007	mg N/L	0.002	0.005
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Nutrients	Total-P	0.66	mg P/L	0.005	0.05
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Nutrients	Sulfate	29	mg SO4/L	2	5
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Nutrients	Alkalinity	134 A	mg CaCO3/L	0.65	2.5

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Nutrients	Turbidity	0.85	NTU	0.1	0.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Nutrients	NO2NO3-N	1.1	mg N/L	0.04	0.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Nutrients	Kjeldahl Nitrogen	0.47	mg N/L	0.08	0.2
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Nutrients	Chloride	89	mg Cl/L	2	5
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Nutrients	Organic Carbon	4.0 A	mg C/L	0.5	1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Nutrients	Fluoride	0.73	mg F/L	0.035	0.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Nutrients	O-Phosphate-P	0.58	mg P/L	0.04	0.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Prometryn	0.021 U	ug/L	0.021	0.082
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Parathion Ethyl	0.021 U	ug/L	0.021	0.082
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Metalaxyl	0.041 U	ug/L	0.041	0.16
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Fonofos	0.010 U	ug/L	0.01	0.041
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Ethoprop	0.0051 U	ug/L	0.0051	0.021
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Atrazine	0.010 U	ug/L	0.01	0.041
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Ametryn	0.010 U	ug/L	0.01	0.041
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Naled	0.041 U	ug/L	0.041	0.16
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Metribuzin	0.021 U	ug/L	0.021	0.082
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Fenamiphos	0.031 U	ug/L	0.031	0.12
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Diazinon	0.010 U	ug/L	0.01	0.041
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Butylate	0.021 U	ug/L	0.021	0.082
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Ethion	0.010 U	ug/L	0.01	0.041
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Disulfoton	0.0051 U	ug/L	0.0051	0.021
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Azinphos Methyl	0.021 U	ug/L	0.021	0.082
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Alachlor	0.062 U	ug/L	0.062	0.25
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Atrazine Desethyl	0.036 U	ug/L	0.036	0.15
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Metolachlor	0.062 U	ug/L	0.062	0.25
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Hexazinone	0.031 UJ	ug/L	0.031	0.12
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Demeton	0.025 UJ	ug/L	0.025	0.099
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Chlorpyrifos Ethyl	0.010 U	ug/L	0.01	0.041
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Bromacil	0.041 U	ug/L	0.041	0.16
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Sucralose	45	ug/L	0.8	4
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Prometon	0.021 U	ug/L	0.021	0.082
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Phorate	0.0051 U	ug/L	0.0051	0.021
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Parathion Methyl	0.010 U	ug/L	0.01	0.041
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Atrazine Desisopropyl	0.033 U	ug/L	0.033	0.14
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Simazine	0.010 U	ug/L	0.01	0.041
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Norflurazon	0.031 U	ug/L	0.031	0.12
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Mevinphos	0.010 U	ug/L	0.01	0.041
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Malathion	0.010 U	ug/L	0.01	0.041

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Pesticides	Chlorpyrifos Methyl	0.010 U	ug/L	0.01	0.041
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	2-Chlorophenol	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	3,3'-Dichlorobenzidine	41 UJ	ug/L	41	160
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Benzo(b)fluoranthene	0.21 U	ug/L	0.21	0.82
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.21 U	ug/L	0.21	0.82
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Di-n-octyl phthalate	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.1 U	ug/L	3.1	12
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Phenanthrene	0.21 U	ug/L	0.21	0.82
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Pyrene	0.21 U	ug/L	0.21	0.82
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	2,4-Dinitrotoluene	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	2,6-Dinitrotoluene	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.1 U	ug/L	2.1	8.2
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Anthracene	0.21 U	ug/L	0.21	0.82
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Benzo(a)pyrene	0.21 U	ug/L	0.21	0.82
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Dimethyl phthalate	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Fluoranthene	0.21 U	ug/L	0.21	0.82
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Hexachlorobutadiene	3.1 U	ug/L	3.1	12
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	2,4-Dichlorophenol	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1 U	ug/L	3.1	12
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Acenaphthylene	0.21 U	ug/L	0.21	0.82
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.21 U	ug/L	0.21	0.82
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	1,4-Dioxane	0.36	ug/L	0.02	0.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	2,4-Dinitrophenol	15 UJ	ug/L	15	62
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Butyl benzyl phthalate	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Di-n-butyl phthalate	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.21 U	ug/L	0.21	0.82
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Diethyl phthalate	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Hexachloroethane	3.1 U	ug/L	3.1	12
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.1 UJ	ug/L	3.1	12
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Naphthalene	0.21 U	ug/L	0.21	0.82
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.41 U	ug/L	0.41	0.82
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	2,4-Dimethylphenol	10 U	ug/L	10	41
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	4-Nitrophenol	15 U	ug/L	15	62
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Benzo(a)anthracene	0.21 U	ug/L	0.21	0.82
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.1 U	ug/L	3.1	12

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Chrysene	0.21 U	ug/L	0.21	0.82
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Nitrobenzene	2.1 U	ug/L	2.1	8.2
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Phenol	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	2-Nitrophenol	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Benzo(k)fluoranthene	0.21 U	ug/L	0.21	0.82
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Fluorene	0.21 U	ug/L	0.21	0.82
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Acenaphthene	0.21 U	ug/L	0.21	0.82
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Benzidine	100 UJ	ug/L	100	410
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	2.1 U	ug/L	2.1	8.2
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Hexachlorobenzene	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1 U	ug/L	2.1	8.2
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	2-Chloronaphthalene	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Isophorone	1.0 U	ug/L	1	4.1
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.1 U	ug/L	2.1	8.2
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Priority Organic Pollutants	Pentachlorophenol	3.1 U	ug/L	3.1	12
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Nutrients	pH	7.53			
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Nutrients	Temperature	29.26	C		
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Nutrients	Specific Conductance	633	umhos/cm		
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Nutrients	Sample Depth	.15	m		
9/15/2014 11:50	Effluent Grab	EFF-1 EFFLUENT	Nutrients	Dissolved Oxygen	7.64	mg/L		
9/15/2014 13:40	Test Wetland	TEST WETLAND	AGP/LN	Algal Growth Potential	0.720 I	mg DryWt/L	0.3	0.9
9/15/2014 13:40	Test Wetland	TEST WETLAND	Chlorophyll/Grain Size/BOD	Phaeophytin-a	0.57 I	ug/L	0.4	1.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.3 I	mg/L	0.2	2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	4.3	ug/L	0.55	1.7
9/15/2014 13:40	Test Wetland	TEST WETLAND	Overflow	Fecal Coliforms-Membrane Filter	108	cfu/100 mL	2	2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Metals	Copper	0.66 I	ug/L	0.5	1
9/15/2014 13:40	Test Wetland	TEST WETLAND	Metals	Chromium	0.66 I	ug/L	0.3	1.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Metals	Lead	0.73 I	ug/L	0.2	0.8
9/15/2014 13:40	Test Wetland	TEST WETLAND	Metals	Aluminum	601	ug/L	5	20
9/15/2014 13:40	Test Wetland	TEST WETLAND	Metals	Zinc	5.0 U	ug/L	5	20
9/15/2014 13:40	Test Wetland	TEST WETLAND	Metals	Magnesium	0.97	mg/L	0.04	0.16
9/15/2014 13:40	Test Wetland	TEST WETLAND	Metals	Nickel	0.58 I	ug/L	0.25	1
9/15/2014 13:40	Test Wetland	TEST WETLAND	Metals	Sodium	22.6	mg/L	0.5	2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Metals	Iron	630	ug/L	30	120
9/15/2014 13:40	Test Wetland	TEST WETLAND	Metals	Calcium	4.99	mg/L	0.075	0.3
9/15/2014 13:40	Test Wetland	TEST WETLAND	Metals	Selenium	0.20 U	ug/L	0.2	0.8

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
9/15/2014 13:40	Test Wetland	TEST WETLAND	Metals	Cadmium	0.050 U	ug/L	0.05	0.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Metals	Potassium	2.3	mg/L	0.3	1.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Metals	Silver	0.025 U	ug/L	0.025	0.1
9/15/2014 13:40	Test Wetland	TEST WETLAND	Metals	Arsenic	1.44	ug/L	0.25	1
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	Total-P	0.045	mg P/L	0.002	0.005
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	Ammonia-N	0.064	mg N/L	0.002	0.005
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	Sulfate	0.89	mg SO4/L	0.2	0.5
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	TSS	7 I	mg/L	2	10
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	Turbidity	2.6	NTU	0.1	0.1
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	NO2NO3-N	0.012	mg N/L	0.004	0.01
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	Kjeldahl Nitrogen	1.6	mg N/L	0.08	0.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	Chloride	22	mg Cl/L	0.2	0.5
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	Alkalinity	22	mg CaCO3/L	0.65	2.5
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	O-Phosphate-P	0.008 I	mg P/L	0.004	0.01
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	Organic Carbon	32	mg C/L	0.5	1
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	Color (true)	500	PCU	10	24
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	Fluoride	0.054 I	mg F/L	0.035	0.1
9/15/2014 13:40	Test Wetland	TEST WETLAND	Pesticides	Sucralose	2.6	ug/L	0.05	0.25
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.42 U	ug/L	0.42	0.83
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	2,4-Dichlorophenol	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1 U	ug/L	3.1	12
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	4-Nitrophenol	16 U	ug/L	16	62
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Benzidine	100 U	ug/L	100	420
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Butyl benzyl phthalate	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	2-Nitrophenol	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Benzo(k)fluoranthene	0.21 U	ug/L	0.21	0.83
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.1 U	ug/L	3.1	12
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	2.1 U	ug/L	2.1	8.3
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Fluorene	0.21 U	ug/L	0.21	0.83
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.1 U	ug/L	3.1	12
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.1 U	ug/L	3.1	12
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Nitrobenzene	2.1 U	ug/L	2.1	8.3
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Phenanthrene	0.21 U	ug/L	0.21	0.83
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	2,4-Dinitrophenol	16 UJ	ug/L	16	62
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Di-n-butyl phthalate	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Diethyl phthalate	1.0 U	ug/L	1	4.2

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Pentachlorophenol	3.1 U	ug/L	3.1	12
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Pyrene	0.21 U	ug/L	0.21	0.83
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	2,6-Dinitrotoluene	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.1 U	ug/L	2.1	8.3
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.21 U	ug/L	0.21	0.83
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Isophorone	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	2,4-Dimethylphenol	10 U	ug/L	10	42
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.21 U	ug/L	0.21	0.83
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.21 U	ug/L	0.21	0.83
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Dimethyl phthalate	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Hexachlorobenzene	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Hexachlorobutadiene	3.1 U	ug/L	3.1	12
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Hexachloroethane	3.1 U	ug/L	3.1	12
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.1 U	ug/L	2.1	8.3
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	N-Nitrosodimethylamine	2.1 U	ug/L	2.1	8.3
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	2-Chlorophenol	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Benzo(a)pyrene	0.21 U	ug/L	0.21	0.83
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Benzo(b)fluoranthene	0.21 U	ug/L	0.21	0.83
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Di-n-octyl phthalate	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Fluoranthene	0.21 U	ug/L	0.21	0.83
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Phenol	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	1,4-Dioxane	0.023 I	ug/L	0.02	0.1
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	2,4-Dinitrotoluene	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	2-Chloronaphthalene	1.0 U	ug/L	1	4.2
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	3,3'-Dichlorobenzidine	42 U	ug/L	42	170
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Acenaphthylene	0.21 U	ug/L	0.21	0.83
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Anthracene	0.21 U	ug/L	0.21	0.83
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Naphthalene	0.21 U	ug/L	0.21	0.83
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Acenaphthene	0.21 U	ug/L	0.21	0.83
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Benzo(a)anthracene	0.21 U	ug/L	0.21	0.83
9/15/2014 13:40	Test Wetland	TEST WETLAND	Priority Organic Pollutants	Chrysene	0.21 U	ug/L	0.21	0.83
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	Specific Conductance	131	umhos/cm		
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	Sample Depth	.15	m		
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	Temperature	26.08	C		
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	pH	6.46			

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
9/15/2014 13:40	Test Wetland	TEST WETLAND	Nutrients	Dissolved Oxygen	2.73	mg/L		
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	AGP/LN	Algal Growth Potential	0.779 I	mg DryWt/L	0.3	0.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Chlorophyll/Grain Size/BOD	Phaeophytin-a	1.3 U	ug/L	1.3	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Chlorophyll/Grain Size/BOD	Biochemical Oxygen Demand-5 Day,N-Inhib	1.6 I	mg/L	0.2	2
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Chlorophyll/Grain Size/BOD	Chlorophyll-a, Corrected	9.5	ug/L	1.8	5.5
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Overflow	Fecal Coliforms-Membrane Filter	104	cfu/100 mL	2	2
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Metals	Arsenic	2.06	ug/L	0.25	1
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Metals	Potassium	2.0	mg/L	0.3	1.2
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Metals	Copper	0.50 U	ug/L	0.5	1
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Metals	Nickel	0.30 I	ug/L	0.25	1
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Metals	Zinc	5.0 U	ug/L	5	20
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Metals	Lead	0.29 I	ug/L	0.2	0.8
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Metals	Sodium	9.0	mg/L	0.5	2
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Metals	Calcium	16.2	mg/L	0.075	0.3
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Metals	Iron	2.18E+03	ug/L	30	120
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Metals	Aluminum	66	ug/L	5	20
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Metals	Chromium	0.30 U	ug/L	0.3	1.2
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Metals	Silver	0.025 U	ug/L	0.025	0.1
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Metals	Magnesium	1.43	mg/L	0.04	0.16
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Metals	Cadmium	0.050 U	ug/L	0.05	0.2
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Metals	Selenium	0.20 U	ug/L	0.2	0.8
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	Color (true)	91	PCU	2.5	6
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	Kjeldahl Nitrogen	0.68	mg N/L	0.08	0.2
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.004	0.01
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	Total-P	0.033	mg P/L	0.002	0.005
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	Alkalinity	40 A	mg CaCO3/L	0.65	2.5
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	Chloride	11	mg Cl/L	0.2	0.5
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	TSS	9 I	mg/L	2	10
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	Organic Carbon	11	mg C/L	0.5	1
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	Ammonia-N	0.006	mg N/L	0.002	0.005
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	Turbidity	6.5	NTU	0.1	0.1
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	Fluoride	0.038 I	mg F/L	0.035	0.1
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	Sulfate	2.4	mg SO4/L	0.2	0.5
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Pesticides	Sucralose	0.034 IJ	ug/L	0.01	0.05
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	2,4-Dimethylphenol	9.8 U	ug/L	9.8	39
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Isophorone	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	1,4-Dioxane	0.060 I	ug/L	0.02	0.1

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	2-Chlorophenol	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Butyl benzyl phthalate	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Hexachlorobenzene	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Hexachlorobutadiene	2.9 U	ug/L	2.9	12
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Pentachlorophenol	2.9 U	ug/L	2.9	12
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	2.9 U	ug/L	2.9	12
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	2-Nitrophenol	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Acenaphthylene	0.20 U	ug/L	0.2	0.78
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Anthracene	0.20 U	ug/L	0.2	0.78
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Benzidine	98 U	ug/L	98	390
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Di-n-octyl phthalate	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	2.9 U	ug/L	2.9	12
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Phenol	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Pyrene	0.20 U	ug/L	0.2	0.78
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	2,4-Dichlorophenol	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	2,4-Dinitrotoluene	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	4-Nitrophenol	15 U	ug/L	15	59
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Bis(2-chloroethyl)ether	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	2.9 U	ug/L	2.9	12
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.20 U	ug/L	0.2	0.78
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Diethyl phthalate	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Phenanthrene	0.20 U	ug/L	0.2	0.78
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	2,4-Dinitrophenol	15 UJ	ug/L	15	59
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	2,6-Dinitrotoluene	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Benzo(a)anthracene	0.20 U	ug/L	0.2	0.78
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Benzo(k)fluoranthene	0.20 U	ug/L	0.2	0.78
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Fluoranthene	0.20 U	ug/L	0.2	0.78
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Fluorene	0.20 U	ug/L	0.2	0.78
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.0 U	ug/L	2	7.8
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	4-Chloro-3-methylphenol	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.0 U	ug/L	2	7.8
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Chrysene	0.20 U	ug/L	0.2	0.78
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Di-n-butyl phthalate	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Hexachloroethane	2.9 U	ug/L	2.9	12
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	N-Nitrosodimethylamine	2.0 U	ug/L	2	7.8
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Naphthalene	0.20 U	ug/L	0.2	0.78
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Nitrobenzene	2.0 U	ug/L	2	7.8

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	2-Chloronaphthalene	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	4-Bromophenyl phenyl ether	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Acenaphthene	0.20 U	ug/L	0.2	0.78
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Benzo(a)pyrene	0.20 U	ug/L	0.2	0.78
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Benzo(b)fluoranthene	0.20 U	ug/L	0.2	0.78
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Dimethyl phthalate	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	1,2,4-Trichlorobenzene	0.98 U	ug/L	0.98	3.9
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.39 U	ug/L	0.39	0.78
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	3,3'-Dichlorobenzidine	39 U	ug/L	39	160
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.20 U	ug/L	0.2	0.78
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	2.0 U	ug/L	2	7.8
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Hexachlorocyclopentadiene	2.9 U	ug/L	2.9	12
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.20 U	ug/L	0.2	0.78
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	Dissolved Oxygen	0.53	mg/L		
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	Sample Depth	0.1	m		
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	Specific Conductance	130	umhos/cm		
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	pH	6.67			
9/15/2014 14:35	Control Wetland	CONTROL WETLAND	Nutrients	Temperature	26.27	C		
9/15/2014 12:25	Field Blank	FIELD BLANK	Metals	Zinc	5.0 U	ug/L	5	20
9/15/2014 12:25	Field Blank	FIELD BLANK	Metals	Potassium	0.30 U	mg/L	0.3	1.2
9/15/2014 12:25	Field Blank	FIELD BLANK	Metals	Iron	30 U	ug/L	30	120
9/15/2014 12:25	Field Blank	FIELD BLANK	Metals	Cadmium	0.050 U	ug/L	0.05	0.2
9/15/2014 12:25	Field Blank	FIELD BLANK	Metals	Nickel	0.25 U	ug/L	0.25	1
9/15/2014 12:25	Field Blank	FIELD BLANK	Metals	Aluminum	5.0 U	ug/L	5	20
9/15/2014 12:25	Field Blank	FIELD BLANK	Metals	Copper	0.50 U	ug/L	0.5	1
9/15/2014 12:25	Field Blank	FIELD BLANK	Metals	Arsenic	0.25 U	ug/L	0.25	1
9/15/2014 12:25	Field Blank	FIELD BLANK	Metals	Silver	0.025 U	ug/L	0.025	0.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Metals	Chromium	0.30 U	ug/L	0.3	1.2
9/15/2014 12:25	Field Blank	FIELD BLANK	Metals	Sodium	0.50 U	mg/L	0.5	2
9/15/2014 12:25	Field Blank	FIELD BLANK	Metals	Lead	0.20 U	ug/L	0.2	0.8
9/15/2014 12:25	Field Blank	FIELD BLANK	Metals	Selenium	0.20 U	ug/L	0.2	0.8
9/15/2014 12:25	Field Blank	FIELD BLANK	Metals	Calcium	0.075 U	mg/L	0.075	0.3
9/15/2014 12:25	Field Blank	FIELD BLANK	Metals	Magnesium	0.040 U	mg/L	0.04	0.16
9/15/2014 12:25	Field Blank	FIELD BLANK	Nutrients	Chloride	0.20 U	mg Cl/L	0.2	0.5
9/15/2014 12:25	Field Blank	FIELD BLANK	Nutrients	O-Phosphate-P	0.004 U	mg P/L	0.004	0.01
9/15/2014 12:25	Field Blank	FIELD BLANK	Nutrients	Organic Carbon	0.50 U	mg C/L	0.5	1
9/15/2014 12:25	Field Blank	FIELD BLANK	Nutrients	Total-P	0.002 U	mg P/L	0.002	0.005
9/15/2014 12:25	Field Blank	FIELD BLANK	Nutrients	Kjeldahl Nitrogen	0.080 U	mg N/L	0.08	0.2

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
9/15/2014 12:25	Field Blank	FIELD BLANK	Nutrients	NO2NO3-N	0.004 U	mg N/L	0.004	0.01
9/15/2014 12:25	Field Blank	FIELD BLANK	Nutrients	Color (true)	2.5 U	PCU	2.5	6
9/15/2014 12:25	Field Blank	FIELD BLANK	Nutrients	Ammonia-N	0.002 U	mg N/L	0.002	0.005
9/15/2014 12:25	Field Blank	FIELD BLANK	Nutrients	Sulfate	0.20 U	mg SO4/L	0.2	0.5
9/15/2014 12:25	Field Blank	FIELD BLANK	Nutrients	Fluoride	0.035 U	mg F/L	0.035	0.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Nutrients	Turbidity	0.10 U	NTU	0.1	0.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Nutrients	Alkalinity	0.65 U	mg CaCO3/L	0.65	2.5
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Bromacil	0.048 U	ug/L	0.048	0.19
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Fonofos	0.012 U	ug/L	0.012	0.048
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Metalaxyl	0.048 U	ug/L	0.048	0.19
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Naled	0.048 U	ug/L	0.048	0.19
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Butylate	0.024 U	ug/L	0.024	0.097
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Diazinon	0.012 U	ug/L	0.012	0.048
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Phorate	0.0060 U	ug/L	0.006	0.024
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Ametryn	0.012 U	ug/L	0.012	0.048
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Atrazine	0.012 U	ug/L	0.012	0.048
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Demeton	0.029 UJ	ug/L	0.029	0.12
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Malathion	0.012 U	ug/L	0.012	0.048
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Metribuzin	0.024 U	ug/L	0.024	0.097
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Prometon	0.024 U	ug/L	0.024	0.097
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Chlorpyrifos Methyl	0.012 U	ug/L	0.012	0.048
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Disulfoton	0.0060 U	ug/L	0.006	0.024
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Parathion Ethyl	0.024 U	ug/L	0.024	0.097
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Parathion Methyl	0.012 U	ug/L	0.012	0.048
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Fenamiphos	0.036 U	ug/L	0.036	0.15
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Hexazinone	0.036 UJ	ug/L	0.036	0.15
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Norflurazon	0.036 U	ug/L	0.036	0.15
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Ethion	0.012 U	ug/L	0.012	0.048
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Prometryn	0.024 U	ug/L	0.024	0.097
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Simazine	0.012 U	ug/L	0.012	0.048
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Sucralose	0.010 U	ug/L	0.01	0.05
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Alachlor	0.073 U	ug/L	0.073	0.29
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Atrazine Desethyl	0.012 U	ug/L	0.012	0.048
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Atrazine Desisopropyl	0.012 U	ug/L	0.012	0.048
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Azinphos Methyl	0.024 U	ug/L	0.024	0.097
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Chlorpyrifos Ethyl	0.012 U	ug/L	0.012	0.048
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Ethoprop	0.0060 U	ug/L	0.006	0.024
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Metolachlor	0.073 U	ug/L	0.073	0.29

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
9/15/2014 12:25	Field Blank	FIELD BLANK	Pesticides	Mevinphos	0.012 U	ug/L	0.012	0.048
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	1,4-Dioxane	0.25	ug/L	0.02	0.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Hexachlorobenzene	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Benzo(g,h,i)perylene	0.20 U	ug/L	0.2	0.82
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Fluoranthene	0.20 U	ug/L	0.2	0.82
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Nitrobenzene	2.0 U	ug/L	2	8.2
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Phenanthrene	0.20 U	ug/L	0.2	0.82
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Phenol	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	2-Chloronaphthalene	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Di-n-butyl phthalate	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Chrysene	0.20 U	ug/L	0.2	0.82
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Butyl benzyl phthalate	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	4-Chlorophenyl phenyl ether	2.0 U	ug/L	2	8.2
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Bis(2-ethylhexyl)phthalate	2.0 U	ug/L	2	8.2
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Bis(2-chloroethyl)ether	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	1,2,4-Trichlorobenzene	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	2,4-Dichlorophenol	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	2-Chlorophenol	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	2-Nitrophenol	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Benzidine	100 U	ug/L	100	410
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Dibenzo(a,h)anthracene	0.20 U	ug/L	0.2	0.82
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Dimethyl phthalate	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Indeno(1,2,3-cd)pyrene	0.20 U	ug/L	0.2	0.82
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Isophorone	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	N-Nitrosodiphenylamine/ Diphenylamine	3.1 U	ug/L	3.1	12
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	2,4-Dinitrophenol	15 UJ	ug/L	15	61
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	2-Methyl-4,6-dinitrophenol	3.1 U	ug/L	3.1	12
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	4-Bromophenyl phenyl ether	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Di-n-octyl phthalate	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Fluorene	0.20 U	ug/L	0.2	0.82
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Hexachlorobutadiene	3.1 U	ug/L	3.1	12
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	N-Nitrosodimethylamine	2.0 U	ug/L	2	8.2
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Pentachlorophenol	3.1 U	ug/L	3.1	12
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	2,4,6-Trichlorophenol	0.41 U	ug/L	0.41	0.82
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	2,4-Dimethylphenol	10 U	ug/L	10	41
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	2,6-Dinitrotoluene	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	3,3'-Dichlorobenzidine	41 U	ug/L	41	160
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Benzo(a)anthracene	0.20 U	ug/L	0.2	0.82

Date_Sampled	UDL	Field_Sample_ID	SCH_Group	Component	Result	Units	MDL	PQL
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Benzo(k)fluoranthene	0.20 U	ug/L	0.2	0.82
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Bis(2-chloroethoxy)methane	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Acenaphthene	0.20 U	ug/L	0.2	0.82
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Anthracene	0.20 U	ug/L	0.2	0.82
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Benzo(a)pyrene	0.20 U	ug/L	0.2	0.82
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Bis(2-chloroisopropyl)ether	3.1 U	ug/L	3.1	12
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Diethyl phthalate	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Hexachloroethane	3.1 U	ug/L	3.1	12
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	4-Chloro-3-methylphenol	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Benzo(b)fluoranthene	0.20 U	ug/L	0.2	0.82
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Hexachlorocyclopentadiene	3.1 U	ug/L	3.1	12
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	N-Nitrosodi-n-propylamine	2.0 U	ug/L	2	8.2
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Naphthalene	0.20 U	ug/L	0.2	0.82
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Pyrene	0.20 U	ug/L	0.2	0.82
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	2,4-Dinitrotoluene	1.0 U	ug/L	1	4.1
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	4-Nitrophenol	15 U	ug/L	15	61
9/15/2014 12:25	Field Blank	FIELD BLANK	Priority Organic Pollutants	Acenaphthylene	0.20 U	ug/L	0.2	0.82

Appendix G

Toxicological results

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia

Facility: Hurlburt Field AWTP
Address: 301 Heritage Road
County: Okaloosa
NPDES Permit #: FL 0003174
Contact/District: Nathan Mulkey / NWD

LIMS entry: 9-26-14 MF verified: 9-26-14 CM

Diluent/ Batch: MHWCD / 9-12-14 Test Days Used: 0 – 3
MHWCD / 9-16-14 Test Days Used: 3 – 6

SOP#: TA07_05 EPA 821-R-02-013 Method 1002.0

Organism: *Ceriodaphnia dubia*
Organism Batch #: 9-16-14
Organism age : <24 hours
Feeding: Prior to Test and Daily
Food: [L] YCT [L] *P. subcapitata*
Food Batch: 4-29-14 6-26-14
Chamber size : 30 ml
Sample volume : 20 ml

Sample Received	LAB Sample #	LIMS JOB #	LIMS SAMPLE #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-2014-09-16-78	1636750	9.15.14/0712	9.16.14/1010
Test Day 2	2	TLH-2014-09-18-58	1637611	9.17.14/0731	9.18.14/1003
Test Day 4	3	TLH-2014-09-20-01	1638444	9.19.14/0704	9.20.14/0935

Batch #	9-12-14	9-16-14	NA	NA	NA			
Water Quality Parameters	MHWCD	MHWCD	Sample 1	Sample 2	Sample 3	Other:	Measured By:	Verified by:
Field Total Residual Cl_2 (mg/L):	NA	NA	* NM	NM	NM		—	CR
Lab Total Residual Cl_2 (mg/L):	<0.03	<0.03	1.11	0.68	0.62	SR	CR/RC/HW	CM CR
Alkalinity (mg/L as $CaCO_3$):	74	65	149	151	144		AR/RC/HW	CR
Hardness (mg/L as $CaCO_3$):	83	78	47	45	48		AR/RC/HW	CR
Total Ammonia (mg/L as N):	<0.017	<0.017	<0.017	<0.017	<0.017		MF	CR
Conductivity: µmhos mmhos:	304	312	669	636	619		MF/CR/RC	CR/CM
Salinity (ppth):								

* NM = not measured

Test Incubated in: Incubator #: MF 25

Loaded by: MF

Temperature Shipped ≤ 6° C (all samples) (yes) no
Holding Time ≤ 36 hours (yes) no
Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # MF 25 min. 24.8 max. 26.0
Room B246 min. 23.7 max. 25.0
Test min. 23.6 max. 26.0

Test Replicates	Loaded from culture vial
1	C15
2	C19
3	C21
4	C22
5	C23
6	A7
7	A11
8	B10
9	B12
10	B14

Results	
Control % CV:	41%
Dunnetts PMSD:	45.4%
Reproduction NOEC:	100%
Reproduction LOEC:	>100%
Survival NOEC:	100%
Survival LOEC:	>100%
ICP_{20}:	>100%
ICP_{25}:	>100%

Investigators' signatures

	Initials
Marshall Faircloth	MF
Cassidy Reinert	CR
Gilles Thebault	CM
Amelia Parker	KPR
Ryan Gray	RC
Henry Wolfe	HW

REVIEWER Liz Miller

Comments:

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

SOP TA07_05

Facility: Hurl Dunt Field

LIMS Sample #: 16360750 for lab sample #1

Start Date: 9-16-14 (4 mf) Time: 1155

End Date: 9-23-14 (4 mf) Time: 1130

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving orginal organisms	Neonates per female
Control	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	4 (mf)	6 (mf)	3 (mf)	4	5	5	4	0	5	30	10	3.3
	4	0	0	0	0	0	0	0	0	3	0	3	10	0.33
	5	0	0	0	7	5	7	9	11	5	4	48	10	5.3
	6	X0	0	0	0	15	8	0	12	0	11	46	9	5.1
	7	-	8	0	9	NC	NC	4	NC	12	NC	33 ~~mf~~	9	3.7
	8			* Confirmed male mf 9/24/14										
	Total	4	8		19	24	20	18	27	20	20	160	9 (10-1) 9	17.8

Conc.	Day	Replicate Number 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving orginal organisms	Neonates per female
0.25 %	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	5	4	3	4	4	3	3	4	4	38	10	~~13.8~~ 3.8
	4	0	0	0	0	0	0	0	0	0	0	0	10	0
	5	6	7	3	7	9	9	6	8	10	7	72	10	7.2
	6	8	12	0	16	11	12	10	6	17	18	110	10	11.0
	7	NC	NC	8	NC	NC	NC	NC	NC	NC	NC	8	10	0.8
	8													
	Total	18	24	15	26	24	25	19	17	31	29	228	10	22.8

Organisms loaded by: MF

Day	Counted/ verified by:	Concentrations prepared by:
0	CM	MF
1	CR	CR
2	CR	CR
3	MF	MF
4	MF ~~MF~~	MF ~~MF~~ MF
5	CM	CM
6	MF	MF
7	MF	
8		

Concentration	Mean neonates /female	% survival
Control	17.8	90 %
6.25%	22.8	100 %
12.50%	21.3	80 %
25%	17.2	90 %
50%	22.1	100 %
100%	20.2	100 %

Test acceptability	
Mean control reproduction 15/female	(yes) no
3rd brood in 60% of surviving females	(yes) no
Control survival ≥ 80%:	(yes) no

Comments: NC = Not Counted LM

*Day 0 is test initiation day
X = Dead (original organism)

Test Page 2 of 6

PAGE

Revised 11/22/13 AP

920000

FDEP Biology Laboratory - Chronic Definitive Bench Sheet

Ceriodaphnia dubia Survival and Reproduction

SOP TA07_05

Facility: Hurlburt Field

LIMS Sample # : 16360750 for lab sample #1

220000

Conc.	Day	Rep 1	2	3	4	5	6	7	8	9	10	Total neonates	orginal organisms	Neonates per female
12.5 %	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	3	3	2	5	3	2	4	4	3	5	34	10	3.4
	4	0	0	0	0	0	0	0	0	9	9	18	10	1.8
	5	8	7	8	9	8	6	6X	5	0	0	57	9	5.7
	6	18	11	15	0	14	10	|	18	9	9	104	9	10.4
	7	NC	NC	NC	X0	NC	NC	|	NC	NC	NC	0	8	0.8
	8													
	Total	29	21	25	14	25	18	10	27	21	23	213	8 (10)	21.3

Conc.	Day	Rep 1	2	3	4	5	6	7	8	9	10	Total neonates	orginal organisms	Neonates per female
25 %	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	1	4	2	0	0	3	0	5	1	20	10	2.0
	4	0	0	0	0	0	0	0	0	0	X0	0	9	0
	5	8	7	0	8	2	2	9	0	12	|	48	9	4.8
	6	0	18	17	13	1	0	[illegible]	2	0	|	51 68	9	6.8
	7	0	NC	7	NC	3	16	NC	4	6	|	36	9	3.6
	8													
	Total	12	26	28	23	6	18	29	6	23	mf 1	172	9 (10)	17.2

Conc.	Day	Rep 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving orginal organism	Neonates per female
50 %	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	4	4	2	3	2	4	3	3	5	34	10	3.4
	4	0	0	0	0	0	0	0	0	0	0	0	10	0
	5	6	9	9	11	6	10	9	10	8	9	90	10	9.0
	6	0	0	14	14	0	0	0	9	3(5)	0	37	10	3.7
	7	11	13	NC	NC	0	17	0	NC	19	0	60	10	6.0
	8													
	Total	21	26	27	27	9	29	13	22	33	14	221	10	22.1

Conc.	Day	Rep 1	2	3	4	5	6	7	8	9	10	Total neonates	Surviving orginal organism	Neonates per female
100 %	0*												10	
	1												10	
	2	0	0	0	0	0	0	0	0	0	0	0	10	0
	3	4	4	6	5	4	3	4	5	3	6	44	10	4.4
	4	0	0	8	0	0	0	0	0	0	0	8	10	0.8
	5	9	4	8	7	8	4	11	6	8	6	71	10	7.1
	6	0	12	NC	0	0	0	0	0	0	0	12	10	1.2
	7	16	NC	–	0	10	7	12	0	8	14	67	10	6.7
	8													
	Total	29	20	22	12	22	14	27	11	19	26	202	Survivors	20.2

Comments: dech!

	Rep 1	2	3	4	5	6	7	8	9	10	total neo	tot surv	neo per ♀
0	0	0	0	0	0	0	0	0	0	0	0	10	0
1	0	0	0	0	0	0	0	0	0	0	0	10	0
2	0	0	0	0	0	0	0	0	0	0	0	10	0
3	4	4	2	2	4	2	5	2	1	3	29	10	2.9
4	0	X0	0	0	0	0	0	0	0	0	0	9	0
5	4	X8	8	3	X1	4	8	7	7	7	49	8	4.9

	Rep	1	2	3	4	5	6	7	8	9	10	total neonates	tot surviving adults	neo per ♀
Day 6	—	0	X	15	0	X	0	0	11	7	10	43	8	4.3
Day 7	—	13	↓	NC	13	↓	13	13	NC	NC	NC	52	8	5.2
total	—	21	4	25	18	5	19	26	20	15	17 6 20 0e	170	8 (10)	17.0

*Day 0 is test initiation day
X = Dead (original organism)

FDEP Biology Laboratory - Chronic Bioassay Bench Sheet

Pimephales promelas or Menidia beryllina

Facility: Hurlburt Field AWTP
Address: 301 Heritage Road
County: Okaloosa
NPDES Permit #: FL0003174
Contact/District: Nathan Mulkey / NWD

LIMS entry: 9-26-14MF Verified: 9-26-14 CM

Test Species (circle one)
(P. promelas) SOP#: TA07_09 EPA-821-R-02-013 Method 1000.0
M. beryllina SOP#: TA07_14 EPA-821-R-02-014 Method 1006.0

Start Date: 9.16.14 Time: 1500
End Date: 9.23.14 Time: 1100

Diluent/ Batch #:
MHW / 9.11.14 Test Days Used: 0
MHW / 9.16.14 Test Days Used: 1-6
ASW / _____ Test Days Used: _____
ASW / _____ Test Days Used: _____

Feeding Prior to Test and Daily
Organism Batch #: 9.16.14
Organism Age : 248 hrs.
Chamber size : 1000 ml
Test volume : 500 ml

Artemia Lot #: 29039

Artemia Batch #			
Day 0	159.14	Day 3	162.14
Day 1	160.14	Day 4	163.14
Day 2	161.14	Day 5	164.14
		Day 6	165.14

Sample Received	Lab Sample #	LIMS Job #	LIMS Sample #	Collection Date/Time	Received Date/Time
Test Day 0	1	TLH-~~2014~~-09-16-58 CR	1636750	9.15.14/0712	9.16.14/1010
Test Day 2	2	TLH-2014-09-18-58	1637611	9.17.14/0731	9.18.14/1003
Test Day 4	3	TLH-2014-09-20-01	1638444	9.19.14/0704	9.20.14/0935

Water Quality Parameters	Batch #	9.11.14 MHW / ASW (circle one)	9.16.14 MHW / ASW (circle one)	NA Sample 1	NA Sample 2	NA Sample 3	Other:	Measured By:	Verified by:
Field Total Residual Cl_2 (mg/L):		NA	NA	*NM	NM	NM		—	CR
Lab Total Residual Cl_2 (mg/L):		<0.03	<0.03	1.11	0.68	0.63		DM/RE/RC/HW	CR/EM
Alkalinity (mg/L as $CaCO_3$):		66	65	149	151	144		CR/RC/HW	CM/CR
Hardness (mg/L as $CaCO_3$):		81	86	47	45	48		CR/RC/HW	CM/CR
Total Ammonia (mg/L as N):		20.017	<0.017	<0.017	<0.017	<0.017		MF	CR
Conductivity: ☑ µmhos ☐ mmhos:		293	292	669	636	619		RC/CR/MF	CR/EM
Salinity (ppth):									

*NM = not measured

Initial sample handling:
Instructions: Check yes or no. If yes is checked, complete blanks

PH adjustment : ☐ yes ☑ no Initial pH: _____ NaOH _____ N HCl _____ N _____ Drops mL Final pH: _____
Aeration : ☑ yes ☐ no Initial DO: 10.2 mg/L Final DO: 8.6 mg/L Duration: 30 minutes Rate: ~ 100 bubbles/min
Salinity adjusted : ☐ yes ☑ no Initial Salinity: _____ Final Salinity: _____ Salts Hypersaline brine
Dechlorination: ☑ yes ☐ no 1.2 mL of 0.025N Sodium Thiosulfate per liter of sample. Final TRC: <0.03

Light Intensity : 50 - 100 ft. candles
Photoperiod : 16 light 8 dark
Temperature Range °C:
Incubator # 5 min. 24.8 max. 26.0
Test min. 23.4 max. 25.8
Room B246 min. 23.7 max. 25.0

Sample Validation:
Instructions: Check yes or no. Fill in temperatures.
Temperature: Shipped ≤ 6°C ☑ Yes ☐ No
If Hand Delivered:Cooling ☐ Yes ☐ No (received ____°C collected ____°C)
Holding Time: ≤ 36 Hours ☑ Yes ☐ No
(Composite-end of collection; grab-when collected;
4 in 24 - time last sample collected)

Statistics	
Growth NOEC:	100%
Growth LOEC:	>100 %
Growth IC_{20}:	>100 %
Growth IC_{25}:	>100%
Ctrl % CV:	13 %
Dunnetts PMSD:	24.4%
Survival NOEC:	100 %
Survival LOEC:	>100 %

Investigators' signatures	Initials:
Libby Mansfield	CM
Marshall Faircloth	MF
Cassidy Reichert	CR
[illegible]	RE
H. Wade	HW
REVIEWER Liz Miller	

Comments:

PAGE

revised 5/20/14 CR

Chronic Bioassay Survival Benchsheet

Facility: Hurlburt Field

LIMS Sample Number: 16316750
(for Lab Sample # 1)

Department of Environmental Protection
Biology Laboratory Chronic Definitive Bioassay
***P. promelas* SOP TA07_09 *M. beryllina* SOP TA07_14**

Organism: (*P. promelas*) *M.beryllina* (circle one)

D = dead M=missing

		TEST DAY							
Concentration	Replicate	0	1	2	3	4	5	6	7
Control	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	9 ID	9	8 ID	8	8	8	8
	D	10	10	10	10	10	10	10	10
Sample 6.25 %	A	10	10 9 ID CM	10	10	10	10	10	10
	B	10	9 ID	9	8 ID	8	8	8	8
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample 12.5 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	9 ID
Sample 25 %	A	10	10	10	10	10	10	9 ID	9
	B	10	10	10	10	10	10	10	9 ID
	C	10	10	10	10	10	9 ID	9	9
	D	10	10	10	10	10	9 ID	9	9
Sample 50 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Sample 100 %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	10	10	10	10
	C	10	9 ID	9	9	9	9	9	9
	D	10	10	10	10	10	10	10	9 ID
Sample Dechlor %	A	10	10	10	10	10	10	10	10
	B	10	10	10	10	9 ID	9	9	9
	C	10	10	10	10	10	10	10	10
	D	10	10	10	10	10	10	10	10
Loaded by: CR/MF	Checked by:		CM	CM	CM	MF	CM	RC/CM	CR
Verified by: MF/RC									

Comments:

Chronic Bioassay Weighing Benchsheet

Facility: Hurlburt Field

LIMS Sample Number: 1636750
(for Lab Sample # 1)

***P. promelas* and *M. beryllina* Bench Sheet**
SOP TA06_21

Concentration	Replicate	Pan #	Mean wt. = Fish wt. divided by 10 Convert g to mg: move decimal 3 places to right Pan wt. (g)	Pan + Fish (g)	Fish wt. (g)	Original # of fish	Mean wt. (mg)	Avg.
Control	A	1	0.02219	0.02730	0.00511	10	0.511	
	B	2	0.02234	0.02905	0.00671	10	0.671	
	C	3	0.02219	0.02736	0.00517	10	0.517	0.569
	D	4	0.02237	0.02813	0.00576	10	0.576	
sample 6.25%	A	5	0.02177	0.02749	0.00572	10	0.572	
	B	6	0.02361	0.02859	0.00498 gw	10	0.498	
	C	7	0.02284	0.02971	0.00687	10	0.687	0.577
	D	8	0.02405	0.02954	0.00549	10	0.549	
sample 12.5%	A	9	0.02274	0.02808	0.00534	10	0.534	
	B	10	0.02271	0.02931	0.00660	10	0.660	
	C	11	0.02240	0.02727	0.00487	10	0.487	0.554
	D	12	0.02216	0.02750	0.00534	10	0.534	
sample 25 %	A	13	0.02176	0.02859	0.00683	10	0.683	
	B	14	0.02118	0.02645	0.00527	10	0.527	
	C	15	0.02172	0.02735	0.00563	10	0.563	0.591
	D	16	0.02098	0.02689	0.00591	10	0.591	
sample 50 %	A	17	0.02188	0.02808	0.00620	10	0.620	
	B	18	0.02184	0.02841	0.00657	10	0.657	
	C	19	0.02152	0.02765	0.00613	10	0.613	0.583
	D	20	0.02229	0.02671	0.00442	10	0.442	
sample 100 %	A	21	0.02297	0.02913	0.00634	10	0.634	
	B	22	0.02362	0.02918	0.00556	10	0.556	
	C	23	0.02241	0.02652	0.00411	10	0.411	0.514
	D	24	0.02215	0.02671	0.00456	10	0.456	
sample Dechl. Ctrl. %	A	25	0.02242	0.02878	0.00636	10	0.636	
	B	26	0.02193	0.02745	0.00552	10	0.552	
	C	27	0.02123	0.02766	0.00643	10	0.643	0.632
	D	28	0.02301	0.02999	0.00698	10	0.698	
	Weighed by initials:		CR	CR				

Comments:

Note: Pan number (#) refers to actual Pan number.

revised 5/20/14 CR

Page

Appendix H

Florida Wetland Condition Index – Vegetation (WCI-V)

DEP FORM FD 9000-33: VEGETATION WETLAND CONDITION INDEX FIELD SHEET

Wetland: Test | County: | Date: 9-15-2014 | Page ___ of ___

Project: USAF Hurlburt Field WWTP | Lat/Long- Start: 30.44162 86.6723 | Lat/Long- Start: 30.44162 86.6733

Analyst: F. Butera, R. Abad | Lat/Long- End: 30.44202 86.6723 | Lat/Long- End: 30.44172 86.6727

(Species level required, Collect specimen if needed for positive identification)

Species	Transect: 1 North 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)	Transect: 2 West 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Panicum gymnocarpum											✓											
Toxicodendron radicans	1	1	1		1	1	1	1				1			1	1	1	1	1		1	
Nyssa sylvatica biflora	C	C	C	C	C	C	C	C	C	C		C	C	C	C	C	C	C	C	C	C	
Magnolia virginiana	C	C	C	C	C	C	C	C	C	C		C	C	C	C	C	C	C	C	C	C	
Lyonia lucida	1	1	1	1	1	1	1	1	1	1		1			1			1	1	1	1	
Myrica heterophylla	1	1	1					1			✓								1			
Rhododendron viscosum	C	C	C	C	C	1	1			1	✓	1	1	1			1	1		1		
Liverworts	1		1		1				1		✓	1		1				1			1	
Opposite leaf vine	1	1	1	1	1	1	1		1		✓	1	1	1	1	1	1	1	1	1	1	
Itea virginica		1	1	1		1		1					1	1	1							
Cyrilla racemiflora					1	1	1		1	1		1	1					1		1	1	
Acer rubrum						1	1															
Ilex myrtifolia						1	1															
Ilex cassine								1														
Clifonia										1								1				
Ilex coriacea										1												
Smilax sp												1		1	1							✓
Carex glaucescens																1	1					
Chamaecyparis																1						
Laurel smilax																1		1		1		

START 30.4416 x 86.6723

FDEP FORM FD 9000-33: VEGETATION WETLAND CONDITION INDEX FIELD SHEET

Wetland: TEST | County: Escambia | Date: 9-15-2014 | Page ___ of ___

Project: USAF Hurlburt Field WWTP

Analyst: F. Butera, R. Abad

(Species level required, Collect specimen if needed for positive identification)

Species	Transect: 3 South — Lat/Long- Start: 30.4416 x W 86.6723 — Lat/Long- End: 30.4413 x 86.6725										Specimen collected (check)	Transect: 4 East — Lat/Long- Start: 30.4416 x W 86.6723 — Lat/Long- End: 30.4416 x W 86.6719										Specimen collected (check)
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	
Nyssa sylvatica biflora	C	C	C	C	C	C	C	C	C	C		C	C	C	C	C	C	C	C	C	C	
Magnolia virginiana	C	C	C	C	C	C	C	C	C	C		C	C	C	C	C	C	C	C	C	C	
Acer rubrum	C	C																				
Cyrilla racemiflora	1	1		1		1			1	1		1	1	1					1			
Clifonia 1																				1		
Ilex cassine																						
Ilex coriacea																						
Ilex myrtifolia																					1	
Ilex vomitoria																	1					
Rhododendron viscosa																						
Itea floridana	1		1									1					1					
Lyonia lucida	1		1							1				1								
Myrica heterophylla																						
Myrica cerifera																						
Toxicodendron radicans																					1	
Opposite leaf Vine	1	1	1	1					1	1		1	1					1	1	1		
Smilax sp																						
Smilax laurel										1												
Carex glaucescens										1												
Liverworts	1	1							1	1		1					1		1			
Panicum gymnocarpon									1	1					1		1	1		1		
Boehmeria cylindrica														1	1	1		1				
Lycopus sp.														1	1	1						
Ludwigia sp																1						✓
MIKANIA SCANDENS																1						
Chamaecyparis																			1	1		
P. nigra elliottii																					1	

DEP FORM FD 9000-33: VEGETATION WETLAND CONDITION INDEX FIELD SHEET

Wetland: CONTROL | County: OKALOOSA | Date: 9-15-2014 | Page ___ of ___

Project: USAF Hurlburt Field WWTP | Lat/Long- Start: ~~30.4~~ | Lat/Long- Start: 30.4476 86.6583

Analyst: F. Butera, R. Abad | Lat/Long- End: ~~86. 30.4474, 86.~~ | Lat/Long- End: 30.4466 86.6584

(Species level required, Collect specimen if needed for positive identification)

Species	Transect: 1 NE 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)	Transect: 2 SW 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Nyssa sylvatica Biflora	C	C	C	C	C	C	C	C	C	C		C	C	C	C	D	C	C	C	D	B	
Cyperus																						
Magnolia virginiana		1	1	1			1	1		1		1	1	1	1		1	1			1	
Acer rubrum																						
Cyrilla racem. flora			1	1				1	1			1				1	1	1	1	1		
Cephalanthus occidentalis	1	1			V				1	1											1	
Carex																+						
Utricularia	C	C	C	C	C	C	C	C	C		✓	C	C	C	C	C	C	C	C	1		
~~Eleocharis~~ Lyonia lucida													1			1				1		
Ludwigia leptocarpa	1					1		1														
Buchnera cylindrica	1		1			1	1	1	1	1		1	1		1	1	1				1	
Najas guadalupensis	C	C	C	C	C	C	C	C	C		✓	C	C	C	C	C	C	C	1			
Lycopus		1			1	1		1	V		✓									1		
Carex glaucescens		1								1						+	1	1	1	\		
Eleocharis baldwinii	1	1	1	1			1	1			✓		1	1				1		[		
Mikania scandens			1							1		1										
Spergularia americana			1		1							1		1	1							
Polygonum			+	1			1							1								
Hydrocotyle sp			1				1	1														
Myrica cerifera			1																			
Nymphoides CORDATA			+	+	+	—																
Myriophyllum aquaticum						1	1					1		1								
Ludwigia repens							1															
Sapium Sebiferum							1					+										
Opposite leaf vine									1	1		(			1		1	1			1	
Nymphaeace Floridana						1	1							1		1	1					
POLTEDERIA CORDATA												1								1		
Pinus elliottii															1							
Chamaecyparis																1		1	1	1		
Smilax laurel or Walteri																				1		
Rhynchospora corniculata (Shoj)									+	C										1	1	
Dichanthelium scoparium																					(	✓
Iteu virginica																1						

Apple snail eggs (Pink 2" x 1½" 2mm diameter)

30.4474 86.6582

30.4466 x 86.6584

Pivot 30.4471 86.6584

FDEP FORM FD 9000-33: VEGETATION WETLAND CONDITION INDEX FIELD SHEET

Wetland: CONTROL | County: Okaloosa | Date: 9-15-2014 | Page 1 of 2

Project: USAF Hurlburt Field WWTP | Lat/Long- Start: | Lat/Long- Start: 30.4971

Analyst: F. Butera, R. Abad | Lat/Long- End: 30.4962 86.6580 | Lat/Long- End: 86.6589

(Species level required, Collect specimen if needed for positive identification)

Species	Transect: 3 SE 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)	Transect: 4 NW 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Nyssa sylvatica	C	C	C	C	C	C	C	C		C		C	C	C	C	C	D	D	D	C	D	
~~Taxodium~~ FD																						
Magnolia virginica	1	1	1	1	1	C	C	C		C		1									1	
Acer rubrum					1											1					1	
Sparganium	1											1						1	1			
Eleocharis baldwin	1			1																	1	
Utricularia	C	C	C	C	1			1				C	C	C	C	C	C	C	1	C		
Nyssa quadruplasis	1	C	C	C	1							C	C	C	C	C	C	C	1	C		
Opposite leaf vine	1	1	1		1									1	1			1		1		
Lycopus		1	1		1	1	1					1	1	1	1	1				1	1	
Boehmeria		1							1					1				1			1	
Carex glaucescens		1		1		1			1	1				1								
Itea virginia			1	1										1								
Dicanthelium scab				1																		
Pontederia					1																	
Hypericum					1																	
Sapium sebiferum					1																	
Smilax laurel/walteri					(	1	1	1	1		✓									1		
~~Acer rubrum~~ FD					1																	
Cyrilla racem. flora					1		1	1	1							1						
Ludwigia suffruticosa					1			1	1		✓											
Lyonia					1			1	1	1												
Chamaecyparis thyoides					1																	
Clethra	1	+	+	+	+	+	+					1			1							
Ilex vomitoria							1															
Cephalanthus occidentalis								1	1											1	1	
Ilex coriacea									1													
Centella asiatica									1													
Rhododendron viscosum										1						1						
Mikania scandens										1												
Hydrocotyle				1											1	1				1		
Myrica															1							
~~Rhododendron viscosum~~ FD																+						
Toxicodendron																				1		

DEP FORM FD 9000-33: VEGETATION WETLAND CONDITION INDEX FIELD SHEET

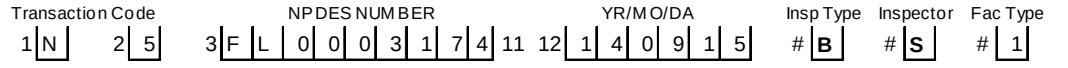
Wetland: CONTROL	County: OKALOOSA	Date: 9-15-14	Page 2 of 2
Project: USAF Hurlburt Field WWTP	Lat/Long- Start:	Lat/Long- Start:	
Analyst: F. Butera, R. Abad	Lat/Long- End:	Lat/Long- End:	

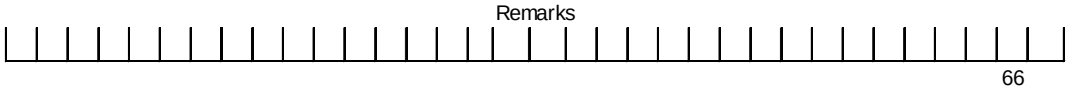
(Species level required, Collect specimen if needed for positive Identification)

Species	Transect: 3 SE 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)	Transect: 4 NW 0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	Specimen collected (check)
Hydrocotyle																				1		
Toxicodendron radicans																				1		

The Bioassay of the Hurlburt Field AWTP effluent sampled on September 15, 2014, NPDES #FL0003174

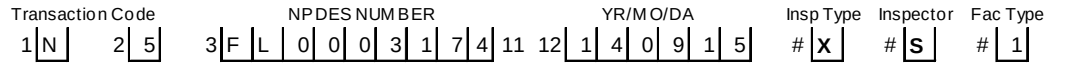
Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

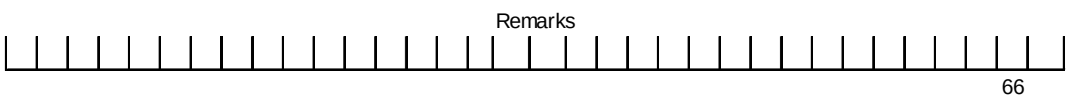




The Priority Pollutants Analysis of the Hurlburt Field AWTP effluent sampled on September 15, 2014, NPDES #FL0003174

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)





Biological Analyses of the Hurlburt Field AWTP effluent sampled on September 15, 2014, NPDES #FL0003174

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

