FACT SHEET

as required by LAC 33:IX.2411, for draft **Louisiana Pollutant Discharge Elimination System Permit No.** **LA0032328**; AI **19578**; **PER19990002** to discharge to waters of the **State of Louisiana** as per LAC 33:IX.2311.

The **permitting authority** for the Louisiana Pollutant Discharge Elimination System (LPDES) is:

Louisiana Department of Environmental Quality
Office of Environmental Services
P. O. Box 4313
Baton Rouge, Louisiana 70821-4313

I. **THE APPLICANT IS:** City of Hammond
South Slough Wetland Wastewater Assimilation Project
P.O. Box 2788
Hammond, LA 70404

II. **PREPARED BY:** Eura DeHart

DATE PREPARED: November 18, 2008

III. **PERMIT ACTION:** reissue LPDES permit LA0032328, AI 19578

LPDES application received: September 30, 2004

NPDES effective date: November 1, 1995
NPDES expiration date: October 31, 2000*

*The facility is currently operating under Amended Compliance Order WE-C-04-0263A.

IV. **FACILITY INFORMATION:**

A. The application is for the discharge of treated sanitary wastewater from a publicly owned treatment works serving the city of Hammond.

B. The facility is located at 1801 Mooney Avenue, in Hammond, Tangipahoa Parish.

C. The treatment facility consists of a three cell aerated lagoon. The effluent will be discharged via the wetland distribution system to the South Slough Wetland flowing south and southeast to the Joyce Wildlife Management Area swamp. Disinfection is by chlorination.

D. Discharges of treated sanitary wastewater from the City of Hammond were previously from two treatment plants, the North Plant and the South Plant. The influent from the North Plant has been re-routed to the South Plant for treatment and discharge. This new discharge location will replace both of the City of Hammond's discharges; therefore, this permit will replace the permits for the North Plant and the South Plant. The City has retained the permit number for the South Plant, LA0032328, for the new discharge location. The permit for the North Plant, LA0032310, has been inactivated.

E. Outfall 001 - sampling point for the treated discharge after the last treatment unit and before distribution to the South Slough Wetland (automatic sampler located at South Slough effluent pipe prior to distribution)

Sampling Point Location: Latitude 30°24'23" North
Longitude 90°25'49" West

Description: treated sanitary wastewater
Design Capacity: 8.0 MGD

Type of Flow Measurement which the facility is currently using:
Combination Totalizing Meter / Continuous Recorder

The wetland distribution system is oriented west to east and is comprised of 3600 linear feet of 24" diameter aerial distribution manifold placed on pilings along the south bank of South Slough with 900 individual 2" distribution nozzles.

V. RECEIVING WATERS:

The City of Hammond previously discharged from two treatment plants, the North Plant and The South Plant. However, the City of Hammond no longer discharges from both plants and now discharges only from the South Plant into the South Slough Wetland and Joyce Wildlife Management Area (subsegment 040604-001).

Subsegment 040604-001, South Slough Wetland and Joyce Wildlife Management Area, is not listed on LDEQ's Final 2004 303(d) List as impaired, and to date no TMDL's have been established. A reopener clause will be established in the permit to allow for the requirement of more stringent effluent limitations and requirements as imposed by any future TMDLs.

The discharge is into South Slough Wetland and the Joyce Wildlife Management Area in segment 040604-001 of the Lake Pontchartrain Basin.

The designated uses for Segment 040604-001 of the Lake Pontchartrain Basin are:

Secondary Contact Recreation
Fish and Wildlife Propagation

The designated uses for Segment 040604-001 of the Lake Pontchartrain Basin are as indicated in LAC 33:IX.1123.C.3, Table (3).

VI. ENDANGERED SPECIES:

The receiving waterbody, Subsegment 040604-001 of the Lake Pontchartrain Basin, is not listed in Section II.2 of the Implementation Strategy as requiring consultation with the U. S. Fish and Wildlife Service (FWS). This strategy was submitted with a letter dated October 24, 2007 from Watson (FWS) to Brown (LDEQ). Therefore, in accordance with the Memorandum of Understanding between the LDEQ and the FWS, no further informal (Section 7, Endangered Species Act) consultation is required. It was determined that the issuance of the LPDES permit is not likely to have an adverse effect on any endangered or candidate species or the critical habitat. The effluent limitations established in the permit ensure protection of aquatic life and maintenance of the receiving water as aquatic habitat.

VII. HISTORIC SITES:

The discharge is conveyed via a new pipeline and discharged to the wetland from a new wetland distribution system. Comite Resources, Inc. has consulted with the State Historic Preservation Officer (SHPO) in a letter, dated May 21, 2003, to determine whether construction-related activities could potentially affect sites or properties on or eligible for listing on the National Register of Historic Places. SHPO's response, dated June 6, 2003, stated that no known archaeological sites or historic properties will be affected by this project.

VIII. PUBLIC NOTICE:

Upon publication of the public notice, a public comment period shall begin on the date of publication and last for at least 30 days thereafter. During this period, any interested persons may submit written comments on the draft permit and may request a public hearing to clarify issues involved in the permit decision at this Office's address on the first page of the fact sheet. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

For additional information, contact:

Mr. Eura DeHart
Water Permits Division
Department of Environmental Quality
Office of Environmental Services
P. O. Box 4313
Baton Rouge, Louisiana 70821-4313

IX. PROPOSED PERMIT LIMITS:

Final Effluent Limits:

OUTFALL 001

DESIGN CAPACITY is 8.0 MGD

As per LAC 33:IX.2707L.2.a.i, material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of less stringent effluent limitations in the proposed permit constitutes an exception to LAC 33:IX.2707.L.1, which states when a permit is renewed or reissued standards or conditions must be at least as stringent as the final limitations, standards, or conditions in the previous permit. Systems that discharge to wetlands are given secondary limits. LAC 33:IX.711.D.2.c, states that existing major facilities with treatment equivalent to Secondary Treatment, such as an oxidation pond system are given 30 mg/l BOD_5 and 90 mg/l TSS (30-day average) levels of treatment. The secondarily treated wastewater discharged into the natural wetlands provides for the introduction of nutrient rich wastewater and sediments. Both are beneficial to the wetlands in that they stimulate productivity in the form of increased vegetative growth, and also counter the subsidence rate of the wetland. A Use Attainability Analysis (UAA) was conducted to determine the suitability of the South Slough wetlands and the Joyce Wildlife Management Area (JWMA) wetlands for use as a wetland assimilation site. The *Hammond Wetland Wastewater Assimilation Use Attainablilty Analysis* (Day et al., 2005) concluded that the JWMA wetlands will assimilate 95% of the nitrogen and 90% of the phosphorus discharged from Hammond's wastewater treatment facilities. The baseline study of vegetation, sediment, and water data for the area indicates that the South Slough and JWMA wetlands are excellent candidates for wetland assimilation. The

relatively low loading rates and long residence times of wastewater effluent in the wetlands will lead to high assimilation rates of nutrients. It is likely that the added nutrients will lead to increased productivity in the receiving wetlands, as has been observed in other wetland assimilation sites, which will help offset regional subsidence. Use of the South Slough and JWMA wetlands for wastewater assimilation will lead to economic savings, improved water quality, and enhanced habitat for fish and wildlife.

The wetland classifications of this assimilation project include palustrine forested, palustrine scrub-shrub, palustrine emergent, and estuarine emergent. The City of Hammond owns the 130 acre South Slough Wetland on which the effluent distribution pipe is constructed. The effluent will flow south across the South Slough Wetland and into the Joyce Wildlife Management Area (WMA) wetland. The Joyce WMA contains 16,394 acres of wetlands that is publicly owned and managed by the Louisiana Department of Wildlife and Fisheries (LDWF). The City of Hammond and the LDWF have signed a Memorandum of Understanding (MOU), outlining the use of the wetlands for wastewater assimilation. A copy of the MOU is enclosed in the application.

The nozzles of the effluent distribution system will be employed in any combination and rotation necessary to ensure uniform coverage and to maximize the assimilation potential and productivity of the wetland. Dates of employment of the nozzles will be noted in the Annual Wetland Monitoring Report.

Final limits shall become effective on the effective date of the permit and expire on the expiration date of the permit.

Effluent Characteristic	Monthly Avg.(lbs/day)	Monthly Avg.	Weekly Avg.	Basis
BOD_5	2002	30 mg/l	45 mg/l	Limits are based on secondary treatment for sanitary wastewater in accordance with LAC33:IX.711.D.2.b.
TSS	6005	90 mg/l	135 mg/l	Limits are based on secondary treatment for sanitary wastewater in accordance with LAC33:IX.711.D.2.b.
Total Nitrogen	report	report mg/l	report mg/l	Values obtained will be used to calculate long term wetland loading rates.[1]
Total Phosphorus	Report	report mg/l	report mg/l	Values obtained will be used to calculate long term wetland loading rates.[1]

Effluent Characteristic	Monthly Avg.(lbs/day)	Monthly Avg.	Weekly Avg.	Basis
Magnesium, Total	Report	Report (mg/l)	Report (mg/l)	In conjunction with the Wetland System Monitoring Requirements of the permit, "Report" for the listed metals has been proposed for this permit based on Best Professional Judgement (BPJ).
Lead, Total	Report	Report (mg/l)	Report (mg/l)	
Cadmium, Total	Report	Report (mg/l)	Report (mg/l)	
Chromium, Total	Report	Report (mg/l)	Report (mg/l)	
Iron, Total	Report	Report (mg/l)	Report (mg/l)	
Nickel, Total	Report	Report (mg/l)	Report (mg/l)	
Silver, Total	Report	Report (mg/l)	Report (mg/l)	
Selenium, Total	Report	Report (mg/l)	Report (mg/l)	

Priority Pollutants

Effluent Characteristics	Monthly Average (lbs/day)	Daily Maximum (lbs/day)	Basis
Total Copper[3]	0.85	2.02	Water Quality Based Limitations[2]
Total Mercury[3]	0.002	0.004	Water Quality Based Limitations[2]
Total Zinc[3]	6.62	15.71	According to the water quality based calculations, a limit for Zinc is not required. However, due to compliance issues the Water Quality Based Limitation for Zinc was established.[2]

1. **If loading rates exceed 15 g/m²/yr total nitrogen or 4 g/m²/yr total phosphorus, then either the loading rates must be reduced or the assimilation area must be increased.**
2. A dilution of 0 cfs was used in place of the default of 0.1 cfs as per the Water Quality Management Plan.
3. If any analytical test result for Total Copper, Total Mercury, and Total Zinc is less than the following minimum quantification level (MQL), then a value of zero (0) shall be used for the discharge monitoring report (DMR) calculations and reporting requirements.

POLLUTANT	MQL
Total Copper	10 µg/l
Total Mercury	0.2 µg/l
Total Zinc	20 µg/l

Heavy metals and other toxins found in wastewater can have damaging effects on wetland systems. Research has found that the movement of heavy metals in the natural cycle of the wetland vegetation and sediments implies that wetlands are not final sinks for these metals. As a result, effluents with high metals concentrations such as would be introduced by industrial waste **should not** be applied to wetland systems. Due to the potential long-term, detrimental impacts from heavy metals, salts, biocides, and other toxins, wetland discharges will be limited primarily to domestic effluent.

Mercury – The water quality based limit for total mercury was calculated to be 0.002 lbs/day monthly average and 0.004 lbs/day daily max. In accordance with 40 CFR 122.44(k)(3) Best Management Practices to control or abate the discharge of pollutants can be used when the numeric effluent limitations are infeasible.

It is the position of this Department that development and implementation of a Mercury Minimization Plan (MMP) will result in the most efficient reduction of mercury discharges to surface waters of Louisiana from the City of Hammond's wastewater treatment facility. Pollution prevention and waste minimization are more reasonably accomplished and cost productive than the implementation of controls and technologies to meet such stringent end-of-pipe mercury limitations. The MMP employs EPA approved analytical methods (EPA Methods 1631, 245.7) through effluent sampling and system wide monitoring programs to locate and indentify potential sources of mercury in the treatment system. Once identified, the MMP integrates cost-effective reduction controls, either treatment or prevention based, to reduce or eliminate mercury from the source.
Effluent monitoring data utilizing the more sensitive EPA approved test methods will be submitted as part of the MMP. Upon review of the MMP and subsequent annual reports, LDEQ reserved the right to reopen the permit to require additional and/or more stringent limitations and requirements in order to address mercury concerns.

The permittee shall develop and implement a Mercury Minimization Program Plan within one year of the effective date of the permit. Yearly thereafter, the permittee shall submit an annual report. See attached Mercury Minimization Guidance Document for additional information. The permittee shall utilize the effluent data collected in accordance with the MMP using the more sensitive EPA approved test methods to determine compliance with the Mercury limitation contained in the permit.

Other Effluent Limitations:

1) **Fecal Coliform**
The discharge from this facility is into a water body (wetland), which has a designated use of Secondary Contact Recreation. However, Primary Contact Recreation limits of 200/100 ml (Monthly Average) and 400/100 ml (Daily Maximum) are proposed as Fecal Coliform limits in the permit. These limits are being proposed through Best Professional Judgment as an added measure for public safety, and due to the fact that existing facilities have demonstrated an ability to comply with these limitations using present available technology.

2) **pH**
According to LAC 33:IX.3705.A.1., POTW's must treat to at least secondary levels. Therefore, in accordance with LAC 33:IX.5905.C, the pH shall not be less than 6.0 standard units nor greater than 9.0 standard units at any time. (Limits as established through BPJ considering BCT for similar waste streams in accordance with LAC 33:IX.5905.C.)

3) **Solids and Foam**
There shall be no discharge of floating solids or visible foam in other than trace amounts in accordance with LAC 33:IX.1113.B.7.

4) **Residual Chlorine (TRC)**

After disinfection and prior to final distribution to the wetland, the effluent shall contain NO MEASURABLE Total Residual Chlorine at any one time monitored by grab sample. Given the current constraints pertaining to chlorine analytical methods, NO MEASURABLE will be defined as less than 0.1 mg/l of chlorine.

Toxicity Characteristics

Permits issued to treatment works treating domestic wastewater with a flow (design or expected) greater than or equal to 1 MGD shall require biomonitoring at some frequency for the life of the permit or where available data show reasonable potential to cause lethality, the permit shall require a whole effluent toxicity (WET) limit (*Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards*, Water Quality Management Plan Volume 3. Version 6, April 16, 2008).

Whole effluent biomonitoring is the most direct measure of potential toxicity which incorporates the effects of synergism of the effluent components and receiving stream water quality characteristics. Biomonitoring of the effluent is, therefore, required as a condition of this permit to assess potential toxicity. LAC 33:IX.1121.B.3. provides for the use of biomonitoring to monitor the effluent for protection of State waters. The biomonitoring procedures stipulated as a condition of this permit are as follows:

The permittee shall submit the results of any biomonitoring testings performed in accordance with the LPDES Permit No. LA0032131, **Biomonitoring Section** for the organisms indicated below.

TOXICITY TESTS	FREQUENCY
48 Hour Definitive Toxicity Test using Daphnia pulex	2/year
48 Hour Definitive Toxicity Test using fathead minnow (Pimephales promelas)	2/year

Dilution Series - The permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests. These additional concentrations shall be 32%, 42%, 56%, 75%, and 100%. The low-flow effluent concentration (critical low-flow dilution) is defined as 100% effluent. Results of all dilutions shall be documented in a full report according to the test method publication mentioned in the **Biomonitoring Section** under Whole Effluent Toxicity. This full report shall be submitted to the Office of Environmental Compliance as contained in the Reporting Paragraph located in the **Biomonitoring Section** of the permit.

The permit may be reopened to require effluent limits, additional testing, and/or other appropriate actions to address toxicity if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream or water body. Modification or revocation of the permit is subject to the provisions of LAC 33:IX.2383. Accelerated or intensified toxicity testing may be required in accordance with Section 308 of the Clean Water Act.

Wetland System Monitoring

The five (5) year LPDES permit contains technology-based effluent limitations for BOD_5, TSS, and pH reflecting the best controls available. Additional water quality-based effluent limitations and/or conditions are included in the LPDES permits. State narrative and numerical water quality standards are used in conjunction with EPA criteria and other available toxicity information to determine the adequacy of technology-based permit limits and the need for additional water quality-based controls.

The state has established a narrative water quality criterion, which states that:

"No substances shall be present in the waters of the state or the sediments underlying said waters in quantities that alone or in combination will be toxic to human, plant, or animal life or significantly increase health risks due to exposure to the substances or consumption of contaminated fish or other aquatic life." (*Louisiana Surface Water Quality Standards*, LAC Title 33, Part IX, Chapter 11, Section 1113.B.5.)

However, the State of Louisiana has set the following specific criteria for protection of the receiving Natural Wetlands (South Slough Wetland and Joyce Wildlife Management Area):

- **NO MORE THAN A 20% DECREASE IN NATURALLY OCCURRING LITTER FALL OR STEM GROWTH;**
- **NO SIGNIFICANT DECREASE IN THE DOMINANCE INDEX OR STEM DENSITY OF BALD CYPRESS;**
- **NO SIGNIFICANT DECREASE IN FAUNAL SPECIES DIVERSITY AND NO MORE THAN A 20% DECREASE IN BIOMASS**

EPA document *Biological Criteria: National Program Guidance for Surface Waters*, discusses the Clean Water Act and states that "the general authority for biological criteria comes from Section 101(a) of the Act which establishes as the objective of the Act the restoration and maintenance of the chemical, physical, and biological integrity of the Nation's waters, including natural wetlands. To meet this objective, water quality criteria must include criteria to protect biological integrity. Section 101(a)(2) includes the interim water quality goal for the protection and propagation of fish, shellfish, and wildlife." Biological integrity is functionally defined in this EPA manual as "the condition of the aquatic community inhabiting the unimpaired waterbodies of a specified habitat as measured by community structure and function." The importance and function of wetlands include, but are not limited to the following: erosion and flood control, saltwater intrusion control, water quality enhancement, habitat for threatened and endangered species, wildlife habitat, nutrient material cycling, recreation and aesthetics.

Natural wetland loss is a problem in Louisiana. This problem is caused by insufficient sedimentation and relative sea level rise each year. The introduction of nutrient rich wastewater to natural wetlands is beneficial in that it stimulates productivity in the wetland. This productivity promotes vertical accretion through increased organic matter deposition and the formation of soil through increased root growth. This vertical accretion helps maintain the wetlands, despite the rising water levels. Additionally, the total suspended solids, provided by the wastewater, also increase the sediment level in the wetland.

Although the introduction of wastewater into natural wetlands renders benefits to the wetland system, changes to the system will occur. Therefore, it is important to address issues, which will indicate the extent of these changes and to determine if the changes are acceptable.

In addition to the standard biomonitoring which is proposed in this permit, the biological monitoring schedule proposed below is broader in scope, and more specific to the wetland ecosystem, than standard biomonitoring.

It will provide a more direct indication of change in functions of the wetland system as a whole. The proposed biological monitoring schedule for the South Slough Wetland Wastewater Assimilation Project is based on BPJ, taking into account the size and characteristics of the wetland system.

The following parameters are proposed to be sampled and monitored for the specified wetland component at all three (3) montoring sites within the wastewater assimilation area and the two (2) monitoring sites within the control area:

- **Sampling and classifying the flora** present and determining percentage of total cover for each vegetative species. The sampling will provide information on whether dominance and species diversity of the community is being altered.
- **Growth studies of vegetative productivity**, which will provide an indication of health and vigor of the plant community.
- **Water stage** is a gauged measurement of the water depth, which will assist in determining stress in the wetlands from hydrologic loadings and will determine the existence of a zone of influence resulting from wastewater applications. The zone around the discharge serves to assimilate the wastewater most effectively. This zone grows larger as wastewater continues to be discharged and the assimilative capacity of the immediate area becomes saturated.
- **Metals and nutrient data from plant tissue samples**, which will identify excesses or deficiencies that could become problematic.
- **Sediment analysis for metals, and nutrients**, which will indicate whether or not metals are bound and buried in the sediments, and nutrients assimilated.
- **Corresponding analysis of surface water** must be made to provide a comparison of water quality in the vicinity of the discharge and at increasing distance from it.

From the results from a number of wetland assimilation sites in Louisiana, we conclude that the benthic and nekton community sampling is not likely to provide relevant data for the monitoring program. Therefore, benthic monitoring will no longer be included as part of wetland assimilation permits. Compared to data from the baseline study, the effects of the discharge on the biological integrity (as defined above) may be accurately assessed.

BASIS FOR ESTIMATE OF WETLAND PLANT PRODUCTIVITY

To measure wetland productivity, plots were established within the discharge area. Also, a marsh control plot and a forested control plot were established in the control area. Within each plot, all trees with a diameter at breast height (dbh) greater than 10 cm were marked with an aluminum identification tag and the species recorded. Tree productivity (total above ground) will be determined from measurements of litter fall and dbh measurements. Litter fall will be collected from established litter boxes, separated into leaf and woody material, dried at 60° C and weighted. Monthly litter fall will be summed for each box to obtain annual leaf litter fall. Tree biomass will be estimated using dbh vs. tree biomass allometric equations calculated for each species in similar forests in the southeastern U.S. Changes in biomass from year to year represent annual wood production. These values for annual litter fall and stem growth can be summed to give annual above ground forest productivity. Also, at each marsh plot, end of season live (EOSL) biomass was measured using five randomly placed quadrats. Clip plot samples are collected during the latter part of September. All data are presented as live dry weight per square meter basis (g dry wt m^{-2}), and is representative of aboveground net primary productivity (NPP).

The wetland monitoring procedures stipulated as a condition of this permit are as follows:

The permittee shall submit the results of any wetland monitoring testing performed in accordance with the LPDES Permit Number LA0032328, Part II, Section D, shown in the table below:

PARAMETER	WETLAND COMPONENT		
	FLORA	SEDIMENT	SURFACE WATER
Species Classification	P		
Percentage of Whole Cover (for each species)	P		
Growth Studies	A_1		
Water Stage			M
Metals: Mg, Pb, Cd, Cr, Cu, Zn, Fe, Ni, Ag, Se	P_1	P_1	P
Metals Analysis: Hg, As		P_1	
Nutrient Analysis I: TKN, TP	$P_{1,2}$	$P_{1,2}$	Q
Nutrient Analysis II: NH_3N, NO_2N, NO_3N, PO_4		P_1	Q
Others: BOD_5, TSS, pH, Dissolved Oxygen			P_1
Accretion Rate		P_1	

Water quality will be monitored by taking water samples along the path of flow of the effluent in the assimilation site and from one or more control sites.

Sampling in the **WASTEWATER ASSIMILATION AREA** must be conducted as follows:

Collection of a minimum of three samples per site in each of three sites: 1) approximately 100' from the discharge point (treatment site), 2) midway (mid site), and 3) at a point near where the water leaves the assimilation wetland (out site).

Exception: Only one sample per site in each of the three sites for those samples collected quarterly.

Sampling for the **CONTROL AREA** must be conducted as follows:

Collection of a minimum of three samples per site in the forested control site and the marsh control site. All three samples will be taken from a site or sites similar to the wastewater management area in the receiving stream.

Exception: Only one sample per site in each of the control area sites for those samples collected quarterly.

Monitoring shall be conducted at the sites identified in the *Hammond Wetland Wastewater Assimilation Use Attainability Analysis* (Day et al., 2005).

A: ANNUALLY. Sample once per year at all three (3) WASTEWATER ASSIMILATION AREA sites and the CONTROL AREA and included in the yearly report.

A_1 – Stem growth and litter fall.

M: MONTHLY. Samples should be taken at all three (3) WASTEWATER ASSIMILATION AREA sites and the CONTROL AREA each month and include in the yearly report.

P: PERIODICALLY. Sampling must be made once during September through November in the fourth year of the permit period for all three (3) WASTEWATER ASSIMILATION AREA sites and the CONTROL AREA.

P_1 – Sample preservation, handling, and analysis must meet the specifications of the Test Methods for Evaluating Solid Waste Physical/Chemical Methods, third edition (EPA Publication Number SW-846, 1986, or most recent revision) or an equivalent substitute as approved by the administrative authority.

P_2 – Sampling to be conducted in summer to reflect peak growth.

Q: QUARTERLY. Sampling (one sample collected per site) must be made every three months annually for all three (3) WASTEWATER ASSIMILATION AREA sites and the CONTROL AREA.

The impacts of treated municipal effluent on assimilation wetlands are assessed in two ways: 1) by comparison to a reference (or 'control') area located nearby with similar ecological characteristics but not influenced by the municipal effluent; and 2) by comparison of environmental data collected at the wetlands prior to effluent addition. Impacts are evaluated between the assimilation wetland and an adjacent reference wetland using data collected during the year preceding the analysis (e.g., stem growth, leaf litter biomass, surface water nutrients, etc.). An analysis of variance (ANOVA) analysis using statistical software is carried out to determine if significant differences ($\alpha < 0.05$) exist between the assimilation and reference wetlands. Comparisons of means with ANOVA tests are made using Tukey-Kramer Honestly Significant Difference (HSD) test. Other statistical tests are used as appropriate (i.e. summary statistics, data distribution, tests of data normality and other assumptions). Generally, significant increases in vegetation productivity in the assimilation versus the reference wetlands are positive impacts, while increases in surface water nutrients and heavy metal concentrations are negative impacts that may require corrective action.

The second analysis utilizes pre- and post-discharge measurements of vegetative productivity, water quality, and several other environmental parameters to determine if treated municipal effluent has impacted the assimilation wetland. A paired t-test is used to compare group means between the Ecological Baseline Study (EBS) data and recently collected data. Data are considered significantly different at a probability > $|t|$ pf ≤ 0.05. As with the analysis between the assimilation and reference wetlands, significant increases in vegetation productivity data over data gathered during the EBS are viewed as positive impacts, while increases in surface water nutrients and concentrations of heavy metals are viewed as negative impacts that may require corrective action.

Sampling procedures to be used during the wetland monitoring phase.

Water quality analyses must be conducted according to test procedures approved under 40 CFR Part 136.

For soils/sediments, sample preservation, handling, and analysis must meet the specifications of the Test Methods for Evaluating Solid Waste Physical/Chemical Methods, third edition (EPA Publication Number SW-846, 1986, or most recent revision) or an equivalent substitute as approved by the administrative authority.

The Use of Louisiana Swamp Forests for Application of Treated Municipal Wastewater: Standard Operating Procedures for Monitoring the Effects of Effluent Discharge. John W. Day, Jr., Joel Lindsey, Jason N. Day, and Robert R. Lane, Comite Resources, Inc. Used with the permission of Dr. John W. Day, Jr., March 14, 2003

WATER QUALITY

1. **Dissolved oxygen and water temperature:** is measured using a Yellow Springs Instrument Co. meter or an ORION Model 820 Dissolved Oxygen meter or equivalent. The probe will be calibrated within four hours of use with a known standard (100% air saturation).

2. **pH & TDS:** Measurements of pH and TDS (Total Dissolved Solids) are made in the field using a Corning Checkmate M90 Field System or equivalent. Water samples will be collected in 500 ml polyethylene bottles and returned to the laboratory where pH will again be measured in the lab using a Jenco Markson pH meter, Model 6100 or equivalent.

3. **Nutrients:** Discrete water samples will be taken 5 to 10 cm below the water surface with effort taken not to stir bottom sediments or include any film that may be present on water surface. Samples are collected in 500 ml acid washed polyethylene bottles. The samples will be immediately stored at 4°C, on ice, for preservation. The samples will be transported to an analytical laboratory, and within 24 hours filtered and sub-sampled. Samples analyzed for NO_2 + NO_3, NH_4 and PO_4 will be filtered in the laboratory using 0.45 um Whatman GF/F glass fiber filters or equivalent, and unfiltered samples will be sub-sampled into 125 mL bottles. Both filtered and unfiltered samples will be frozen until analysis. The samples will be analyzed for nitrite + nitrate (NO2+NO_3-N), ammonium (NH_4-N), total nitrogen (TN), total phosphorus (TP), and phosphate (PO_4-P) by an EPA and DEQ approved analytical laboratory using Standard Methods.

4. **Total Suspended Solids:** TSS will be determined by filtering 100-200 mL of sample water through re-rinsed, dried and weighed 47 mm 0.45 um Whatman GF/F glass fiber filters. Filters will then be dried for 1 hr at 105° C, weighted, dried for another 15 minutes, and reweighed for quality assurance (Standard Methods 1992).

5. **Biological Oxygen Demand:** BOD samples will be collected in standard 300 ml glass BOD bottles. BOD_5 analysis will be from water samples collected in 500ml polyethylene bottles, stored on ice and taken to the laboratory for analysis. Initial D.O. will be measured within 24 hours. Final D.O. will be measured after 5 days of incubation at 20°C. Measurement of BOD is the responsibility of the facility.

6. **ICP Analysis:** Water samples will be collected from the effluent pipe and surface water in the treatment and control area for ICP and IC analysis. The following will be measured: Mg, Pb, Zn, and Cr. The results of the ICP and IC analysis will be used in reporting the metals and nutrient parameters.

7. **Coliform Analysis:** Fecal coliform (i.e. *Escherichia coli)* will be tested using membrane filtration as a field preparation, and then sent to an EPA certified laboratory for analysis. Ten ml of sample water will be passed through a 0.45 micron filter. The filter will be stored in a sterile petri dish and brought within 8 hrs to a certified laboratory for analysis.

8. **Statistical Analysis:** One-way analysis of variance analysis will be carried out to compare treatment and control area parameters using statistical software. An alpha probability level of <0.05 will be used to define a significant difference. Comparisons of means with significant ANOVA tests will be made using Tukey-Kramer Honestly Significant Difference (HSD) test (Sall and Lehman 1996). Other statistical tests may be used as appropriate.

SOILS

1. **Sediment Cores:** At least one sediment core will be taken from each study site (Treatment & Control) with a 7.5 cm stainless steel corer. Following the removal of large litter debris, the top 10 to 20 cm of the samples will be separated by horizon, dried, ground and analyzed. Parameters measured will include: pH, electrical conductivity (EC), Mg, Pb, Cd, Cr, Cu, Zn, Fe, Ni, Ag, Se, NH_3-N, NO_2+NO_3-N, PO_4-P, TKN, and TP. All elemental analyses will be done using an inductively coupled argon plasma quantometer (ICP). Results will be reported as the average of duplicate analyses that are within a 10% confidence interval. The results will be based on oven dry weight.

2. **Accretion Rate:** Feldspar markers will be laid on the wetland surface at three plots in both the Treatment and Control areas, with each plot having three 0.25 m2 subplots where 1 cm thick powdered feldspar clay will be placed (Cahoon and Turner 1989). The subplots will be marked at each corner with PVC poles. Every four years, the thickness of material deposited on top of the feldspar marker at one subplot of each plot will be measured destructively by taking a 20 cm x 20 cm plug using a shovel or trowel, cleanly slicing the core into several sections to reveal the horizon, then measuring the thickness of material above the surface of the horizon at 10 different locations. The rate of vertical accretion will be calculated by dividing the mean thickness of material above the surface of the horizon by the amount of time the horizon had been in place.

VEGETATION

To sample forest vegetation, three or more subplots should be established at each main plot. Normally, main plots will be established at a near, mid, and outlet locations in the Assimilation site, and another main plot established at a Control site. Each plot will be orientated perpendicular to the hydrological gradient. All trees >10 cm in diameter at breast height (dbh) within each plot will be tagged with an identification number.

1. **Tree Species Composition:** The relative importance of each major tree species in both the Assimilation and Control areas will be based on the density (total number), dominance (basal area), and frequency of occurrence in each of the plots using equations 1-4 (Barbour et al. 1987).

Relative density = (individuals of a species)/(total individuals of all species)	(1)
Relative dominance = (total basal area of a species)/(total basal area of all species)	(2)
Relative frequency = (frequency of species)/(total frequency of all species in area)	(3)
Importance Value = Relative density + Relative dominance + Relative Frequency	(4)

2. **Above Ground Biomass:** Biomass production of a forested wetland is defined as the sum of the leaf and fruit fall (ephemeral productivity) and aboveground wood production (perennial productivity, Newbould 1967).

   A. **Ephemeral or litter fall Productivity:** To estimate ephemeral productivity, litter fall should be collected using 0.25 m^2 boxes with 1 mm mesh bottoms. At least 2 leaf litter boxes should be installed in each subplot (a minimum of 6 boxes at each main plot). The boxes will be placed randomly in each plot. The baskets will be elevated to prevent inundation during high water periods. Litter fall should be collected bimonthly or monthly depending on the season (litter fall is highest during Fall and Winter). We use the term 'leaf litter' in reference to all non-woody litter including flowers, fruits, and seeds that typically account for <10% of the non-woody litter fall total (Megonigal and Day 1988). Leaf litter will be separated from woody litter, dried to constant mass at 65°C, and weighed. Leaf litter weights throughout any given year will be summed and extrapolated to g $m^{-2}yr^{-1}$ units.

   B. **Perennial Productivity:** Stem biomass will be estimated from annual changes in wood biomass calculated using allometric equations based on stem diameter at breast height (dbh ~ 0.3m) as the independent variable (Table 1). The diameter at breast height (dbh) of all tagged trees will be measured above and below (~5 cm) the identification tag during the winter dormant period. This method allows measurement a safe distance from the tag's nail, which often caused the trunk to swell. Diameter will be measured above the butt swell on large cypress trees. Woody production will be calculated using regression equations (Scott et al. 1985; megonigal et al. 1997, Table 1) based on the diameter for each species as the independent variable. We assume that the contribution of wood and stems <10 cm dbh and herbs will be a relatively small fraction of above-ground net primary production (megonigal et al. 1997). The change in biomass from one winter's measurement to the next represents woody production for the year and will be extrapolated to g $m^{-2}yr^{-1}$ units.

C. **Net Primary Production:** Aboveground net primary production (NPP) will be calculated as the sum of leaf litter and wood protection, and will be given in g $m^{-2}yr^{-1}$ units.

Table 1. Regression equations used to convert diameter at breast height (DBH) measurements to overall perennial biomass. All equations are in the form: Biomass = f (DBH), where biomass is in kg, DBH is in cm and f is the parameterized function.

Species	Biomass f(D)	DBH Range	Reference
Fraxinus spp.	Biomass (kg) = ((2.669*((DBHcm*0.394)^1.16332))*0.454	>10 cm	Megonigal et al. '97
Taxodium distichum	Biomass (kg) = 10^(-.97+2.34*LOG10(DBHcm))	>10 cm	Megonigal et al. '97
Nyssa aquatica	Biomass (kg) = 10^(-919+2.291*LOG10(DBHcm))	>10 cm	Megonigal et al. '97
Acer rubrum	Biomass (kg) = ((2.39959*((DBHcm*0.394)^2)^1.2003))*0.454	10-28 cm	Megonigal et al. '97
Quercus nigra	Biomass (kg) = ((3.15067*((DBHcm*0.394)^2)^1.21955))*0.45	10-28 cm	Megonigal et al. '97
	Biomass (kg) = ((5.99898*((DBHcm*0.394)^2)^1.08527))*0.45	>28 cm	Megonigal et al. '97
Salix spp.	Biomass (kg) = 10^(-1.5+2.78*LOG10(DBHcm))	n.a.	Scott et al. 1985
Other Species	Biomass (kg) = ((2.54671*((DBHcm*0.394)^2)^1.20138))*0.45	10-28 cm	Megonigal et al. '97
	Biomass (kg) = ((1.80526*((DBHcm*0.394)^2)^1.27313))*0.45	>28 cm	Megonigal et al. '97

3. **Understory Vegetation:** Shrubs, saplings (individuals <10cm dbh but >2.5 cm dbh), and seedlings (individuals <2.5 cm dbh) will be tabulated by species in a 5m X 5m plot established in each subplot. From the data, density and basal area will be calculated for trees and density will be calculated for sapling and seedling species.

   The present cover for herbaceous vegetation will be determined by a modified line-intercept technique patterned after that proposed by DS&N, Inc. (1988). The method consists of observations made of plant species occurring along a 1m X 10m transect located at the eastern edge of each plot. Each 10m section is divided into 1m X 1m intervals. Species cover will be determined on the basis of the percent cover occupied within each 1m X 10m unit. Herbaceous plots will be measured at least once during the study.

4. **Nutrient and Metals Analysis of Green Leaves:** Green leaf samples should be collected during the last year of the monitoring from the major species in the treatment and control areas, once during March through May and once during September through November. Samples will be oven-dried at 70°C for at least 48 hours, ground in a Wiley mill to pass a 40 mesh screen, and stored in whirl-pak bags. Samples will be analyzed in the laboratory for Mg, Pb, Cd, Cr, Cu, Zn, Fe, Ni, Ag, Se, TKN and TP. The tissue analyses should be done by a wet digestion method.

5. **Marsh Vegetation Production:** Net production in areas dominated by non-woody herbaceous vegetation will be determined by end of season live (EOSL) biomass analysis. Sampling should be conducted during the last week of September or the first week of October. At least five 0.06 m^2 clip plots will be taken at each location using randomly placed quadrants. Vegetation within the quadrant will be cut as close to the surface as possible, stored in labeled paper bags, brought back to the laboratory, and refrigerated until processing. Live material will be separated from dead, and dried at 60° C to a constant weight. All data will be presented on a live dry weight per square meter basis (g dry wt m^{-2}).

X. PREVIOUS PERMITS:

NPDES Permit No. LA0032328: Effective Date: November, 1995
Expiration Date: October 31, 2000

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Daily Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow	Report	Report	Continuous	Recorder
BOD_5	10 mg/l	15 mg/l	2/week	6 hr composite
TSS	15 mg/l	23 mg/l	2/week	6 hr composite
Total Copper	Monitor and Report		1/ two months	24 hr composite
Total Mercury	Monitor and Report		1/ two months	24 hr composite
Total Zinc	45 µg/l	106 µg/l	1/month	24 hr composite
Fecal Coliform Colonies	200 colonies/L	400 colonies/L	2/month	Grab

The permit contains sludge language.
The permit contains biomonitoring.
The permit contains pollution prevention language.

XI. ENFORCEMENT AND SURVEILLANCE ACTIONS:

A) Inspections

A review of the files indicates an EPA lead compliance evaluation inspection was performed on July 9, 2008. The following was noted:

- The South Treatment plant consisted of a headworks, a three-cell oxidation pond, a chlorine contact chamber and amile lond discharge line with approximately 900 diffusers for wastewater distribution into the Joyce Wildlife Management Area. The plant was a design capacity of up to 11 MGD, but currently treat approximately 4 MGD.
- The New South Wastewater Treatment Plant is currently operating without a current wastewater discharge permit. They are operating under two separate compliance orders. One issued by EPA and the other issued by LADEQ. Both orders contain interim effluent limitations and monitoring requirements. The EPA order number is CWA-06-2008-1731 and was issued on January 11, 2008. The facility has submitted a permit application for the new plant. The LADEQ order number is WE-CN-07-0274A and was issued on February 27, 2008.
- For reporting purposes on their Discharge Monitoring Reports, the facility is using the old South Sewer Treatment Plant permit number (LA0032328) and Agency Interest Number 19578.
- During the records review from May 2007 to May 2008, there were numerous permit excursions noted for BOD, Copper, Zinc, and Mercury. The facility is wording to reduce their BOD in their effluent discharge, identify potential customers that have discharges that may contain these metals. Once these sources are identified, they plan to develop ways to remove these metals from the influent before it enters the head works of the plant.
- The facility started analyzing additional BOD samples in May 2008 but failed to

include the additional samples results in their calculations for reporting purposes. They will amend their May and June Discharge Monitoring Reports to include the additional sample results and resubmit them to the appropriate agencies.

- The overall operation of the treatment plant appeared to be satisfactory.
- The review of the lab was satisfactory.
- The operators use a hand held pH meter to measure the pH. They maintain a calibration log book, but are not calibrating the meter before each use. They measure the effluent on days they are required to sample, which is usually on Monday and Tuesday of each week. They calibrate the pH meter on Mondays, but not Tuesdays. The lab director stated that this observation would be corrected by instituting a ne pH calibration SOP.
- A calibration check for the flow meter could not be conducted because the readout was being affected by waves on the surface of the pond. The ultrasonic flow meter should be placed in a still well in order to obtain accurate measurements for flow. The facility has a V-notched weir for a secondary measuring device, but there is no way to measure the height of the effluent flowing through the weir because the facility does not have a staff gage installed for measuring purposes.
- The effluent appeared to be clear in color and is discharged into the Joyce Wildlife management areas, which is located south of Ponchatoula.
- During the exit meeting, the observations noted during the inspection were discussed and the facility representatives stated that each area of concern noted during the inspection would be corrected as soon as possible.

B) Compliance and/or Administrative Orders

The facility is currently operating under Amended Compliance Order WE-C-04-0263B issued February 28, 2007 with interim effluent limitations and monitoring requirements for discharge into the South Slough / Joyce WMA Wetlands.

A Consolidated Compliance Order & Notice of Potential Penalty (Enforcement Tracking No. WE-CN-07-0274) was issued on August 30, 2007 for effluent violations reported on DMRs between December 2006 and June 2007 and failure to properly operate and maintain the facility.

An Amended Consolidated Compliance Order & Notice of Potential Penalty (Enforcement Tracking No. WE-CN-07-0274A) was issued on February 27, 2008 for effluent violations reported on the DMRs between July 2007 and January.

An Amended Consolidated Compliance Order & Notice of Potential Penalty (Enforcement Tracking No. WE-CN-07-0274B) was issued on August 27, 2008 for effluent violations reported on the DMRs between February 2008 and May 2008 and for failure to submit an original DMR for April 2008.

C) DMR Review

A review of the discharge monitoring reports since the start of operation of the new facility and the discharge to the South Slough / Joyce WMA Wetlands in December of 2006 through August 2008 has revealed the following violations:

Month	Parameter	DMR Reported Value	Permit Limit
December 2006	BOD_5, Monthly Avg.	55.3 mg/l	30 mg/l
	BOD_5, Weekly Avg.	123 mg/l	45 mg/l
	Fecal Coliform, Weekly Avg.	10,000 colonies/ml	2000 colonies/ml
	Total Zinc, Monthly Avg.	80.3 µg/l	44.7 µg/l
January 2007	BOD_5, Monthly Avg.	103 mg/l	30 mg/l
	BOD_5, Weekly Avg.	161 mg/l	45 mg/l
	BOD_5 (mass), Monthly Avg.	2945 lb/day	2002 lb/day
	Fecal Coliform, Monthly Avg.	1374 colonies/ml	1000 colonies/ml
	Fecal Coliform, Weekly Avg.	10,000 colonies/ml	2000 colonies/ml
	Total Zinc, Monthly Avg.	86.6 µg/l	44.7 µg/l
	Total Zinc, Weekly Avg.	121 µg/l	106 µg/l
	Total Zinc(mass), Monthly Avg.	2.65 lb/day	0.93 lb/day
	Total Copper, Monthly Avg.	28 µg/l	5.2 µg/l
	Total Copper, Weekly Avg.	28 µg/l	12.3 µg/l
	Total Copper(mass), Monthly Avg.	0.65 lb/day	0.11 lb/day
February 2007	BOD_5, Monthly Avg.	56 mg/l	30 mg/l
	BOD_5, Weekly Avg.	131 mg/l	45 mg/l
	Total Zinc(mass), Monthly Avg.	0.93 lb/day	0.93 lb/day
	Total Copper, Monthly Avg.	14 µg/l	5.2 µg/l
	Total Copper, Weekly Avg.	14 µg/l	12.3 µg/l
	Total Copper(mass), Monthly Avg.	0.19 lb/day	0.11 lb/day
March 2007	BOD_5, Monthly Avg.	68.3 mg/l	30 mg/l
	BOD_5, Weekly Avg.	113 mg/l	45 mg/l
	Total Copper, Monthly Avg.	12 µg/l	5.2 µg/l
	Total Copper, Weekly Avg.	28 µg/l	12.3 µg/l
	Total Copper(mass), Monthly Avg	0.37 lb/day	0.11 lb/day
April 2007	BOD_5, Monthly Avg.	76.5 mg/l	30 mg/l
	BOD_5, Weekly Avg.	168 mg/l	45 mg/l
	Fecal Coliform, Weekly Avg.	>2000 colonies/ml	2000 colonies/ml
	Total Copper, Weekly Avg.	15 µg/l	12.3 µg/l
May 2007	BOD_5, Monthly Avg.	43.2 mg/l	30 mg/l
	BOD_5, Weekly Avg.	95.4 mg/l	45 mg/l
June 2007	BOD_5, Monthly Avg.	49.5 mg/l	30 mg/l
	BOD_5, Weekly Avg.	82.7 mg/l	45 mg/l
July 2007	BOD_5, Monthly Avg.	58.4 mg/l	30 mg/l
	BOD_5, Weekly Avg.	75.3 mg/l	45 mg/l
	Total Copper, Monthly Avg.	17.2 µg/l	5.2 µg/l
	Total Copper, Weekly Avg.	25.0 µg/l	12.3 µg/l
	Total Copper(mass), Monthly Avg	0.25 lb/day	0.11 lb/day
August 2007	BOD_5, Weekly Avg.	52.8 mg/l	45 mg/l
	Total Copper, Monthly Avg.	17 µg/l	5.2 µg/l
	Total Copper, Weekly Avg.	24 µg/l	12.3 µg/l
	Total Copper(mass), Monthly Avg	0.38 lb/day	0.11 lb/day
September 2007	Total Copper, Weekly Avg.	18 µg/l	12.3 µg/l
	Total Copper(mass), Monthly Avg	0.26 lb/day	0.11 lb/day
October 2007	BOD_5, Monthly Avg.	47.0 mg/l	30 mg/l
	BOD_5, Weekly Avg.	65.7 mg/l	45 mg/l
	Total Copper, Monthly Avg.	22.4 µg/l	5.2 µg/l
	Total Copper, Weekly Avg.	33.0 µg/l	12.3 µg/l

	Total Copper (mass), Monthly Avg Total Zinc (mass), Monthly Avg	0.65 lb/day 0.99 lb/day	0.11 lb/day 0.93 lb/day
November 2007	BOD_5, Monthly Avg. BOD_5, Weekly Avg. Total Copper, Monthly Avg. Total Copper, Weekly Avg. Total Copper(mass), Monthly Avg	67.7 mg/l 86.8 mg/l 20.5 µg/l 24 µg/l 0.57 lb/day	30 mg/l 45 mg/l 5.2 µg/l 12.3 µg/l 0.11 lb/day
December 2007	BOD_5, Monthly Avg. BOD_5, Weekly Avg. Total Copper, Monthly Avg. Total Copper, Weekly Avg.	73.4 mg/l 92.7 mg/l 5.75 µg/l 23.0 µg/l	30 mg/l 45 mg/l 5.2 µg/l 12.3 µg/l
January 2008	BOD_5, Monthly Avg.	32.4 mg/l	30 mg/l
February 2008	BOD_5, Monthly Avg. Total Copper, Weekly Avg. Total Copper (mass), Monthly Avg	33.4 mg/l 27 µg/l 0.28 lb/day	30 mg/l 12.3 µg/l 0.11 lb/day
March 2008	BOD_5, Monthly Avg. Total Copper, Monthly Avg. Total Copper, Weekly Avg. Total Copper(mass), Monthly Avg	30.3 mg/l 17.8 µg/l 44.0 µg/l 0.61 lb/day	30 mg/l 5.2 µg/l 12.3 µg/l 0.11 lb/day
April 2008	BOD_5, Monthly Avg. Total Copper, Weekly Avg. Total Zinc (mass), Monthly Avg	33.2 mg/l 13.0 µg/l 1.18 lb/day	30 mg/l 12.3 µg/l 0.93 lb/day
May 2008	BOD_5, Monthly Avg. Total Mercury, Monthly Avg. Total Mercury, Weekly Avg.	33.2 mg/l 0.27 µg/l 0.8 µg/l	30 mg/l 0.026 µg/l 0.061 µg/l
June 2008	BOD_5 (mass), Monthly Avg. BOD_5, Monthly Avg. BOD_5, Weekly Avg. Total Zinc, Monthly Avg. Total Zinc, Weekly Avg. Total Zinc (mass), Monthly Avg	2055 lb/day 44.0 mg/l 60.9 mg/l 66 µg/l 193 µg/l 2.07 lb/day	2002 lb/day 30 mg/l 45 mg/l 44.7 µg/l 103 µg/l 0.93 lb/day

XII. ADDITIONAL INFORMATION:

The Department of Environmental Quality reserves the right to impose more stringent discharge limitations and/or additional restrictions in the future to maintain the water quality integrity and the designated uses of the receiving water bodies based upon water quality studies. These studies may indicate the need for advanced wastewater treatment. Studies of similar dischargers and receiving water bodies have resulted in monthly average effluent limitations of 5 mg/l $CBOD_5$, and 2 mg/l NH_3-N. Therefore, prior to upgrading or expanding this facility, the permittee should contact the Department to determine the status of the work being done to establish future effluent limitations and additional permit conditions.

Please be aware that the Department has the authority to reduce monitoring frequencies when a permittee demonstrates two or more consecutive years of permit compliance. Monitoring frequencies established in LPDES permits are based on a number of factors, including but not limited to, the size of the discharge, the type of wastewater being discharged, the specific operations at the facility, past compliance history, similar facilities and best professional judgment of the reviewer. We encourage

and invite each permittee to institute positive measures to ensure continued compliance with the LPDES permit, thereby qualifying for reduced monitoring frequencies upon permit reissuance. If the Department can be of any assistance in this area, please do not hesitate to contact us. As a reminder, the Department will also consider an increase in monitoring frequency upon permit reissuance when the permittee demonstrates continued non-compliance.

Final effluent loadings (i.e. lbs/day) have been established based upon the permit limit concentrations and the design capacity of 8.0 MGD.

Effluent loadings are calculated using the following example:

BOD: 8.34 gal/lb x 8.0 MGD x 30 mg/l = 2002 lb/day

The **Monitoring Requirements, Sample Types, and Frequency of Sampling** as shown in the permit are as follows:

Effluent Characteristics	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow	Continuous	Recorder
BOD_5	2/week	6 Hr. Composite
Total Suspended Solids	2/week	6 Hr. Composite
Total Nitrogen	1/quarter	6 Hr. Composite
Total Phosphorus	1/quarter	6 Hr. Composite
Total Copper	1/month	24 Hr. Composite
Total Zinc	1/month	24 Hr. Composite
Total Mercury	1/month	24 Hr. Composite
Total Magnesium	1/6 months	24 Hr. Composite
Total Lead	1/6 months	24 Hr. Composite
Total Cadmium	1/6 months	24 Hr. Composite
Total Chromium	1/6 months	24 Hr. Composite
Total Iron	1/6 months	24 Hr. Composite
Total Nickel	1/6 months	24 Hr. Composite
Total Silver	1/6 months	24 Hr. Composite
Total Selenium	1/6 months	24 Hr. Composite
Fecal Coliform Bacteria	2/week	Grab
pH	2/week	Grab
Biomonitoring		
Daphnia pulex (Method 1002.0)	2/year	24 Hr. Composite
Pimephales promelas (Method 1000.0)	2/year	24 Hr. Composite

Pretreatment Requirements

Based upon consultation with LDEQ pretreatment personnel, LDEQ Option III Pretreatment Language shall be included in the permit. Upon reviewing the 2007 Directory of Louisiana Manufacturers, it was determined that a high number of potential industrial users (defined in LAC 33:IX.6105) are located in the region discharging to the City of Hammond Wetland Wastewater Assimilation Project POTW. This language requires the POTW to begin developing an approved Pretreatment Program and submit a list of updated Industrial User Surveys, including qualitative analysis of the Industrial Users' wastewater.

Environmental Impact Questionnaire:

Applicant Comments/Responses (verbatim from applicant)

1. Have the potential and real adverse effects of the proposed facility been avoided to the maximum extent possible?

   There will be no harmful effects on the environment. The treated effluent discharged into the South Slough wetlands and the Joyce WMA wetlands will be helpful to promote new growth and enhance productivity. The plants will utilize all nutrients from the effluent. Also the freshwater will hold salinity levels down in the area and accretion will be enhanced. These impacts are documented in the UAA.

2. Does a cost benefit analysis of the environmental impact costs balanced against the social and economic benefits of the proposed facility demonstrate that the latter outweighs the former?

   There will be no detrimental impact on the environment. There will be a considerable economic cost savings. Therefore social, economical and environmental benefits far outweigh cost as documented in the UAA.

3. Are there alternative projects which would offer more protection to the environment than the proposed facility without unduly curtailing nonenvironmental benefits?

   All other alternatives would be much more costly and not achieve the same benefit. See introduction and history section UAA.

4. Are there alternative sites which would offer more protection to the environment than the proposed facility site without unduly curtailing nonenvironmental benefits?

   No, this site is located near wetlands that can chemically, physically, and biologically remove pollutants, sediments and nutrients from the water flowing through them.

5. Are there mitigating measures which would offer more protection to the environment than the facility as proposed without unduly curtailing nonenvironmental benefits?

   Mitigation measures are not necessary since the project will enhance the environment. See UAA.

XIII TENTATIVE DETERMINATION:

On the basis of preliminary staff review, the Department of Environmental Quality has made a tentative determination to reissue a permit for the discharge described in this Fact Sheet.

XIV REFERENCES:

Louisiana Water Quality Management Plan / Continuing Planning Process, Vol. 8, "Wasteload Allocations / Total Maximum Daily Loads and Effluent Limitations Policy," Louisiana Department of Environmental Quality, 2005.

Louisiana Water Quality Management Plan / Continuing Planning Process, Vol. 5, "Water Quality Inventory Section 305(b) Report," Louisiana Department of Environmental Quality, 1998.

Louisiana Administrative Code, Title 33 - Environmental Quality, Part IX - Water Quality Regulations, Chapter 11 - "Louisiana Surface Water Quality Standards", Louisiana Department of Environmental Quality, 2004.

Louisiana Administrative Code, Title 33 - Environmental Quality, Part IX - Water Quality Regulations, Subpart 2 - "The LPDES Program", Louisiana Department of Environmental Quality, 2004.

Low-Flow Characteristics of Louisiana Streams, Water Resources Technical Report No. 22, United States Department of the Interior, Geological Survey, 1980.

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LPDES Permit Application to Discharge Wastewater, City of Hammond, South Slough Wetland Wastewater Assimilation Project, September 30, 2004.

Day, John W., Robert R. Lane, Joel Lindsey, and Jason Day. Hammond Wetland Wastewater Assimilation Use Attainability Analysis (UAA), Revised April 2005.