UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF LOUISIANA

UNITED STATES OF AMERICA and

STATE OF LOUISIANA, through THE DEPARTMENT OF ENVIRONMENTAL QUALITY,

Plaintiffs,

v.

ACADIA WOODS ADD. #2 SEWER CO.,

ACADIANA TREATMENT SYSTEMS, et al.,

Defendants,

and

TOTAL ENVIRONMENTAL SOLUTIONS, INC.,

Intervening Defendant.

Civil Action No. 6:98-0687

NOTICE OF LODGING OF PROPOSED AGREEMENT AND ORDER REGARDING MODIFICATION OF THE CONSENT DECREE WITH RESPECT TO TESI PENDING SOLICITATION OF PUBLIC COMMENT

Exhibit A

Agreement and Order Regarding Modification of the Consent Decree with Respect to TESI

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DRAFT 2016-09-02

AGREEMENT AND ORDER REGARDING MODIFICATION OF THE CONSENT DECREE WITH RESPECT TO TESI

I. BACKGROUND

A. On December 21, 2000, the Court entered the *Consent Decree with Respect to TESI* ("the Consent Decree"). Prior to entry of the Consent Decree, Intervening Defendant Total Environmental Solutions, Inc. ("TESI") purchased all the assets of the original Defendants in this action at a sale conducted by the trustee/receiver appointed by the Court. The assets purchased by TESI included 172 sewage treatment plants ("STPs") at which the United States and Louisiana alleged the original Defendants had violated the Clean Water Act ("CWA"), 33 U.S.C. §§ 1301 et seq.

B. The 172 STPs originally subject to the Consent Decree are listed in Appendix A to the Consent Decree. Subsequently, TESI disposed of 11 of these STPs, as specified in the

following table, and currently retains ownership of a total of 161 STPs listed in Appendix A to the Consent Decree.

STPs Listed in Consent Decree Appendix A Subsequently Disposed of by TESI			
#	*LPDES Permit Number(s)*	*Name*	*Disposition*
7	LAU049000 LA0049000	Audubon Village (AI No. 51898)	TESI sold the STP to Livingston Parish on 05/23/2013
18	LAG560157	Brandywine Subdivision (AI No. 40845)	On 01/05/2005, the LPDES permit for Brandywine Subdivision STP was terminated. Sewage from the homes previously serviced by the Brandywine Subdivision STP was rerouted to the Grand Marnier Wastewater Treatment Plant (LAG570171; AI No. 42293), an STP owned by TESI but not listed in Appendix A to the Consent Decree.
33	LAG560042	41102	Flow from the Community Sewer/St. Maurice STP (Appx. A, #33, LAG560042, AI No. 41102) was redirected to the St. Maurice Addendum #3 STP (Appx. A, #147, LAG540028, AI No. 40640).
78	LAG540106	L.O. Peck/East Bayou (AI No. 18834)	TESI sold the STP to Lafayette Utilities (LUS) by instrument recorded 01/05/2016
105	LAG540376	Oak Hills Lot 59 (listed as "Oak Hills #1" in Appendix A) (AI No. 41851)	TESI sold the STP to Livingston Parish on 05/23/2013
106	LAG540373	Oak Hills Lot 35 (listed as "Oak Hills #2" in Appendix A) (AI No. 41849)	TESI sold the STP to Livingston Parish on 05/23/2013
117	LAG540374	Pirie Landing (AI No. 40641)	TESI sold the STP to Livingston Parish on 01/12/2011
119	LAG570026	Plantation Park (AI No. 41848)	TESI sold the STP to Livingston Parish on 01/12/2011
147	LAG540028	St. Maurice Addendum #3 (AI No. 40640)	Prior to April 2004, TESI directed the flow from the St. Maurice Addendum #3 STP (Appx. A, #147, LAG540028, AI No. 40640) to the Magnolia Park/St. Maurice Subdivision STP (Appx. A, #92, LA66486, AI No. 43546).
157	LAU551005 LAG541165	Timberly Terrace (AI No. 87177)	TESI sold the STP to the City of Lake Charles on 07/27/2010

171	LAG540131	Woodridge Subdivision (listed as "Woodridge" in Appendix A) (AI No. 18817)	TESI sold the STP to Lafayette Utilities (LUS) effective 06/06/2016

This column refers to the number of the STP in Appendix A of the Consent Decree.

"AI No." refers to the Agency Interest Number assigned to the STP by LDEQ. The AI No. can be used to locate records related to the STP on LDEQ's Electronic Document Management System (http://edms.deq.louisiana.gov/)

C. The STPs subject to the Consent Decree and not disposed of by TESI utilize two methods to treat sewage: 123 STPs are Mechanical STPs and 38 STPs are Pond STPs. A Mechanical STP utilizes mechanical means to aerate a mix of wastewater and activated sludge such that organic components within the wastewater are decomposed by biological processes. The typical components of a TESI mechanical plant include a bar screen to remove debris, an aeration tank to mix the wastewater and activated sludge with oxygen, a clarifying tank to settle and separate solids, and a disinfection system. A Pond STP utilizes a large holding or detention pond or lagoon, usually constructed with earthen dikes, to contain wastewater while sedimentation and biological oxidation occur.

D. In the Consent Decree, TESI committed to operate the STPs without service interruption and cause the STPs to achieve compliance with the requirements of the CWA. To that end, TESI committed to implement the compliance measures at the STPs specified in Section VII of the Consent Decree (Compliance Measures at the STPs). The Consent Decree also included stipulated penalties for violations of the requirements of the Consent Decree and the requirements of the National Pollutant Discharge Elimination System ("NPDES") permits issued for the STPs pursuant to the CWA.

E. Section 402(b) of the Act, 33 U.S.C. § 1342(b), provides EPA may approve a state NPDES permitting program within its jurisdiction. Pursuant to this provision, Louisiana

was granted NPDES permitting authority for discharges into navigable waters within the state on August 27, 1996. 61 Fed. Reg. 47932 (September 11, 1996). Accordingly, Louisiana, through the Louisiana Department of Environmental Quality (“LDEQ”), issues Louisiana Pollutant Discharge Elimination System ("LPDES") permits in accordance with the Louisiana Water Control Law ("LWCL"), LA. R.S. 30:2071-2089, and the regulations promulgated thereunder at LAC 33:IX 2301-7129.

F. In general, TESI has implemented the compliance measures specified in Section VII of the Consent Decree (Compliance Measures at the STPs). However, the process of implementing these measures was more complex than the Parties understood at the time the Consent Decree was entered, and some measures were not completed by the specified deadlines.

G. At the time the Consent Decree was entered, the Parties believed that the implementation of the compliance measures specified in Section VII of the Consent Decree (Compliance Measures at the STPs) would be sufficient to bring the STPs into compliance with the requirements of the CWA. After the compliance measures were implemented, the number of violations of the CWA was reduced. However, facility-specific problems remained, and violations of the CWA at the STPs continued to occur.

H. The United States and Louisiana determined that, in order to achieve compliance with the requirements of the CWA, TESI must first conduct a comprehensive diagnostic evaluation of each STP to determine the specific measures required at each STP subject to the Consent Decree.

I. On March 12, 2009, the Court ordered (DN 207) TESI to implement the *Comprehensive Diagnostic Evaluation Plan and Schedule for Sewage Treatment Plants Subject*

to the Consent Decree with respect to TESI Entered December 21, 2000 ("CDE Plan") (DN 206-2). The Court found that:

> Swift action is required to address the ongoing failure of the STPs to comply with the applicable LPDES permits. The Court instructed the Parties to submit a plan to bring the STPs into compliance with the requirements of the 2000 Consent Decree that addressed the concerns expressed by the Court at the July 29, 2008 hearing. Pursuant to this instruction, the Parties submitted the [CDE Plan].
>
> The purpose of this Order is to require the Parties to take action to address the ongoing failure of the STPs to consistently comply with the applicable LPDES permits by implementing the [CDE Plan].

March 12, 2009 Order at 3.

J. Pursuant to Section 2 of the CDE Plan, TESI was required to conduct a Comprehensive Diagnostic Evaluation at each STP subject to the Consent Decree. Pursuant to Section 3 of the CDE Plan, TESI was required to file a report for each STP ("CDE Report") that, inter alia, identified all work or other actions proposed by TESI to correct conditions identified under the CDE Plan that prevent the STP from achieving long-term, sustained compliance with the CWA, including compliance with the applicable LPDES permit. Each CDE Report was required to be certified by a Professional Engineer. CDE Plan ¶ 3.5. In addition, at the end of the Comprehensive Diagnostic Evaluation process, TESI was required to propose a *Final, System-Wide Schedule for all Required Work That Has Not Yet Been Completed* ("System-Wide Schedule") (Dkt. No. 206-2 at Table 2).

K. TESI has made submissions pursuant to the 2009 Order. See Dkt. Nos. 213, 214, 215, 217, 218, 220, 221, and 224. While TESI has submitted certified CDE Reports for Mechanical STPs, it has not yet submitted certified CDE Reports for Pond STPs.

L. On January 16, 2015, the United States and Louisiana filed an *Unopposed Joint Motion of the United States of America and the State of Louisiana to Enforce the Consent Decree with Respect to TESI* (DN 229). That Motion sought entry of an Order requiring interim

measures to address noncompliance by TESI with the requirements of the Consent Decree. During inspections conducted on behalf of the United States in September and December 2014, inspectors observed conditions at many STPs, including excess solids, leaks, and spills, that the United States and Louisiana concluded evidenced noncompliance with the requirements of the Consent Decree and presented a threat to public health and the environment. On February 6, 2015, the Court entered an Order (DN 231) requiring TESI to take measures intended to address compliance with the Consent Decree and to ameliorate the most urgent threats to public health and the environment. TESI, while it did not necessarily agree with the United States' and Louisiana's conclusions, nonetheless agreed to the proposed Order and did not oppose the Motion.

M. After the Court entered the February 6, 2015 Order, the Parties began discussions regarding implementation by TESI of further measures to ensure long-term, sustained compliance with the requirements of the Consent Decree. Those discussions resulted in this *Agreement and Order Regarding Modification of Consent Decree with Respect to TESI* ("Consent Decree Modification"). The Consent Decree, originally entered on December 12, 2000, as modified by this Consent Decree Modification, will be referred to herein as the "Modified Consent Decree."

N. The Modified Consent Decree requires TESI to implement a *Long Term Compliance Plan* ("LTC Plan") that includes the following requirements:

- Submit certified CDE Reports for all Pond STPs.
- Implement all work and other actions recommended in the certified CDE Reports for both Mechanical and Pond STPs, including applying for a rate increase sufficient to allow TESI to implement the requirements of the Modified Consent Decree.
- Implement Holistic Process Control Plans for all Mechanical and Pond STPs. These are general plans that will apply to all STPs and provide for improved

operation and maintenance while TESI is developing Final STP-Specific Process Control Plans.

- Develop and implement an STP-Specific Process Control Plan for each STP. These plans will be tailored to the individual STP and will set forth effective procedures for TESI to operate and maintain each STP over the long term.

- Develop and implement specific programs for managing the Collection Systems associated with each STP (a Collection System consists of the pipes and other devices that convey sewage from its source to the treatment plant).

- Develop and implement utility-wide measures to ensure proper implementation of LPDES permit requirements (including sampling of effluent), employee safety, and staff training.

- Submit reports to EPA and LDEQ documenting implementation of these requirements.

O. The Modified Consent Decree also specifies procedures pursuant to which TESI, after it implements the requirements of the *Long Term Compliance Plan*, will submit Final STP Reports requesting removal of groups of STPs from the Modified Consent Decree. If EPA and LDEQ determine that TESI has fully implemented the requirements of the *Long Term Compliance Plan* at the STP and that the STP is prepared for long-term, sustained compliance with the CWA and the LWCL, EPA and LDEQ will approve the Final STP Report and the particular STP will no longer be subject to the Modified Consent Decree. Ultimately, when the last STP is removed from the Modified Consent Decree, the Modified Consent Decree will be ready for termination according to the procedures specified in Consent Decree Section XXI (Effective and Termination Dates).

P. The Consent Decree Modification includes definitions of additional terms and revised stipulated penalties.

Q. Paragraph 77 of the Consent Decree provides that there shall be no modification of the Consent Decree without the written approval of the United States of America on behalf of

EPA, LDEQ, TESI, and the Court. By their signatures hereto, the United States of America on behalf of EPA, LDEQ, and TESI approve of this modification of the Consent Decree.

R. In the event that the Court does not enter this Consent Decree Modification, TESI shall not be deemed to have admitted that the actions required herein and in the attachments hereto are reasonable and/or necessary measures required to bring the STP's into long term sustained compliance.

S. The Parties agree that the proposed *Agreement and Order Regarding Modification of the Consent Decree with Respect* to TESI will further the purposes set forth in Paragraph 9 of the Consent Decree and is in the public interest.

NOW THEREFORE, before the taking of testimony, without the necessity of trial, without adjudication of any issues of fact or law, without any admission of liability or of any issue of fact or law by TESI, and upon the consent of the Parties hereto,

IT IS ADJUDGED, ORDERED, AND DECREED THAT:

The Consent Decree be amended to include the following provisions and modifications. Except as specifically noted herein, all provisions of the Consent Decree shall remain in effect.

II. ADDITIONAL COMPLIANCE MEASURES AT THE STPS

1. TESI shall implement the *Long Term Compliance Plan* attached to this Consent Decree Modification as Appendix B according to the requirements and schedules specified therein.

2. Within 15 days of the Effective Date of the Consent Decree Modification, TESI will submit to the Secretary of the Louisiana Public Service Commission a "Petition for Approval of Modification of Tariffs" or equivalent application for a rate increase sufficient to allow TESI to implement the requirements of the Modified Consent Decree.

3. TESI shall submit Final STP Reports for each STP according to the requirements and schedules specified in the *Process for Removing STPs from the Consent Decree with Respect to TESI* attached to this Consent Decree Modification as Appendix C.

4. On the Effective Date of the Consent Decree Modification, the Court's February 6, 2015 Order (DN 231) will terminate and be superseded by the requirements of the Modified Consent Decree.

III. CALCULATION OF TIME

5. Any time period specified in the Modified Consent Decree shall be computed as provided in Fed. R. Civ. P. 6.

IV. ADDITIONAL DEFINITIONS

6. The definitions set forth in Paragraph 2 of the Consent Decree are supplemented to include the following:

m. "Capital Improvement Project" or "CIP" means a project that improves the infrastructure of an STP.

n. "Class 4 Operator" means an operator of a sewerage system with at least a Class 4 certification for wastewater treatment and wastewater collection under the provisions for "Water and Wastewater Operator Certification" in La. Admin. Code tit. 48, §§ 7301 to 7339 (2002).

o. "Collection System" means the sanitary sewage collection and transmission system (including all pipes, force mains, gravity sewer lines, lift stations, pump stations, manholes, and appurtenances thereto) owned or operated by TESI that conveys sewage to an STP. The Collection System does not include Private Laterals.

p. "Comprehensive Diagnostic Evaluation Plan" or "CDE Plan" means the plan filed as Docket Number 206-2 that the Court ordered TESI to implement by Order filed March 12, 2009 (DN 207).

q. "Comprehensive Diagnostic Evaluation Report" or "CDE Report" means the report on the comprehensive diagnostic evaluation at each STP that TESI was required to submit pursuant to Paragraph 3 of the CDE Plan.

r. "Consent Decree" means the "Consent Decree with Respect to TESI" entered by the Court on December 21, 2000 (DN 167)

s. "Consent Decree Modification" means this *Agreement and Order Regarding Modification of the Consent Decree with Respect to TESI*.

t. "Effective Date of the Consent Decree Modification" means the date, following completion of the public notice requirements and procedures described in Section XI (Public Notice Requirements for the Consent Decree Modification), upon which this Consent Decree Modification is entered by the Court or a motion to enter the Consent Decree Modification is granted, whichever occurs first, as recorded on the Court's docket.

u. "Final STP Report" means the report to be submitted for each STP pursuant to the *Process for Removing STPs from the Consent Decree with Respect to TESI* attached to this Consent Decree Modification as Appendix C.

v. "Inflow and Infiltration" or "I&I" means flow in the collection system derived from groundwater infiltration and/or the inflow of rainfall.

w. "Long Term Compliance Plan" or "LTC Plan" means the plan attached to this Consent Decree Modification as Appendix B.

x. "Mechanical STP" means an STP that utilizes mechanical means to aerate a mix of wastewater and activated sludge such that organic components within the wastewater are decomposed by biological processes. The typical components of a TESI mechanical plant include a bar screen to remove debris, an aeration tank to mix the wastewater and activated sludge with oxygen, a clarifying tank to settle and separate solids, and a disinfection system.

y. "Modified Consent Decree" means the *Consent Decree with Respect to TESI* entered by the Court on December 21, 2000 (DN 167) as modified by this *Agreement and Order Regarding Modification of the Consent Decree with Respect to TESI*.

z. "Operation and Maintenance Report" or "O&M Report" means the report completed by TESI personnel during each visit to an STP. The O&M Report includes places to record observations made and data gathered related to the STP. The form of the O&M Report used by TESI for Mechanical STPs is attached the *Long Term Compliance Plan* (Appendix B) as Attachment 4. The form of the O&M Report used by TESI for Pond STPs is attached the *Long Term Compliance Plan* (Appendix B) as Attachment 7.

aa. "Paragraph" means a paragraph in the Modified Consent Decree numbered with an arabic numeral followed by a period.

bb. "Pond STP" means an STP that utilizes a large holding or detention pond, usually constructed with earthen dikes, to contain wastewater while sedimentation and biological oxidation occur.

cc. "Private Lateral" means a sewer line that is not owned by TESI and conveys wastewater from a building or other structure to the Collection System owned and/or operated by TESI.

dd. "Professional Engineer with wastewater experience" means a licensed Professional Engineer with appropriate experience including at least one-year of practical experience supporting process control operations at package type wastewater treatment plants.

ee. "Sludge" or "Biological Solids" means the wastewater solid materials being processed by the STP. Sludge or Biological Solids are comprised of organic matter at various stages of decomposition. Examples of Sludge or Biological Solids are the mixed liquor in the STP's aeration tanks and the sludge blanket in the clarifiers.

ff. "Solids" means the solid materials found in raw wastewater and STP process units. Solids are comprised of wastewater organic solids at various stages of decomposition and inorganic materials, such as gravel, rocks, grit, and plastic. The quality and concentration of the solids will vary based on the STP operational parameters and locations of the solids within the STP.

V. MODIFIED STIPULATED PENALTIES

7. On the Effective Date of this Consent Decree Modification, the Stipulated Penalties set forth in this Consent Decree Modification shall replace the stipulated penalties set forth in Paragraphs 41 through 47 of the Consent Decree. Nothing in this Consent Decree Modification shall release TESI from any liability for stipulated penalties that arose under the Consent Decree prior to the Effective Date of this Consent Decree Modification. Any claims by the United States and/or Louisiana for stipulated penalties shall be governed by the provisions of

the Consent Decree or Modified Consent Decree (as applicable) in effect on the day for which a stipulated penalty is sought.

8. TESI shall be liable for stipulated penalties in the amounts specified in this Paragraph for failure within 15 days of the Effective Date of the Consent Decree Modification to submit to the Secretary of the Louisiana Public Service Commission a "Petition for Approval of Modification of Tariffs" or equivalent application for a rate increase sufficient to allow TESI to implement the requirements of the Modified Consent Decree:

Stipulated Penalty Amounts for Failure to Timely Submit to the Secretary of the Louisiana Public Service Commission an Application for Rate Increase	
1st through 30th day	$150 per day
31st through 60th day	$225 per day
61st day and beyond	$300 per day

9. TESI shall be liable for stipulated penalties in the amounts specified in this Paragraph for failure to re-submit each of the previously submitted CDE Reports for Pond STPs with the certification required by *Long Term Compliance Plan* Paragraph 5(e) by the deadline specified in *Long Term Compliance Plan* Paragraph 5(a) or to submit each H&S Environmental Pond STP Report with the certification required by *Long Term Compliance Plan* Paragraph 5(e) by the deadline specified in *Long Term Compliance Plan* Paragraph 5(b):

Stipulated Penalty Amounts for Failure to Timely Re-Submit Each of the Previously Submitted CDE Reports for Pond STPs or to Submit each H&S Environmental Pond STP	
1st through 30th day	$75 per report per day
31st through 60th day	$150 per report per day
61st day and beyond	$225 per report per day

10. TESI shall be liable for stipulated penalties in the amounts specified in this Paragraph for failure to complete the Mechanical STP CDE Work and the Pond STP CDE Work by the applicable deadline specified in the *Long Term Compliance Plan* Paragraphs 2 (Mechanical STP CDE Work) and 5 (Pond STP CDE Work):

Stipulated Penalty Amounts for Failure to Timely Complete Mechanical STP CDE Work and Pond STP CDE Work	
1st through 30th day	$150 per work item or other action per day
31st through 60th day	$225 per work item or other action per day
61st day and beyond	$300 per work item or other action per day

11. TESI shall be liable for stipulated penalties in the amounts specified in this Paragraph for failure to timely implement each requirement of the Holistic Process Control Plan for Mechanical STPs at a Mechanical STP and each requirement of the Holistic Process Control Plan for Pond STPs at a Pond STP as required by *Long Term Compliance Plan* Paragraphs 3 (Mechanical STPs) and 7 (Pond STPs):

Stipulated Penalty Amounts for Failure to Timely Implement the Holistic Process Control Plan for Mechanical and Pond STPs	
1st through 30th day	$75 per requirement per STP per day
31st through 60th day	$150 per requirement per STP per day
61st day and beyond	$225 per requirement per STP per day

12. TESI shall be liable for stipulated penalties in the amounts specified in this Paragraph for failure to timely waste solids at a Mechanical STP pursuant to the requirements of the Holistic Process Control Plan for Mechanical STPs implementing *Long Term Compliance Plan* Subparagraph 3(a):

Stipulated Penalty Amounts for Failure to Timely Waste Solids at a Mechanical STP Pursuant to the Requirements of the Holistic Process Control Plan for Mechanical STPs	
1st through 30th day	$75 per STP per day
31st through 60th day	$150 per STP per day
61st day and beyond	$225 per STP per day

13. TESI shall be liable for stipulated penalties in the amounts specified in this Paragraph for failure to timely conduct the Mechanical STP inspections and to timely take the required actions regarding the presence of solids in the chlorine contact chamber, spills, and leaks pursuant to the requirements of the Holistic Process Control Plan for Mechanical STPs implementing *Long Term Compliance Plan* Subparagraph 3(d) and (e):

Stipulated Penalty Amounts for Failure to Timely Conduct Mechanical STP Inspections and to Take the Required Actions	
1st through 30th day	$75 per inspection or required action per day
31st through 60th day	$150 per inspection or required action per day
61st day and beyond	$225 per inspection or required action per day

14. TESI shall be liable for stipulated penalties in the amounts specified in this Paragraph for failure to timely develop and fully implement the requirements of an STP-Specific Process Control Plans for a Mechanical STPs or Pond STPs as required by *Long Term Compliance Plan* Paragraphs 4 (Mechanical STPs) and 8 (Pond STPs):

Stipulated Penalty Amounts for Failure to Timely Develop and Fully Implement an STP-Specific Process Control Plan for Mechanical and Pond STPs	
1st through 30th day	$150 per requirement per STP per day
31st through 60th day	$225 per requirement per STP per day
61st day and beyond	$300 per requirement per STP per day

15. TESI shall be liable for stipulated penalties in the amounts specified in this Paragraph for failure to timely remove solids from Pond STPs according to the schedule in *Long Term Compliance Plan* Paragraphs 6(a)(iv) and 11:

Stipulated Penalty Amounts for Failure to Timely Remove Solids from Pond STPs	
1st through 30th day	$150 per STP per day
31st through 60th day	$225 per STP per day
61st day and beyond	$300 per STP per day

16. TESI shall be liable for stipulated penalties in the amounts specified in this Paragraph for failure to timely submit the Collection System Comprehensive Diagnostic Evaluation Report Implementation Audit as required by *Long Term Compliance Plan* Paragraph 13:

Stipulated Penalty Amounts for Failure to Timely Submit the Collection System Comprehensive Diagnostic Evaluation Report Implementation Audit	
1st through 30th day	$75 per day
31st through 60th day	$150 per day
61st day and beyond	$225 per day

17. TESI shall be liable for stipulated penalties in the amounts specified in this Paragraph for failure to timely submit the Enhanced Collection System Maintenance Plan required by *Long Term Compliance Plan* Paragraph 14(a), the Supplemental Enhanced Collection System Maintenance Plan required by *Long Term Compliance Plan* Paragraph 14(b), to perform the Additional Collection System Assessments required by *Long Term Compliance Plan* Paragraph 17, to develop and provide to EPA and LDEQ the Schedule for Collection System Improvements required by *Long Term Compliance Plan* Paragraph 18, and/or to timely submit a Quality Assurance Project Plan that complies with the requirements of *Long Term Compliance Plan* Paragraph 23(d):

Stipulated Penalty Amounts for Failure to Timely Submit the Enhanced Collection System Maintenance Plan, Submit the Supplemental Enhanced Collection System Maintenance Plan, Perform the Additional Collection System Assessments, Develop and Provide to EPA & LDEQ the Schedule for Collection System Improvements, and/or Submit a Quality Assurance Project Plan	
1st through 30th day	$75 per submission per day
31st through 60th day	$150 per submission per day

61st day and beyond	$225 per submission per day

18. TESI shall be liable for stipulated penalties in the amounts specified in this Paragraph for failure to timely implement the Enhanced Collection System Maintenance Plan required by *Long Term Compliance Plan* Paragraph 14(a), the Supplemental Enhanced Collection System Maintenance Plan required by *Long Term Compliance Plan* Paragraph 14(b), and/or the Collection System Improvements included in the approved schedule submitted pursuant *Long Term Compliance Plan* Paragraph 18:

Stipulated Penalty Amounts for Failure to Timely Implement the Requirements of the Enhanced Collection System Maintenance Plan, Supplemental Enhanced Collection System Maintenance Plan, and/or the Schedule for Collection System Improvements	
1st through 30th day	$75 per requirement per day
31st through 60th day	$150 per requirement per day
61st day and beyond	$225 per requirement per day

19. TESI shall be liable for stipulated penalties in the amounts specified in this Paragraph for failure to timely complete all collection system improvements by the deadline specified in *Long Term Compliance Plan* Paragraph 19:

Stipulated Penalty Amounts for Failure to Timely Complete all Collection System Improvements	
1st through 30th day	$150 per STP per day
31st through 60th day	$225 per STP per day
61st day and beyond	$300 per STP per day

20. TESI shall be liable for stipulated penalties in the amounts specified below for failure to timely update LPDES Permits according the schedule specified in *Long Term Compliance Plan* Paragraph 20:

Stipulated Penalty Amounts for Failure to Timely Update LPDES Permits	
1st through 30th day	$75 per STP per day
31st through 60th day	$150 per STP per day
61st day and beyond	$225 per STP per day

21. TESI shall be liable for stipulated penalties in the amounts specified below for failure to timely eliminate at each STP identified hazards that reasonably threaten the safety of the public and its employees as specified in *Long Term Compliance Plan* Paragraph 21:

Stipulated Penalty Amounts for Failure to Timely Eliminate Hazards	
1st through 30th day	$75 per safety issue per STP per day
31st through 60th day	$150 per safety issue per STP per day
61st day and beyond	$225 per safety issue per STP per day

22. TESI shall be liable for stipulated penalties in the amounts specified below for failure to timely complete the hydraulic and organic loading analysis program at each STP as required by *Long Term Compliance Plan* Paragraph 22(c):

Stipulated Penalty Amounts for Failure to Timely Complete the Hydraulic and Organic Loading Analysis Program	
1st through 30th day	$75 per analysis per day
31st through 60th day	$150 per analysis per day
61st day and beyond	$225 per analysis per day

23. TESI shall be liable for stipulated penalties in the amounts specified below for failure to timely implement the requirements of the Enhanced LPDES Self-Monitoring and O&M Procedures specified in *Long Term Compliance Plan* Paragraph 23:

Stipulated Penalty Amounts for Failure to Timely Implement the Enhanced LPDES Self-Monitoring and O&M Procedures	
1st through 30th day	$75 per requirement per STP per day
31st through 60th day	$150 per requirement per STP per day
61st day and beyond	$225 per requirement per STP per day

24. TESI shall be liable for stipulated penalties in the amounts specified below for failure to timely conduct the staff training specified in *Long Term Compliance Plan* Paragraph 24(b):

Stipulated Penalty Amounts for Failure to Timely Conduct Staff Training	
1st through 30th day	$75 per day
31st through 60th day	$150 per day
61st day and beyond	$225 per day

25. TESI shall be liable for stipulated penalties in the amounts specified below for failure to timely conduct the staffing assessment and fill necessary vacancies as required by *Long Term Compliance Plan* Paragraph 24(a):

Stipulated Penalty Amounts for Failure to Timely Conduct the Staffing Assessment and Fill Necessary Vacancies	
1st through 30th day	$75 per day
31st through 60th day	$150 per day
61st day and beyond	$225 per day

26. TESI shall be liable for stipulated penalties in the amounts specified below for failure to timely submit complete Discharge Monitoring Reports ("DMRs") required by the applicable LPDES permit and/or a report, certification, or other submittal pursuant to *Long Term Compliance Plan* Paragraph 26:

Stipulated Penalty Amounts for Failure to Timely Submit Complete DMRs and/or a report, certification, or other submittal pursuant to *Long Term Compliance Plan* Paragraph 26	
1st through 30th day	$150 per report, certification, or other submittal per day
31st through 60th day	$225 per report, certification, or other submittal per day
61st day and beyond	$300 per report, certification, or other submittal per day

27. After the deadline for implementing the Site Specific Process Control Plan at an STP under *Long Term Compliance Plan* Paragraphs 4 (Mechanical STPs) or 8 (Pond STPs), as applicable, TESI shall be liable for stipulated penalties in the amounts specified in this Paragraph for each instance in which an STP violates an effluent limitation in the applicable NPDES permit:

Stipulated Penalty Amounts for Violations of Effluent Limitations	
Effluent Limitation	Penalty per effluent limitation per STP
Daily Maximum or Minimum	$500 per violation
Monthly (or other specified time period) Average	$1500 per violation

28. After the deadline for implementing the Site Specific Process Control Plan at an STP under *Long Term Compliance Plan* Paragraphs 4 (Mechanical STPs) or 8 (Pond STPs), as applicable, TESI shall be liable for stipulated penalties in the amounts specified in this Paragraph for each instance in which a Bypass or Unauthorized Discharge occurs:

Stipulated Penalty Amounts for Bypass and Unauthorized Discharge	
Bypass	$1500 per incident
Unauthorized Discharge of less than 500 gallons	$1000 per incident
Unauthorized Discharge of 500 gallons or greater	$1500 per incident

A. For purposes of this Paragraph, the term "Bypass" is defined as set forth at 40 C.F.R. § 122.41(m) and LAC 33:IX.2313.

B. For purposes of this Paragraph, the term "Unauthorized Discharge" is defined as any discharge of wastewater from an STP from any point other than the outfall specified in the applicable NPDES permit, regardless of whether such discharge reaches waters of the United States.

29. TESI shall be liable for stipulated penalties in the amounts specified in this Paragraph for failure to timely develop and submit each Final STP Report according to the schedule set forth in Appendix C (*Process for Removing STPs from the Consent Decree with Respect to TESI*):

Stipulated Penalty Amounts for Failure to Timely Develop and Submit each Final STP Report According to the Schedule set Forth in Appendix C (*Process for Removing STPs from the Consent Decree with Respect to TESI*)	
1st through 30th day	$75 per STP per day
31st through 60th day	$150 per STP per day
61st day and beyond	$225 per STP per day

VI. REVIEW OF SUBMITTALS

30. After review of any plan, report, or other item that is required to be submitted for review and approval pursuant to the Modified Consent Decree, EPA, after consultation with LDEQ, shall in writing: (a) approve the submission; (b) approve the submission upon specified conditions; (c) approve part of the submission and disapprove the remainder; or (d) disapprove the submission.

31. If the submission is approved pursuant to Subparagraph 30(a), TESI shall take all actions required by the plan, report, or other item, as approved. If the submission is

conditionally approved or approved only in part, pursuant to Subparagraphs 30(b) or (c), TESI shall, upon written direction of EPA, after consultation with LDEQ, take all actions required by the approved plan, report, or other item that EPA and LDEQ determine are technically severable from any disapproved portions, subject to TESI's right to dispute only the specified conditions or the disapproved portions, under Section XIII of the Consent Decree (Dispute Resolution).

32. If the submission is disapproved in whole or in part pursuant to Subparagraphs 30(c) or (d), TESI shall, within 45 days or such other time as the Parties agree in writing, correct all deficiencies and resubmit the plan, report, or other item, or disapproved portion thereof, for approval, subject to TESI's right to invoke Dispute Resolution under Section XIII of the Consent Decree (Dispute Resolution).

33. If a resubmitted plan, report, or other item, or portion thereof, is disapproved in whole or in part, EPA, after consultation with LDEQ, may again require TESI to correct any deficiencies, in accordance with this Section, subject to TESI's right to invoke Dispute Resolution under Section XIII of the Consent Decree (Dispute Resolution).

34. If EPA fails to notify TESI of its approval or disapproval of a plan, report, or other item that is required to be submitted for review and approval pursuant to this Modified Consent Decree within 60 days after receiving the submittal, the completion dates for each milestone in the submittal, once approved, shall be extended by the number of days beyond 60 that EPA took for such approval or disapproval provided that TESI can demonstrate that such an extension is reasonable and necessary to meet the deadlines contained therein.

35. Plans, Reports, or Other Items Submitted for EPA and LDEQ for Review and Comment. If a plan, report, or other item is required to be submitted to EPA and LDEQ for review and comment, EPA and/or LDEQ may review the submittal and provide written

comments. If EPA and/or LDEQ provide comments identifying deficiencies in such a submittal and requests that TESI respond to those comments, TESI shall provide a written response to EPA within 30 days of receipt of such comments.

VII. FACILITATE PUBLIC ACCESS TO DOCUMENTS AVAILABLE FROM LDEQ

36. TESI shall maintain a public website and, as part of that website, it shall provide instructions to facilitate public access to documents related to STPs subject to this Modified Consent Decree available through LDEQ's online Electronic Document Management System ("EDMS") (http://edms.deq.louisiana.gov/). For each STP subject to this Modified Consent Decree, the instructions shall include the name of the STP, the full address or other equivalent location information, the LPDES Permit number, and the Agency Interest Number ("AI No.") assigned to the STP by LDEQ. The instruction shall also include clear and helpful instructions on how to access documents and other information related to a particular STP using LDEQ's EDMS. These instructions shall be made available on TESI's website within 30 days the Effective Date of this Consent Decree Modification.

VIII. NOTICES

37. The parties may by written agreement modify the provisions for providing notice specified in Consent Decree Paragraph 75.

IX. MODIFICATION

38. The text of Paragraph 77 of Consent Decree Section XX (Modification) shall be deleted in its entirety and replaced with the following:

> 77. The terms of this Modified Consent Decree, including any attached appendices, may be modified by a subsequent written agreement signed by all the Parties. Where the modification constitutes a material change to this Decree, it shall be effective only upon approval by the Court. If any Party seeks a modification to this Modified

Consent Decree, it shall send a written notice to the other Parties in accordance with Section XIX (Notices) setting forth the requested changes and the reasons therefor. The Parties shall negotiate informally concerning the modification for a period of up to 30 days from the date of receipt of the notice, unless that period is modified by written agreement. If at the end of the period of informal negotiations the Parties are not in agreement, the Party seeking the modification retains any rights it may have to seek modification from the Court pursuant to Federal Rule of Civil Procedure 60(b). Modifications that would not constitute a material change to this Modified Consent Decree and that would not require approval by the Court include, but are not limited to:

a. A written agreement signed by all the Parties to modify Attachment 15 (Reporting Table) to Appendix B (*Long Term Compliance Plan*).

b. A written agreement signed by all the Parties pursuant to Paragraph 39 of the Consent Decree Modification to extend one or more deadlines in Appendix B (*Long Term Compliance Plan*) up to a maximum of one year.

39. The provisions of this Paragraph govern any request by TESI for an extension of one or more deadlines in Appendix B (*Long Term Compliance Plan*) up to a maximum of one year where TESI demonstrates that, as the result of a problem(s) unknown to TESI as of the Effective Date of this Consent Decree Modification, it cannot meet specified deadlines in Appendix B (*Long Term Compliance Plan*). For purposes of this Paragraph, a problem(s) unknown to TESI as of the Effective Date of this Consent Decree Modification shall, without limitation, exclude problems caused by:

a. TESI's financial inability to carry out the provisions of the Modified Consent Decree;

b. TESI's failure to make diligent efforts to obtain any required permits or licenses including submitting timely, complete, and bona fide applications;

c. TESI's failure to operate and maintain one or more STPs according to the requirements of Appendix B (*Long Term Compliance Plan*); or

d. Conditions documented in reports, studies, or other documents prepared by TESI prior to the Effective Date of the Consent Decree Modification and pursuant to an order of this Court including, but not limited to, the Consent Decree, the March 12, 2009 Order (DN 207), and the February 6, 2015 Order (DN 231).

TESI may seek an extension of deadlines pursuant to this Paragraph by submitting a written request to Plaintiffs which identifies the specific deadline or deadlines for which TESI seeks an extension, the duration of the requested extension, a detailed discussion of the problem(s) which caused the delay and the duration of the resulting delay, and a demonstration that the problem(s) causing the delay were unknown to TESI as of the Effective Date of the Consent Decree Modification. TESI may not seek pursuant to this Paragraph an extension of any deadline by more than the duration of the delay caused by the identified problem(s). If Plaintiffs agree to an extension requested pursuant to this Paragraph, such extension will be effective when each Party has signed a written agreement stating that the provisions of this Paragraph apply to the extension and specifying the extensions (up to a maximum of one year) to deadlines in Appendix B (*Long Term Compliance Plan*). If Plaintiffs do not agree to an extension requested by TESI pursuant to this Paragraph within sixty days (or such longer period as is agreed between the Parties) after the request is submitted, then TESI may invoke dispute resolution pursuant to Section XIII (Dispute Resolution) of the Consent Decree.

X. MODIFICATIONS TO CONSENT DECREE SECTION XXI (EFFECTIVE AND TERMINATION DATES)

40. The first sentence of Consent Decree Paragraph 78 shall be amended as follows: "When TESI determines that it has complied with all requirements of this **Modified** Consent Decree, including **submitting a Final STP Report pursuant to Paragraph 3 of Appendix C (*Process for Removing STPs from the Consent Decree with Respect to TESI*) for each STP subject to the Modified Consent Decree and receiving EPA approval for the Final STP Report for each STP subject to the Modified Consent Decree**, ~~it~~ **TESI** shall **so** certify ~~such compliance~~ in writing to the EPA and LDEQ." The remainder of Paragraph 78 remains in effect without change.

XI. PUBLIC NOTICE REQUIREMENTS FOR THE CONSENT DECREE MODIFICATION

41. This Consent Decree Modification shall be lodged with the Court for a period of not less than thirty (30) days for public notice and comment in accordance with Department of Justice policy and 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if comments by the public regarding the Consent Decree Modification disclose facts or considerations which indicate that the Consent Decree Modification is inappropriate, improper, or inadequate. This Paragraph does not create any rights exercisable by the TESI.

42. The Parties agree and acknowledge that final approval by Plaintiff the State of Louisiana, through the Department of Environmental Quality, and entry of this Consent Decree Modification is subject to the requirements of La. R.S. 30:2050.7, which provides for public notice in the official journal of the Parishes of Acadia, Ascension, Assumption, Calcasieu, East Baton Rouge, Iberia, Iberville, Jefferson, Lafayette, Lafourche, Livingston, Orleans, Pointe Coupee, St. Landry, St. Martin, St. Tammany, Terrebonne, and Vermilion and opportunity for public comment, consideration of any comments, and concurrence by the State Attorney

General. Evidence of final approval of this Consent Decree by LDEQ shall be LDEQ's execution of a Motion to Enter the Consent Decree, and LDEQ reserves the right to withdraw or withhold consent based on information provided during the public comment period or if the State Attorney General raises objections. In the event public comments raise issues over the content or terms of the Consent Decree or if the State Attorney General raises objections, the LDEQ may withdraw from this Consent Decree and will not join in the filing of a Motion to Enter the Consent Decree. This Paragraph does not create any rights exercisable by TESI.

XII. MODIFICATIONS TO CONSENT DECREE SECTION IV (PARTIES BOUND AND NOTICE OF TRANSFER)

43. The text of Paragraph 5 of Consent Decree Section IV (Parties Bound and Notice of Transfer) shall be deleted in its entirety and replaced with the following:

> 5. No change in ownership, corporate, or partnership status relating to the STPs will in any way alter the responsibilities of the Intervening Defendant under this Modified Consent Decree. In the event of any conveyance of easement, or other interest in any STP, or any portion of an STP, all of the Intervening Defendant's obligations under this Modified Consent Decree shall continue to be met by the Intervening Defendant. Notwithstanding the previous two sentences, if one or more of the STPs is acquired (a) by a municipal or parish authority and the acquisition is approved by the appropriate utility regulatory authority in consultation with EPA and LDEQ, or (b) by a private party and the private party agrees to comply with all requirements of the Modified Consent Decree at the acquired STP(s) and to be substituted for the Intervening Defendant as a party to the Modified Consent Decree with respect to the acquired STP(s); the acquisition is approved by the appropriate utility regulatory authority; and the acquisition is

approved EPA and LDEQ, the Intervening Defendant shall have no further responsibility for the respective STP(s) subsequent to the acquisition.

XIII. SIGNATORIES TO THE CONSENT DECREE MODIFICATION

44. Each undersigned representative of TESI, the Assistant Attorney General for the Environment and Natural Resources Division of the U.S. Department of Justice, and the undersigned counsel for LDEQ certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree Modification and to execute and legally bind such party to this document.

45. TESI hereby agrees not to oppose entry of this Consent Decree Modification by this Court or to challenge any provision of this Consent Decree Modification unless the United States and LDEQ have given written notice that they no longer support entry of the Consent Decree Modification.

Entered this _____ day of _____ 2016,

_____

United States District Judge
Western District of Louisiana

FOR THE UNITED STATES OF AMERICA:

Date

JOHN C. CRUDEN
Assistant Attorney General
Environment and Natural Resources Division
United States Department of Justice

Sept 12, 2016
Date

MICHAEL T. DONNELLAN
Senior Attorney
Environmental Enforcement Section
Environment and Natural Resources Division
United States Department of Justice
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FOR THE UNITED STATES OF AMERICA:

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Western District of Louisiana

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THE UNDERSIGNED PARTY enters into this Consent Decree Modification in this action captioned United States and the State of Louisiana v. Acadia Woods Add. #2 Sewer Co., et al., and Total Environmental Solutions, Inc., (W.D. La.) (6:98-cv-00687):

FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY:

Date: 9/19/16

MARK POLLINS, Director
Water Enforcement Division
Office of Civil Enforcement
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

Date: 9/20/16

LOREN DENTON, Chief
Municipal Branch
Water Enforcement Division
Office of Civil Enforcement
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

Date: 9/20/2016

DANE A. WILSON, Attorney
Municipal Branch
Water Enforcement Division
Office of Civil Enforcement
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

FOR THE ENVIRONMENTAL PROTECTION AGENCY:

9.28.16
Date

JOHN BLEVINS
Director
Compliance Assurance and Enforcement Division
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

09/28/2016
Date

TUCKER HENSON
Assistant Regional Counsel
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733
Telephone: 214-665-8148
Email: henson.tucker@epa.gov

FOR THE STATE OF LOUISIANA, THROUGH THE DEPARTMENT OF ENVIRONMENTAL QUALITY:

9-30-16
Date

LOURDES ITURRALDE
Assistant Secretary
Office of Environmental compliance
Louisiana Department of Environmental Quality

9-30-16
Date

TED R. BROYLES, II
Attorney III (La. Bar Roll No. 20456)
Legal Division
Louisiana Department of Environmental Quality
P.O. Box 4302
Baton Rouge, Louisiana 70821-4302
Telephone: 225-219-3985
Facsimile: 225-219-4068
Email: Ted.Broyles@LA.GOV

The signatures appearing above, on behalf of the State of Louisiana, Department of Environmental Quality, shall not be effective until the applicable public notice and public comment requirements of La. R.S. 30:2050.7 have been satisfied.

FOR TOTAL ENVIRONMENTAL SOLUTIONS, INC.:

9-12-16
Date

WILLIAM SCHOENING
Chief Executive Officer
Total Environmental Solutions, Inc.
P.O. Box 4037
Houma, Louisiana 70361

UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF LOUISIANA

UNITED STATES OF AMERICA and

STATE OF LOUISIANA, through THE DEPARTMENT OF ENVIRONMENTAL QUALITY,

Plaintiffs,

v.

ACADIA WOODS ADD. #2 SEWER CO.,

ACADIANA TREATMENT SYSTEMS, et al.,

Defendants,

and

TOTAL ENVIRONMENTAL SOLUTIONS, INC.,

Intervening Defendant.

Civil Action No. 6:98-0687

AGREEMENT AND ORDER REGARDING MODIFICATION OF THE CONSENT DECREE WITH RESPECT TO TESI

APPENDIX B

LONG TERM COMPLIANCE PLAN

Long Term Compliance Plan

This Long Term Compliance Plan includes remedial measures designed to bring the Sewage Treatment Plants ("STPs") subject to the "Consent Decree with TESI" entered by the Court on December 21, 2000 (DN 167) into long-term, sustained compliance with the Clean Water Act and the Louisiana Pollutant Discharge Elimination System ("LPDES") permits issued by the Louisiana Department of Environmental Quality ("LDEQ"). The remedial measures contained in this plan are organized into the following sections:

I. Inventory of STPs
II. Remedial Measures for Mechanical STPs
III. Remedial Measures for Pond STPs
IV. Remedial Measures for the Collection Systems
V. Utility-Wide Programmatic Remedial Measures
VI. Reporting and Certification

Corresponding reporting requirements contained in Paragraph 26 are included to allow for reporting and tracking of the implementation of remedial measures.

I. Inventory of STPs

1. **Inventory of STPs.** Attachment 1, "Inventory of Mechanical and Pond Sewage Treatment Plants" ("Inventory") contains a comprehensive inventory of all TESI owned and operated Mechanical and Pond STPs that are subject to the requirements of this Long Term Compliance Plan. The inventory includes STP name, Agency Interest ("AI") number, LPDES permit number, and type (Mechanical or Pond). TESI shall maintain a current inventory of all STPs consistent with the reporting requirements contained in Paragraph 26. If an STP subject to the requirements of this Long Term Compliance Plan is sold or closed, TESI shall update the inventory to reflect that change (in addition to complying with all other applicable requirements of the 2000 Consent Decree with TESI and state and federal statutes and regulations). In the event an STP subject to the requirements of this Long Term Compliance Plan is converted from a Pond to a Mechanical treatment system or from a Mechanical to a Pond a treatment system, TESI shall ensure that the STP is subject to the appropriate remedial measures as specified in Section II (Remedial Measures for Mechanical STPs) or Section III (Remedial Measures for Pond STPs).

II. Remedial Measures for Mechanical STPs

2. **Mechanical STP Comprehensive Diagnostic Evaluation Report Implementation Audit.** Pursuant to the Order filed March 12, 2009 (DN 207) ("the March 12, 2009 Order"), TESI previously implemented the Comprehensive Diagnostic Evaluation Plan (DN 206-2) ("CDE Plan") at all Mechanical STPs and submitted certified Comprehensive Diagnostic Evaluation Reports for each Mechanical STP ("Mechanical STP CDE Reports"). Pursuant to CDE Plan Paragraph 3.2, each Mechanical STP CDE Report included "[i]dentification of all work or other actions proposed by TESI to correct conditions it has identified that currently do or in the future will prevent the STP from achieving long-term, sustained compliance with the [Clean Water Act]." Henceforth, the term "Mechanical STP CDE Work" will be used to refer

to all work or other actions identified by TESI in the Mechanical STP CDE Reports pursuant to CDE Plan Paragraph 3.2 except work or other actions specifically targeted at the Collection System. (Work or other actions specifically targeted at the Collection Systems are independently addressed in Section IV (Remedial Measures for the Collections System) below.) The term "Mechanical STP CDE Work" will also include any Revised Mechanical STP CDE Work under Paragraph 2.e. Not later than 12 months following the Effective Date of the Consent Decree Modification, TESI shall complete a written Mechanical STP Comprehensive Diagnostic Evaluation Report Implementation Audit documenting the completion status of all Mechanical STP CDE Work at each Mechanical STP. The Mechanical STP Comprehensive Diagnostic Evaluation Report Implementation Audit shall include all information specified in Subparagraphs (a) and (b) below. Except as specifically provided in Subparagraph (c), TESI shall complete implementation at each the Mechanical STP of all Mechanical STP CDE Work specified in Subparagraph (b) according to the schedule set forth in that Subparagraph.

a. To the extent that Mechanical STP CDE Work for a particular Mechanical STP was completed prior to the Effective Date of the Consent Decree Modification, TESI shall document all completed work with a written description of the completed work, photographic evidence, and other attributes consistent with the Reporting requirements contained in Paragraph 26.

b. If it is determined by TESI that Mechanical STP CDE Work at a particular Mechanical STP either:

   i. Was not completed prior to the Effective Date of the Consent Decree Modification, or

   ii. Was completed prior to the Effective Date of the Consent Decree Modification but subsequently relapsed into a prior or otherwise inadequate condition,

   then all such Mechanical STP CDE Work shall be identified and TESI shall propose and, except as specifically provided in Subparagraph c , timely implement a written schedule for completing implementation of all Mechanical STP CDE Work as soon as technically feasible but not later than 27 months following the Effective Date of the Consent Decree Modification.

c. In lieu of the schedule specified in Subparagraph b, the Mechanical STP CDE Work specifically identified in this Subparagraph shall be subject to the schedule specified below:

   i. Rigoletes Estates STP (LPDES Permit No. LAG570093-AI No. 19311)—start: 04/26/2018 and end: 05/02/2018:

      1. Repair bottom scrapper

   ii. The Meadows STP (LPDES Permit No. LAG570233-AI No. 40639)—start: 05/25/2017 and end: 04/25/2018

      1. Replace/install inlet baffle

2. Level and replace walls in aeration and clarifier

iii. Cypress Point STP (LPDES Permit No. LAG540099-AI No. 20020)—start: 05/25/2017 and end: 05/31/2017:

1. Level STP

iv. Country Lane (LPDES Permit No. LA0062910-AI No. 40454)—start: 06/01/2017 and end: 06/07/2017:

1. Install new transfer piping

2. Center inlet well, effluent baffle and weir trough

v. Ille Des Cannes STP (LPDES Permit No. LA0074781-AI No. 20010)—start: 05/25/2017 and end: 04/25/2018:

1. Install equalization system

vi. Magenta Plantation STP (LPDES Permit No. LAG530027-AI No. 18827)—start: 05/25/2017 and end: 04/25/2018:

1. Install intermediate containment tank or equalization system

vii. Quail Hollow STP (LPDES Permit No. LA0078247-AI No. 18818)—start: 05/03/2018 and end: 05/09/2018:

1. Repair/replace return activated sludge ("RAS") rake, skimmer and drive motor

viii. Dugas STP (LPDES Permit No. LAG540239-AI No. 41103)—start: 05/02/2018 and end: 05/02/2019:

1. Install flow equalization system

d. As a supplement to the Mechanical STP CDE Reports and to address the period of time since the Mechanical STP CDE Reports were completed, TESI shall conduct a formal evaluation and inventory of each Mechanical STP's needs as they relate to immediate and long-term capital improvements. No later than12 months following the Effective Date of the Consent Decree Modification, TESI shall inspect and evaluate each Mechanical STPs and prepare a written evaluation and inventory as required by this Paragraph. The evaluation and inventory shall include:

i. A list of operational and capital improvements for each Mechanical STP that are necessary for long-term, sustained compliance with the applicable LPDES permit but are not identified in the Mechanical STP CDE Report for that Mechanical STP, and

ii. A schedule for completion of all operational and capital improvements listed pursuant to Subparagraph i. The schedule shall identify dates for completion of all listed items

as soon as technically feasible but not later than 48 months following the Effective Date of the Consent Decree Modification.

TESI shall complete each operational and capital improvements listed pursuant to Subparagraph i in accordance with the schedule prepared pursuant to Subparagraph ii. TESI shall certify completion operational and capital improvements listed pursuant to Subparagraph i as required by Paragraph 26.

e. If TESI determines that long-term, sustained compliance can be achieved at one or more Mechanical STPs through work or other actions different than those proposed by TESI in the applicable Mechanical STP CDE Report(s), then TESI may prepare a Revised Mechanical STP CDE Report. Any Revised Mechanical STP CDE Report(s) must be completed no later than 18 months following the Effective Date of the Consent Decree Modification. Each Revised Mechanical STP CDE Report must fully comply with the requirements of the March 12, 2009 Order including the requirement in CDE Plan Paragraph 3.5 to include a certification signed by the Professional Engineer. Henceforth, the term "Revised Mechanical STP CDE Work" will be used to refer to all work or other actions identified pursuant to CDE Plan Paragraph 3.2 in any Revised Mechanical STP CDE Report prepared by TESI. After the Professional Engineer signs the certification pursuant to CDE Plan Paragraph 3.5 in a Revised Mechanical STP CDE Report, TESI will no longer be required to implement the Mechanical STP CDE Work specified in the original Mechanical STP CDE Report applicable to that STP and will instead implement the Revised Mechanical STP CDE Work specified in the Revised Mechanical STP CDE Report applicable to that STP. No later than 18 months following the Effective Date of the Consent Decree Modification, TESI shall revise the Mechanical STP Comprehensive Diagnostic Evaluation Report Implementation Audit to include all Revised Mechanical STP CDE Work. By that same deadline, TESI shall also submit to EPA for Review and Comment a proposed schedule for implementing all Revised Mechanical STP CDE Work. Where practical, TESI will identify Revised Mechanical STP CDE Work to be commenced immediately. The schedule shall provide that all Revised Mechanical STP CDE Work be implemented as soon as technically feasible but not later than 48 months following the Effective Date of the Consent Decree Modification. TESI shall complete implementation of all Revised Mechanical STP CDE Work according to this schedule.

3. **Holistic Process Control Plan for Mechanical STPs.** TESI shall implement a Holistic Process Control Plan for Mechanical STPs as an interim measure until the STP-specific Process Control Plans for Mechanical STPs, required in Paragraph 4, are completed and implemented for each Mechanical STP. TESI has submitted and EPA and LDEQ have reviewed the Holistic Process Control Plan for Mechanical STPs attached hereto as Attachment 2, and determined that the attachment fulfills the requirements for a Holistic Process Control Plan for Mechanical STPs set forth in this Paragraph. TESI shall implement the attached Holistic Process Control Plan for Mechanical STPs in its entirety beginning on the Effective Date of the Consent Decree Modification. Any future modifications of the Holistic Process Control Plan for Mechanical STPs shall be consistent with all requirements of this Paragraph. The Holistic Process Control Plan for Mechanical STPs shall include:

a. STP Solid Wasting Procedures for regular solids evaluation and wasting to ensure solids wasting will occur within one week of each time solids depth is found to exceed 40% of the total height of the clarifier sidewall unless a 50% dilution settleability test does not show greater settleability than the standard settleability measurement taken. The solids depth measurement, the standard settleability test, and the 50% dilution settleability test must be performed during the same visit to the STP.

b. Solids wasting shall be required regardless of the results of the 50% dilution settleability test if solids depth exceeds 40% of the total height of the clarifier sidewall and:

i. TESI is unable to perform the standard settleability test and the 50% dilution settleability test during the same visit to the STP as the visit during which the solids depth is measured, or

ii. The depth of solids in the clarifier exceeds 60% of the total height of the clarifier sidewall.

c. In addition to the provisions in Subparagraphs a and b above, the STP Solids Wasting Procedures shall ensure:

i. Each time solids wasting at an STP is required, solids shall be removed from the clarifier such that the total depth of the solids in the clarifier is no more than 1/3 of the total height of the clarifier sidewall.

ii. If TESI documents that it has contacted at least three sewage sludge hauling contractors within two business days after a determination under Paragraphs a and b above that wasting of solids is required at an STP and none of the sewage sludge hauling contractors were able to remove the solids from the STP by the applicable deadline, then TESI may invoke force majeure under Section XIV (Force Majeure) of the Consent Decree.

iii. When responding to excessive solids buildup in excess of target levels suspected to be caused by a power or mechanical malfunction, TESI personnel will follow the Mechanical WWTP Sludge Removal Protocol Due to Power and Mechanical Deficiencies Affecting Clarifier ("the Malfunction Protocol"), attached hereto as Attachment 3. If TESI seeks to apply the Malfunction Protocol, it must document that decision so that compliance with the requirements of this Long Term Compliance Plan can be evaluated. Specifically, each time the measured sludge depth in an STP exceeds 40% of the total height of the clarifier sidewall and TESI elects to follow the provisions of the Malfunction Protocol, it must document the event by providing complete information including:

1. The date, location, and result of the initial sludge depth measurement that exceeded 40% of the total height of the clarifier sidewall;

2. Whether TESI suspected that the buildup of sludge was caused by a power or mechanical malfunction;

3. Whether TESI elected to follow the Malfunction Protocol;

4. Whether TESI identified a malfunction within 24 hours and, if so, the type (power or mechanical) of malfunction identified;

5. The date, location, and result of the re-measurement of sludge depth pursuant to Malfunction Protocol ¶ 2; and

6. Whether solids were wasted from the STP after re-measurement and, if so, the date this occurred and the resulting sludge depth.

iv. Solids depths will be measured with a Sludge Judge sampling device and recorded at all mechanical STPs during each regularly scheduled visit by TESI personnel.

d. STP Inspection Procedures to ensure TESI properly inspects Mechanical STPs for solids accumulation in chlorine contact chambers and identifies, responds to, and reports spills and leaks. The STP Inspection Procedures shall ensure:

i. At least weekly, TESI personnel will inspect each Mechanical STP for the presence of floatable and settled solids within the chlorine contact chamber. Any floatable solids in the chlorine contact chamber will be removed by skimming on the same day the problem is identified. If settled solids are present in the chlorine contact chamber, they shall be removed if, at any location within the chlorine contact chamber, the settled solids are deep enough to register when measured with a Sludge Judge sampling device. Removal of floatable and settled solids within the chlorine contact chamber shall be documented by TESI personnel on the applicable plant's Operation and Maintenance Report ("O&M Report"). A blank O&M Report for Mechanical STPs is attached hereto as Attachment 4. TESI shall use the attached O&M Report for all site visits to Mechanical STPs. Any modification of the O&M Report for Mechanical STPs shall, at a minimum, include places to record the same information included in the attachment.

ii. At least weekly, TESI personnel will inspect each Mechanical STP to determine whether spills have occurred. The TESI personnel conducting the inspection will look for spills both in areas adjacent to the Mechanical STP and in locations (including ditches and surface waters) where spilled materials may have flowed through surface conduits. The location where spilled materials came to be located will be referred to as the "spill zone." Where spills have occurred:

1. The TESI personnel conducting the inspection will document the spill on the applicable plant's O&M Report and take photographs at the time of the inspection of the spill zone and any surrounding surface waters within 20 yards of the spill zone.

2. TESI will treat any spill of solids from a Mechanical STP onto the ground as "noncompliance" within the meaning of LAC 33:IX.2701(L)(6) and (7) and will comply with the applicable reporting and other requirements in LAC 33:IX.2701 and any related requirements in the applicable discharge permits issued by LDEQ.

3. Within one week of an inspection that identifies a spill at a Mechanical STP, TESI will cleanup all spills identified during that inspection. Cleanup will include removal and proper disposal of all spilled materials (e.g., sewage, solids, rags), disinfection of the surrounding area, and document the cleanup activities on the applicable plant's O&M Report and take photographs showing the spill zone and any surrounding surface waters within 20 yards of the spill zone.

iii. At least weekly, TESI personnel will inspect each Mechanical STP for leaks. When a leak is identified, the TESI personnel conducting the inspection will document the leak on the applicable plant's O&M Report and take photographs of the leak and the extent of the resulting release. Any material released from the STP as a result of the leak shall be treated as a spill under Subparagraph ii. All identified leaks shall be repaired within 14 days of identification.

e. Site visit schedules for TESI personnel to assess:

i. Integrity of fencing to preclude public access.

ii. Display of signage indicating TESI's ownership, potential hazards of accessing the STP, and a phone number to contact in the event of an emergency or overflow.

iii. Ongoing operability and maintenance of treatment and disinfection units.

iv. Ongoing operability of discharge piping to direct discharges to designated discharge locations.

f. Inventory of operational and backup equipment needed to ensure the proper safety of TESI and contractor personnel and the availability of equipment necessary for timely responses at an STP to spills, leaks, power failures, and situations requiring emergency bypass pumping.

g. Procedures for diagnostic testing and water quality monitoring activities.

4. **STP-Specific Process Control Plans for Mechanical STPs.** TESI shall develop and implement an STP-Specific Process Control Plan at each Mechanical STP. TESI has submitted and EPA and LDEQ have reviewed the Template for STP-Specific Process Control Plans for Mechanical STPs attached hereto as Attachment 5 and determined that the attachment fulfills the requirements set forth in this Paragraph for a template for STP-Specific Process Control Plans for Mechanical STPs. Any future modifications of the attached Template for STP-Specific Process Control Plans for Mechanical STPs shall be consistent with requirements of this Paragraph.

Under the supervision of a Professional Engineer with wastewater experience and/or a Class 4 Operator, TESI shall develop and fully implement STP-Specific Process Control Plans for all Mechanical STPs that follow the attached template according to the requirements of this Paragraph. No later than 12 months following the Effective Date of the Consent Decree Modification, TESI shall prepare a written schedule to develop and fully implement STP-Specific Process Control Plans for all Mechanical STPs as required by this

Paragraph with a deadline to develop and fully implement STP-Specific Process Control Plans for all Mechanical STPs not later than 42 months following the Effective Date of the Consent Decree Modification. In the written schedule TESI shall prioritize the inventory of all Mechanical STPs into four approximately equal sized groups and schedule the completion and implementation of the STP-Specific Process Control Plan for all STPs in each group at 24, 30, 36 and 42 month completion intervals. TESI shall develop and fully implement STP-Specific Process Control Plans for each Mechanical STPs in accordance with the schedule. TESI shall certify completion and implementation of each group of STP Specific Process Control Plans as required by Paragraph 26. Upon implementation at a particular Mechanical STP, the STP-specific Process Control Plans shall supersede the Holistic Process Control Plan for Mechanical STPs for that Mechanical STP. Each STP-Specific Process Control Plan for Mechanical STPs shall include:

a. The specific solids wasting activities necessary at the STP to maintain long-term, sustained compliance with the LPDES permit.

b. Results of existing or newly acquired hydraulic and organic loading analyses and resulting operational set-points and solids wasting criteria and the date of the analyses.

c. The STP Inspection Procedures required in Subparagraph 3.d.

d. The Enhanced LPDES Self-Monitoring and O&M Program required in Paragraph 23.

e. A process by which root cause analyses of all operational and maintenance problems encountered at the STP are conducted and documented to aid problem resolution in the event of future recurrence.

III. Remedial Measures for Pond STPs

5. **Comprehensive Diagnostic Evaluation Report Submission.** Pursuant to the March 12, 2009 Order, TESI previously submitted to the Court CDE Reports for Pond STPs. The CDE Reports for Pond STPs submitted by TESI to the Court did not address management of solids in the Pond STPs and did not include the signed certification required by CDE Plan Paragraph 3.5. Pursuant to this Long Term Compliance Plan, TESI will supplement the previously submitted reports by also submitting diagnostic reports prepared by H&S Environmental, LLC that will address solids management in the Pond STPs ("H&S Environmental Pond STP Reports"). TESI will also obtain the certifications required by Subparagraph e for both the CDE Reports for the Pond previously submitted to the Court and the H&S Environmental Pond STP Reports. Henceforth, the term "Pond STP CDE Reports" will refer jointly to the CDE Reports for the Ponds previously submitted to the Court with the required certification and the H&S Environmental Pond STP Reports with the required certification. Except as specifically provided in this Paragraph, the CDE Reports for Pond STPs shall comply with all requirements in the March 12, 2009 Order. Henceforth, the term "Pond STP CDE Work" will be used to refer to all work or other actions identified by TESI in the Pond STP CDE Reports pursuant to CDE Plan Paragraph 3.2 except work or other actions specifically targeted at the Collection Systems. (Work or other actions specifically targeted at the Collection Systems are independently addressed in Section IV (Remedial

Measures for the Collection Systems) below.) The term "Pond STP CDE Work" will also include any Revised Pond STP CDE Work under Paragraph 2.e.

a. Not later than nine months following the Effective Date of the Consent Decree Modification, TESI shall re-submit the previously submitted CDE Reports for Pond STPs with the certification required by Subparagraph e.

b. Not later than nine months following the Effective Date of the Consent Decree Modification, TESI shall submit the H&S Environmental Pond STP Reports for all Ponds STPs with the certification required by Subparagraph e.

c. Not later than nine months following the Effective Date of the Consent Decree Modification, TESI shall submit a written schedule for implementing the Pond STP CDE Work. In drafting the schedule, TESI will identify Pond STP CDE Work to be commenced immediately, including the Operation and Maintenance Improvements specified in Paragraph 9, the schedule shall provide for completion of such Pond STP CDE Work not later than 18 months following the Effective Date of the Consent Decree Modification. The schedule shall also provide that all other Pond STP CDE Work will be completed by the deadline in Paragraph 10 (i.e. not later than 48 months following the Effective Date of the Consent Decree Modification). In the schedule, TESI shall organize the inventory of Pond STPs into two approximately equal sized groups and schedule the completion of implementation of all Pond STP CDE Work at the Pond STPs in the first group by 36 months after the Effective Date of the Consent Decree Modification and the second group by 48 months after the Effective Date of the Consent Decree Modification. TESI shall update the "Final, System-Wide Schedule for All Required Work That Has Not Yet Been Completed" prepared pursuant to CDE Plan Table 2 (ECF No. 206-2 at 14) to include all Pond STP CDE Work. TESI shall complete implementation at each Pond STP of all Pond STP CDE Work according to this schedule.

d. Not later than 12 months following the Effective Date of the Consent Decree Modification, TESI shall submit a spreadsheet summarizing the estimated quantities of accumulated solids and the quantities of solids to be removed or otherwise treated from each Pond such that the depth of accumulated solids does not exceed 1.5 feet. The estimated solids removal and/or treatment quantities shall be derived from solids profiles included within the diagnostic reports prepared by H&S Environmental, LLC. The spreadsheet shall be provided to EPA for review and comment.

e. In lieu of the certification required by CDE Plan Paragraph 3.5, each Pond STP CDE Report shall be certified as follow:

   i. Each CDE Reports for Pond STPs TESI previously submitted to the Court pursuant to the March 12, 2009 Order will be certified as follows by Michael L. Thompson P.E., CET or by another qualified professional engineer with good standing in the State of Louisiana:

I certify under the penalty of law, specifically making a false statement and/or committing perjury in a pending civil case in the United States District Court for the Western District of Louisiana, to the following:

1. *This Comprehensive Diagnostic Evaluation Report (CDE Report) for the [insert STP name] sewage treatment system with LPDES Permit Number [insert LPDES number] and all attachments were prepared under my direction and supervision. Based upon my inquiry of either the person or persons who manage the system and/or the person or persons directly responsible for gathering the information, the information submitted is true, accurate, complete, and appropriate to support the evaluation required.*

2. *I represent to the Court based on my knowledge, expertise and experience in the area of sewage treatment systems and the specific information evaluated by me in rendering the opinions and conclusions contained in this CDE Report that I have identified remedial actions which I deem beneficial to achieve long term sustained compliance with current permit conditions and requirements of the Clean Water Act based on applicable engineering standards of care. I further represent:*

    a. *The information which has been gathered and upon which I have based my opinions and conclusions set forth in this CDE Report is the type of information customarily relied upon by engineering professionals to evaluate and render opinions regarding the functionality of a sewage treatment system;*

    b. *The opinions and conclusions set forth in this CDE Report are based upon and comply with applicable engineering standards; and*

    c. *All remedial actions recommended herein, if implemented, will improve long term sustained compliance with current permit conditions and the requirements of the Clean Water Act.*

I am aware that submitting false information in connection with this certification may subject me to the charges of perjury or of making a false statement in connection with pending litigation in a United States District Court for the Western District of Louisiana and/or contempt of court.

ii. Each H&S Environmental Pond STP Reports will be certified as follows by Steve Harris of H&S Environmental, LLC or by a qualified professional engineer with good standing in the State of Louisiana:

I certify under the penalty of law, specifically making a false statement and/or committing perjury in a pending civil case in the United States District Court for the Western District of Louisiana, to the following:

1. *This Lagoon Performance Evaluation Report (Lagoon Report) for the [insert STP name] sewage treatment system with LPDES Permit Number [insert LPDES number] and attachments were prepared under my*

direction and supervision using information provided to me by TESI and/or its agents in accordance with a system designed to assure the evaluation of information necessary for the rendering of the opinions and/or conclusions contained in this Lagoon Report.

2. *I represent to the Court based on my knowledge, expertise and experience in the area of sewage treatment lagoon systems and the information evaluated by me in rendering the opinions and conclusions contained in this Lagoon Report that I have identified potential solutions or other actions which if properly and fully implemented will result in the STP achieving long term sustained compliance with current permit conditions and applicable requirements of the Clean Water Act as of September 15, 2015. I further represent that:*

   a. *The information which has been gathered and upon which I base my opinions and conclusions set forth in this Lagoon Report is the type of information customarily relied upon by experts in the field of Lagoon Treatment Systems to evaluate and render opinions regarding the functionality of a Lagoon Treatment System; and*

   b. *All potential solutions or other actions recommended herein are those which I deem necessary to achieve long term sustained compliance with current permit conditions and the requirements of the Clean Water Act. This representation is conditioned on TESI fully and completely implementing the recommendations contained in this Lagoon Report.*

I am aware that submitting false information in connection with this certification may subject me to the charges of perjury or of making a false statement in connection with pending litigation in a United States District Court for the Western District of Louisiana and/or contempt of court.

f. As a supplement to the Pond STP CDE Reports and to address the period of time since the Pond STP CDE Reports were completed, TESI shall conduct a formal evaluation and inventory of each Pond STP's needs as they relate to immediate and long-term capital improvements. No later than 12 months following the Effective Date of the Consent Decree Modification, TESI shall inspect and evaluate each Pond STPs and prepare a written evaluation and inventory as required by this Paragraph. The evaluation and inventory shall include:

   i. A list of operational and capital improvements for each Pond STP that are necessary for long-term, sustained compliance with the applicable LPDES permit but are not identified in the CDE Report for that Pond STP, and

   ii. A schedule for completion of all operational and capital improvements listed pursuant to Subparagraph i. The schedule shall identify dates for completion of all listed items as soon as technically feasible but not later than 48 months following the Effective Date of the Consent Decree Modification.

TESI shall complete each operational and capital improvement listed pursuant to Subparagraph i in accordance with the schedule prepared pursuant to Subparagraph ii. TESI shall certify completion of the operational and capital improvements listed pursuant to Subparagraph i as required by Paragraph 26.

g. If TESI determines that long-term, sustained compliance can be achieved at one or more Pond STPs through work or other actions different than those proposed by TESI in the applicable Pond STP CDE Report(s), then TESI may prepare a Revised Pond STP CDE Report. Any Revised Pond STP CDE Report(s) must be completed no later than 18 months following the Effective Date of the Consent Decree Modification. Each Revised Pond STP CDE Report must fully comply with the requirements of the March 12, 2009 Order including the requirement in CDE Plan Paragraph 3.5 to include a certification signed by the Professional Engineer. Henceforth, the term "Revised Pond STP CDE Work" will be used to refer to all work or other actions identified pursuant to CDE Plan Paragraph 3.2 in any Revised Pond STP CDE Report submitted by TESI. After the Professional Engineer signs the certification pursuant to CDE Plan Paragraph 3.5 in a Revised Mechanical STP CDE Reports, TESI will no longer be required to implement the Pond STP CDE Work specified in the original Pond STP CDE Report applicable to that STP and will instead implement the Revised Pond STP CDE Work specified in the Revised Pond STP CDE Report applicable to that STP. No later than 18 months following the Effective Date of the Consent Decree Modification, TESI shall revise schedule submitted pursuant to Paragraph 5.c to include all Revised Mechanical STP CDE Work and submit the revised schedule to EPA for Review and Comment. In revising the schedule, TESI will identify all Revised Pond STP CDE Work to be commenced immediately, including the Operation and Maintenance Improvements specified in Paragraph 9, and the schedule shall provide for completion of such Revised Pond STP CDE Work not later than 24 months following the Effective Date of the Consent Decree Modification. The schedule shall provide that all Revised Pond STP CDE Work shall be implemented as soon as technically feasible but not later than 48 months following the Effective Date of the Consent Decree Modification. TESI shall complete implementation of all Revised Pond STP CDE Work according to this schedule.

6. **Solids Management Plan for Ponds STPs.**

a. Not later than 12 months following the Effective Date of the Consent Decree Modification, TESI shall develop and provide to EPA for review and approval a Preliminary Solids Management Plan for all STPs that continue to be operated as Ponds that includes:

i. A preliminary cost estimate for solids removal or treatment from each Pond and total estimated cost for all Ponds.

ii. Proposed process(es) for solids removal or treatment.

iii. Proposed method(s) of solids disposal.

iv. A prioritized schedule for solids removal, treatment and disposal for all Ponds with three equally sized groupings. The prioritized schedule shall identify those STPs scheduled for completion within 30, 39, and 48 month completion intervals. The schedule shall ensure that Ponds not currently meeting their permitted effluent limitations are prioritized, followed by those trending towards non-compliance and ultimately that all solids removal and disposal activities are completed not later than 48 months following the Effective Date of the Consent Decree Modification.

b. Not later than 24 months following the Effective Date of the Consent Decree Modification, TESI shall develop and provide to EPA for review and comment a Solids Management Plan for all STPs that continue to be operated as Ponds that includes:

i. A current cost estimate for solids removal or treatment from each Pond and total estimated cost for all Ponds.

ii. Criteria for determining the need for solids removal or treatment in the future.

iii. If TESI requires the services of a state of Louisiana authorized third party contractor to remove solids, TESI shall provide to EPA for review and comment copies of signed contracts that specify the vendor name, schedule for completion, type and number of equipment to be used, and proposed locations for solids disposal. If a third party contractor is not used, TESI shall provide the type and number of equipment to be used and proposed locations for solids disposal.

7. **Holistic Process Control Plan for Pond STPs.** TESI shall implement a Holistic Process Control Plan for Pond STPs as an interim measure until the STP-specific Process Control Plans for Pond STPs, required in Paragraph 8, are completed and implemented for each Pond STP. TESI has submitted and EPA and LDEQ have reviewed the Holistic Process Control Plan for Pond STPs attached hereto as Attachment 6 and determined that the attachment fulfill the requirements for a Holistic Process Control Plan for Pond STPs set forth in this Paragraph. TESI shall implement the attached Holistic Process Control Plan for Pond STPs beginning on the Effective Date of the Consent Decree Modification. Any future modifications of Attachment 6 (Holistic Process Control Plan for Pond STPs) shall be consistent with all requirements of this Paragraph. The Holistic Process Control Plan for Pond STPs shall include:

a. Site visit schedules for TESI personnel to assess:

i. Integrity of fencing to preclude public access.

ii. Display of signage indicating TESI's ownership, potential hazards of accessing STP, and a phone number to contact in the event of an emergency or overflow.

iii. Identification and removal of unwanted vegetation in the form of trees and/or shrubs within Pond cells.

iv. Identification and correction of erosion of cells walls and discharge locations.

v. Ongoing operability of cell baffles, cell transfer piping, and the placement and operability of turtle excluders.

vi. Ongoing operability and maintenance needs of disinfection system and effluent filters, if present.

vii. Ongoing operability of discharge piping to direct discharges to designated discharge locations.

viii. Identification, cleanup, and repair of solids in the chlorine contact chamber, leaks, and spills comparable to Paragraph 3.d.

b. Quarterly influent and inter-pond sampling for CBOD, BOD, TSS, VSS consistent with the recommendations of H&S Environmental, LLC in the H&S Environmental Pond STP Reports.

c. Inventory of operational and backup equipment needed to ensure the proper safety of TESI and contractor personnel and the availability of equipment necessary for timely responses at an STP to spills, leaks, power failures, and situations requiring emergency bypass pumping.

d. Procedures for operator and technician diagnostic testing and water quality monitoring activities.

e. Procedures for TESI personnel and vendors performing maintenance or solids removal and disposal activities.

f. A blank O&M Report for Pond STPs is attached hereto as Attachment 7. TESI shall use the attached O&M Report for all site visits to Pond STPs. Any modification of the O&M Report for Pond STPs shall, at a minimum, include places to record the same information included in the attachment.

8. **STP-Specific Process Control Plans for Pond STPs.** TESI shall develop and implement an STP-Specific Process Control Plan at each Pond STP. TESI has submitted and EPA and LDEQ have reviewed the Template for STP-Specific Process Control Plans for Pond STPs attached hereto as Attachment 8 and determined that the attachment fulfills the requirements set forth in this Paragraph for a template for an STP-Specific Process Control Plan for Pond STPs. Any future modifications of the attached Template for STP-Specific Process Control Plans for Pond STPs shall be consistent with requirements of this Paragraph.

Under the supervision of a Professional Engineer with wastewater experience and/or a Class 4 Operator, TESI shall develop and fully implement STP-Specific Process Control Plans for all Pond STPs that follow the attached template according to the requirements of this Paragraph. Not later than 12 months following the Effective Date of the Consent Decree Modification, TESI shall prepare a written schedule to develop and fully implement STP-Specific Process Control Plans for all Pond STPs as required by this Paragraph with a deadline to develop and fully implement STP-Specific Process Control Plans for all Pond STPs not later than 42 months following the Effective Date of the Consent Decree

Modification. In the written schedule, TESI shall prioritize the inventory of all Pond STPs into four approximately equal sized groups and schedule the completion and implementation of the STP Specific Process Control Plan for all STPs in each group at 24, 30, 36 and 42 month completion intervals. TESI shall develop and fully implement STP-Specific Process Control Plans for each Pond STPs in accordance with the schedule. TESI shall certify completion and implementation of each group of STP Specific Process Control Plans as required by Paragraph 26. Upon implementation at a particular Pond STP, the STP-specific Process Control Plans shall supersede the Holistic Process Control Plan for Pond STPs for that Pond STP. Each STP-Specific Process Control Plan for Pond STPs shall include:

a. The specific operations and maintenance activities necessary at the STP to maintain long-term, sustained compliance with the applicable LPDES permit.

b. Results of existing or newly acquired hydraulic and organic loading analyses and resulting operational set-points and solids wasting criteria and the date of the analyses.

c. The STP Inspection Procedures required in Subparagraph 7.a.

d. The Enhanced LPDES Self-Monitoring and O&M Program required in Paragraph 23.

e. A process by which root cause analyses of all operational and maintenance problems encountered at the STP are conducted and documented to aid in problem resolution in the event of future recurrence.

9. **Complete Operation and Maintenance Improvements for Pond STPs.** Not later than 18 months following the Effective Date of the Consent Decree Modification, TESI shall have completed all of the operation and maintenance improvements recommended within the CDE Reports for Pond STPs. Operation and maintenance improvements shall be defined as:

   a. Fencing,

   b. Signage,

   c. Vegetation control and removal, including duckweed removal,

   d. Erosion control,

   e. Disinfection system operational improvements including cover and removal of solids from the disinfection system, and

   f. Discharge piping improvements.

10. **Pond STP CDE Report Implementation.** Not later than 48 months following the Effective Date of the Consent Decree Modification, TESI shall complete implementation of all Pond STP CDE Work, Revised Pond STP CDE Work, and all work or other actions required to address newly identified deficiencies specified through the supplemental formal evaluations required in Subparagraph 5.f.

11. **Complete Solids Management Plan Activities at Pond STPs.** Not later than 48 months following the Effective Date of the Consent Decree Modification, TESI shall complete all solids removal, treatment and disposal activities consistent with the Solids Management Plan for all STPs that continue to be operated as Ponds submitted pursuant to Paragraph 6.b.

IV. Remedial Measures for the Collection Systems

12. **Applicability.** The following remedial measures presented in Paragraphs 16 through 19 apply to the contributing sanitary sewer Collection Systems for all Mechanical and Pond STPs listed in Attachment 1 (Inventory).

13. **Collection System Comprehensive Diagnostic Evaluation Report Implementation Audit.** TESI shall provide a Collection System Comprehensive Diagnostic Evaluation Report Implementation Audit pursuant to the requirements of this Paragraph. Henceforth, the term "Collection System CDE Work" will be used to refer to all work or other actions targeted at the Collection System identified by TESI in the Mechanical STP CDE Reports and the Pond STP CDE Reports pursuant to CDE Plan Paragraph 3.2. No later than 12 months following the Effective Date of the Consent Decree Modification, TESI shall complete a written Collection System Comprehensive Diagnostic Evaluation Report Implementation Audit documenting the completion status of all Collection System CDE Work at each STP. The Collection System Comprehensive Diagnostic Evaluation Report Implementation Audit shall include all information specified in Subparagraphs (a) and (b) below.

    a. To the extent that Collection System CDE Work for a particular STP was completed prior to the Effective Date of the Consent Decree Modification, TESI shall document all completed work with a written description of the completed work, photographic evidence, and other attributes consistent with the Reporting requirements contained in Paragraph 26.

    b. If it is determined by TESI that Collection System CDE Work at a particular STP either:

        i. Was not completed prior to the Effective Date of the Consent Decree Modification, or

        ii. Was completed prior to the Effective Date of the Consent Decree Modification but subsequently relapsed into a prior or otherwise inadequate condition,

    then all such Collection System CDE Work shall be identified and completed as provided in the implementation schedule required in Paragraph 18.

14. **Enhanced Collection System Maintenance Plan.**

    a. Not later than 12 months following the Effective Date of the Consent Decree Modification, TESI shall submit an Enhanced Collection System Maintenance Plan to EPA for review and approval. The Enhanced Collection System Maintenance Plan shall be developed under the supervision of a Professional Engineer with wastewater experience and/or a Class 4 Operator. The Enhanced Collection System Maintenance Plan shall be consistent with the requirements of this Paragraph and follow the Template for the Enhanced Collection System Maintenance Plan attached hereto as Attachment 9.

TESI shall implement the Enhanced Collection System Maintenance Plan as provided in Section VI (Review of Submittals) of the Consent Decree Modification. Any future modifications of the attached Enhanced Collection System Maintenance Plan shall be consistent with requirements of this Paragraph and Attachment 9 (Template for the Enhanced Collection System Maintenance Plan). The Enhanced Collection System Maintenance Plan will include:

i. A holistic and ongoing program to routinely investigate each Collection System for defects, sources of excessive Inflow and Infiltration ("I&I") as defined by the Ten States Standards, "Ratio of Peak Hourly Flow to Design Average Flow" Graph attached hereto as Attachment 10 and to be in excess of four times base flow, and other operational concerns that could lead or contribute to future sanitary sewer overflows and/or building backups.

ii. A routine maintenance and cleaning program for each Collection System and lift stations that ensures each pipe segment and manhole is inspected and cleaned as necessary once every three years and each lift station is routinely inspected not less than monthly and cleaned as necessary.

1. Collection systems comprised of PVC: The inspection of manholes and sewer line shall be documented with the proper completion of the TESI "Manhole/Sewer Line Inspection & Smoke Testing Report" Form attached hereto as Attachment 11.

2. Collection systems comprised of all materials other than PVC: The inspection of the collection system shall be conducted within 12 months of the Effective Date of the Consent Decree Modification. The inspection of manholes and sewer line shall be documented with the proper completion of Attachment 11 (TESI "Manhole/Sewer Line Inspection & Smoke Testing Report" Form).

iii. An inventory and map of known or suspected high risk/critical areas within each Collection System that are prone to surcharging, sanitary sewer overflows, building backups, or deterioration. The inventory and map shall denote the location, cause, and remedy of all known sanitary sewer overflows and building backups that occur after the Effective Date of the Consent Decree Modification. The inventory and map shall be updated every six month period consistent with the Reporting requirements in Paragraph 26.

iv. Accompanying the inventory and map required by Subparagraph iii above shall be a plan and schedule for frequent or storm-based inspection and/or monitoring of the high risk/critical areas.

v. A schedule to fully implement the Enhanced Collection System Maintenance Plan not later than 36 months following the Effective Date of the Consent Decree Modification.

b. Not later than 36 months following the Effective Date of the Consent Decree Modification, TESI shall develop and fully implement a Supplemental Enhanced

Collection System Maintenance Plan. The Supplemental Enhanced Collection System Maintenance Plan will include:

i. An analysis of the current work order system and its ability to effectively serve and schedule the investigation and cleaning programs required by Subparagraphs a.i and a.ii above. If the current work order system cannot effectively serve and schedule the programs, TESI shall identify improvements and/or software necessary for the work order system and provide a schedule for the improvements and acquisition of any identified materials needed to fully implement the improvements as soon as technically feasible but not later than 36 months following the Effective Date of the Consent Decree Modification.

15. **Collection System Attribute Data.** Within one month after TESI completes implementation of the Collection System CDE Work at an STP, TESI shall have available for its personnel's use paper-based and/or electronic Collection System Attribute Data for each individual Collection System service area denoting:

    a. Sewer main pipe size.

    b. Sewer main pipe type.

    c. Sewer main pipe age, if known.

    d. Sewer main pipe condition, if known.

    TESI shall ensure that the Collection System attribute data for each individual Collection System service area is updated during the Additional Collection System Assessments conducted under Paragraph 17 to include any relevant changes to the sewer main pipe consistent with the Reporting requirements in Paragraph 26.

16. **Collection System Maps.** Within one month after TESI completes implementation of the Collection System CDE Work at an STP, TESI shall have available paper-based and/or electronic map(s) of individual Collection System service areas clearly denoting:

    a. The STP associated with the service area, including STP name, AI number, LPDES permit number, type (Mechanical or Pond), address/location, and latitude/longitude coordinates.

    b. Collection system boundaries including all contributory Collection Systems. Contributory systems would include all Collection Systems which drain into the respective service area including (1) Collection Systems owned or operated by a third party and (2) Collection Systems owned by TESI but not included in Attachment 1 (Inventory).

    c. Locations of sewer mains, manholes, lift stations, force mains, and private laterals, if available.

    d. Locations of known easements or access rights.

e. Number of connections and estimated service population.

TESI shall ensure that each map provides an accurate portrayal of the respective Collection System. TESI shall also ensure that Collection System maps are updated on an annual basis to include any changes in the respective Collection System consistent with the Reporting requirements in Paragraph 26.

17. **Additional Collection System Assessments.** For all Collections Systems that experience a sanitary sewer overflow or an incident that resulted in a building backup that occurs during the first year after the Effective Date of the Consent Decree Modification, TESI shall perform additional capacity assurance and/or condition assessments for the effected Collection System. TESI shall complete the Additional Collection System Assessments in two approximately equal groups at 24 months and 42 months after the Effective Date of the Consent Decree Modification. When conducting the Additional Collection System Assessments, TESI shall use common industry practices such as smoke testing, dye water testing, Closed Circuit Television (CCTV) inspection, and flow metering. TESI shall use the inventory and map of known or suspected high-risk areas required in Subparagraph 14.a.iii as the geographic basis of these assessments. The Additional Collection System Assessments shall identify and document:

    a. The extent of I&I and its sources.

    b. Structural defects causing and/or contributing to blockage, significant deterioration, or collapse.

    c. All required improvements to eliminate I&I and/or structural defects to eliminate future sanitary sewer overflows, building backups, surcharging, blockage, or collapse.

18. **Schedule Collection System Improvements.** Not later than 27 months after the Effective Date of the Consent Decree Modification, TESI shall develop and provide to EPA for review and approval a prioritized schedule to implement the required improvements identified under Paragraph 13 and Subparagraph 17.c. With regard to improvements identified under Subparagraph 17.c, the prioritized schedule submitted 27 months after the Effective Date of the Consent Decree Modification shall include all improvements identified in the first group of Additional Collection System Assessments (scheduled for completion not later than 24 months after the Effective Date of the Consent Decree Modification). The prioritized schedule shall be updated 45 months after the Effective Date of the Consent Decree Modification to include all improvements identified in the second group of Additional Collection System Assessments (scheduled for completion not later than 42 months after the Effective Date of the Consent Decree Modification). The prioritized schedule shall ensure implementation of all Collection System improvements as soon as technically feasible but not later than 72 months following the Effective Date of the Consent Decree Modification. TESI shall prioritize the inventory of necessary Collection System improvements into two approximately equally sized groups with each group scheduled for completion within 48 and 72 months after the Effective Date of the Consent Decree Modification). Those Collection Systems identified as having the most significant I&I and/or other defects shall be included

in within the group to be completed 48 months after the Effective Date of the Consent Decree Modification.

19. **Complete Collection System Improvements.** TESI shall complete all required Collection System improvements within 72 months following the Effective Date of the Consent Decree Modification.

V. Utility-Wide Programmatic Remedial Measures

20. **Updating LPDES Permits.** Not later than the deadlines specified in the table below, TESI shall ensure that it has provided LDEQ with accurate and comprehensive information to ensure the updating of all LPDES permits for all STPs listed in Attachment 1 (Inventory). As set forth in the table below, TESI shall implement the requirements of this Paragraph at each STP within 15-months after the deadline for completing the analysis of hydraulic and organic loading at that STP under Paragraph 22.

Deadlines for Completion of Implementation of the Requirements of Paragraph 20	
Paragraph 22 Group which includes the STP	*Paragraph 20 Deadline for the STP*
All STPs in the Group to be completed within 21 months after the Effective Date of this Consent Decree Modification	30 Months following the Effective Date of the Consent Decree Modification
All STPs in the Group to be completed within 27 months after the Effective Date of this Consent Decree Modification	36 Months following the Effective Date of the Consent Decree Modification
All STPs in the Group to be completed within 33 months after the Effective Date of this Consent Decree Modification	42 Months following the Effective Date of the Consent Decree Modification
All STPs in the Group to be completed within 39 months after the Effective Date of this Consent Decree Modification	48 Months following the Effective Date of the Consent Decree Modification

Consistent with LDEQ's individual and general LPDES permit application requirements located within Sanitary Wastewater Discharge Permit Application, WPS-S and Sanitary General Wastewater Discharge Permit Notice of Intent (NOI), WPS-G, respectively, this information shall include, but is not limited to:

a. STP name, location, type, and service population

b. STP owner and operator

c. LPDES permit number and AI number.

d. Accurate description of the permit revision, including STP addition, upgrade, or construction of a new STP

e. Accurate number of connections to the STP and indirect discharges

f. Accurate and updated treatment facility information

g. Accurate outfall locations, latitude/longitude of discharge points

h. Accurate and updated description of the STP, type of flow measurement/recording device, estimation of raw wastewater flow and load, treatment design capacity, estimated or expected wastewater flow, additional plant information, and sewage sludge use or disposal permit information.

TESI shall update and keep current the STP inventory consistent with the Reporting requirements in Paragraph 26. In the event a permit revision is necessary, TESI shall promptly provide LDEQ with the required information to enable their review and action.

21. **Public and Employee Safety.** TESI shall ensure the safety of the public and its employees from hazards associated with the STPs listed in Attachment 1 (Inventory) consistent with the requirements of this Paragraph. Not later than six months following the Effective Date of the Consent Decree Modification, TESI shall have completed a safety assessment that identifies hazards that reasonably threaten the safety of the public and its employees at each STP. The results of the safety assessment shall be provided in a Safety Assessment Report for EPA's review and comment, consistent the requirements of Paragraph 26. The Safety Assessment Report shall describe all interim or permanent measures that have been implemented within the six-month period to reduce or eliminate the hazards. In the event a permanent remedy cannot be implemented within 6 months, the Safety Assessment Report shall include a schedule for the implementation of a permanent remedy within 42 months.

22. **Hydraulic and Organic Loading Analysis Program.** Not later than 15 months following the Effective Date of the Consent Decree Modification, TESI shall develop and begin implementation of a program for determining the hydraulic and organic loading to the STPs consistent with the requirement in Subparagraphs 4.b and 8.b respectively. The Hydraulic and Organic Loading Analysis Program shall include:

a. The acquisition, training, and use of at least one portable in-line flow measurement device to be available for use by TESI in its Collection Systems.

b. The formal training and application of the Influent Grab Sampling SOP attached hereto as Attachment 12 for influent sampling at its STPs.

c. A prioritized schedule for conducting hydraulic and organic loading analyses for all STPs with four groupings. The schedule shall identify those STPs scheduled for completion within 21, 27, 33, and 39 month completion intervals. All analysis shall be completed within 39 months following the Effective Date of the Consent Decree Modification. If the Professional Engineer with wastewater experience and/or a Class 4 Operator preparing the Site-Specific STP Process Control Plans required by Paragraphs 4 & 8 determines

that existing hydraulic and organic loading analyses for a particular STP are fully equivalent to the analyses that would otherwise be newly acquired pursuant to this Paragraph and sufficient to utilize in the preparation of the Site-Specific STP Process Control Plan for that STP, then TESI may rely on that data for purposes of preparing the Site-Specific STP Process Control Plans required by Paragraphs 4 & 8 and need not perform additional analyses pursuant to this paragraph. Otherwise, TESI shall perform hydraulic and organic loading analyses at the STP pursuant to this Paragraph. Reports submitted pursuant to Paragraph 26 shall clearly state for each STP whether new analyses were conducted or existing analyses were determined to be "fully equivalent to the analyses that would otherwise be newly acquired pursuant to this Paragraph and sufficient to utilize in the preparation of the Site-Specific STP Process Control Plan for that STP".

d. The program shall include written procedures for site selection, use and calibration of equipment, maintenance, field and calibration observations, and data acquisition and recording.

23. **Enhanced LPDES Self-Monitoring and O&M Procedures.** The Enhanced LPDES Self-Monitoring and O&M Procedures required by the Paragraph are to be implemented at all STPs listed in Attachment 1 (Inventory). EPA and LDEQ have determined that TESI can implement the requirements of this paragraph through the measures specifically identified in the Subparagraphs below. The measures specifically identified in the Subparagraphs below shall together constitute the Enhanced LPDES Self-Monitoring and O&M Procedures required by this Paragraph. The Enhanced LPDES Self-Monitoring and O&M Procedures shall be implemented by TESI in their entirety. The Enhanced LPDES Self-Monitoring Procedures includes the following:

a. Standard Operating Procedures ("SOPs") to ensure that effluent samples are routinely collected and results are reported as required by the applicable LPDES permit and state and federal statutes and regulations. Specifically, samples should be collected for analysis at the time the person responsible for collecting samples visits the STP regardless of the condition of the STP or perceived effluent quality at the time of arrival. If TESI concludes that the sample data for a particular STP reflects an effluent quality not consistent with normal operating conditions, it may provide to LDEQ, in addition to the sample data, a letter or other communication describing (1) the unique conditions that were experienced during this sampling event and (2) the corrective actions taken to ensure permit compliance for all future operations. The measures TESI will take to implement this Subparagraph are included in Attachment 13 (Total Environmental Solutions, Inc. Compliance Department Procedures & Protocols). TESI will comply with the requirements of this Subparagraph by implementing Attachment 13 (Total Environmental Solutions, Inc. Compliance Department Procedures & Protocols) beginning on the Effective Date of the Consent Decree Modification. Any future modifications of Attachment 13 (Total Environmental Solutions, Inc. Compliance Department Procedures & Protocols) shall be consistent with requirements of this Subparagraph.

b. SOPs and/or sample and analysis forms and records used to denote:

i. Dates, times, and location of sampling.

ii. Names of individuals performing sampling.

iii. Field observations that describe any and all unique aspects of the sampling event, e.g. effluent was light brown in color.

iv. Analytical methods.

v. Results of analyses.

vi. Dates of analyses.

vii. Time of analyses, as necessary to verify holding times.

viii. Names or initials of analysts.

ix. Instantaneous flow at grab sample stations, if required.

x. Automatic samplers and other sampling equipment are properly maintained, calibrated, and cleaned.

xi. Samples are preserved using methods listed in 40 CFR, Part 136 (e.g., chilled, acidified).

xii. Sample containers are as listed in 40 CFR, Part 136.

xiii. Chain-of-custody is maintained and documented.

The measures TESI will take to implement this Subparagraph are included in Attachment 13 (Total Environmental Solutions, Inc. Compliance Department Procedures & Protocols). TESI will comply with the requirements of this Subparagraph by implementing Attachment 13 (Total Environmental Solutions, Inc. Compliance Department Procedures & Protocols) beginning on the Effective Date of the Consent Decree Modification. Any future modifications of Attachment 13 (Total Environmental Solutions, Inc. Compliance Department Procedures & Protocols) shall be consistent with requirements of this Subparagraph.

c. SOPs for use and data entry into LDEQ's NetDMR System are consistent with the requirements contained in Administrative Order WE-C-14-00788, Agency Interest NOS. 42031 et al, issued by LDEQ on November 10, 2014. The measures TESI will take to implement this Subparagraph are set forth in Section G of Attachment 13 (Total Environmental Solutions, Inc. Compliance Department Procedures & Protocols). TESI will comply with the requirements of this Subparagraph by implementing Section G of Attachment 13 (Total Environmental Solutions, Inc. Compliance Department Procedures & Protocols) beginning on the Effective Date of the Consent Decree Modification. Any future modifications of Section G of Attachment 13 (Total Environmental Solutions, Inc.

Compliance Department Procedures & Protocols) shall be consistent with requirements of this Subparagraph.

d. A formal Quality Assurance Project Plan for sampling, analysis, data management and reporting consistent with EPA's Requirements for Quality Assurance Project Plans (QA/R-5), Publication Number and Date: EPN240/B-0 11003, March 2001. The measures TESI will take to implement this Subparagraph will be set forth in a proposed Quality Assurance Project Plan that TESI will submit to EPA for review and approval. TESI will submit the proposed Quality Assurance Project Plan to EPA no later than sixty days after the Effective Date of the Consent Decree Modification. The proposed Quality Assurance Project Plan will comply with the requirements of this Subparagraph and be developed under the supervision of a Professional Engineer with wastewater experience and/or a Class 4 Operator. TESI will comply with the requirements of this Subparagraph by implementing the Quality Assurance Project Plan approved by EPA pursuant to Section VI (Review of Submittals) of the Consent Decree Modification. Any future modifications of the approved Quality Assurance Project Plan shall be consistent with requirements of this Subparagraph.

e. Operations and Maintenance Procedures for necessary operation, maintenance, and monitoring activities to ensure long-term, sustained compliance with the respective LPDES permit including:

   i. Site visit schedules for TESI personnel with specific responsibilities for both Mechanical and Pond STPs, consistent with the provisions of the Holistic and STP-Specific Process Control Plans.

      1. At each Mechanical STP, the measures TESI will take to implement this Subparagraph during the period from the Effective Date of this Consent Decree Modification until an STP-Specific Process Control Plan has been developed and fully implemented at the STP pursuant to LTC Plan Paragraph 3 are set forth in Section 5 of Attachment 2 (Holistic Process Control Plan for Mechanical STPs). At each Mechanical STP, the measures TESI will take to implement this Subparagraph during the period after an STP-Specific Process Control Plan has been developed and fully implemented at the STP pursuant to LTC Plan Paragraph 3 will be set forth in the applicable STP-Specific Process Control Plan which will include site visit schedules and specific personnel responsibilities (see Sections 3.b (Description of position and responsibilities) and 3.c (General routing information) of Attachment 5 (Template for STP-Specific Process Control Plan for Mechanical STPs)).

      2. At each Pond STP, the measures TESI will take to implement this Subparagraph during the period from the Effective Date of this Consent Decree Modification until an STP-Specific Process Control Plan has been developed and fully implemented at the STP pursuant to LTC Plan Paragraph 7 are set forth in Section 5.8 of Attachment 6 (Holistic Process Control Plan for Pond STPs). At each Pond STP, the measures TESI will take to implement this Subparagraph during the period after an STP-Specific Process Control Plan has been developed

and fully implemented at the STP pursuant to LTC Plan Paragraph 7 will be set forth in the applicable STP-Specific Process Control Plan which will include site visit schedules and specific personnel responsibilities (see Sections 3.b (Description of position and responsibilities) and 3.c (General routing information) of Attachment 8 (Template for STP-Specific Process Control Plan for Pond STPs)).

Any future modifications of Attachment 2 (Holistic Process Control Plan for Mechanical STPs), Attachment 6 (Holistic Process Control Plan for Pond STPs), or an STP-Specific Process Control Plan for a Mechanical or Pond STP shall be consistent with requirements of this Subparagraph.

ii. Inventory of operational and backup equipment needed to ensure the proper operation and maintenance of Mechanical and Pond STPs,

1. At each Mechanical STP, the measures TESI will take to implement this Subparagraph during the period from the Effective Date of this Consent Decree Modification until an STP-Specific Process Control Plan has been developed and fully implemented at the STP pursuant to LTC Plan Paragraph 3 are set forth in Section 5.5 of Attachment 2 (Holistic Process Control Plan for Mechanical STPs). At each Mechanical STP, the measures TESI will take to implement this Subparagraph during the period after an STP-Specific Process Control Plan has been developed and fully implemented at the STP pursuant to LTC Plan Paragraph 3 will be set forth in the applicable STP-Specific Process Control Plan which will include the inventory of operational and backup equipment (see Section 2.c (Site-specific equipment list (s)) of Attachment 5 (Template for STP-Specific Process Control Plan for Mechanical STPs)).

2. At each Pond STP, the measures TESI will take to implement this Subparagraph during the period from the Effective Date of this Consent Decree Modification until an STP-Specific Process Control Plan has been developed and fully implemented at the STP pursuant to LTC Plan Paragraph 7 are set forth in Section 5.4.5.2 of Attachment 6 (Holistic Process Control Plan for Pond STPs). At each Pond STP, the measures TESI will take to implement this Subparagraph during the period after an STP-Specific Process Control Plan has been developed and fully implemented at the STP pursuant to LTC Plan Paragraph 7 will be set forth in the applicable STP-Specific Process Control Plan which will include the inventory of operational and backup equipment (see Section 2.c (Site-specific equipment list (s)) of Attachment 8 (Template for STP-Specific Process Control Plan for Pond STPs)).

Any future modifications of Attachment 2 (Holistic Process Control Plan for Mechanical STPs), Attachment 6 (Holistic Process Control Plan for Pond STPs), or an STP-Specific Process Control Plan for a Mechanical or Pond STP shall be consistent with requirements of this Subparagraph.

iii. Procedures to ensure the safety of TESI and contractor personnel, availability of equipment necessary for emergency response, procedures regarding spill response from the Collection System and STPs, power failure, leaks from the STPs, and emergency bypass pumping.

1. Beginning on the Effective Date of the Consent Decree Modification, the measures TESI will take to implement this Subparagraph are set forth in Attachment 13 (Total Environmental Solutions, Inc. Compliance Department Procedures & Protocols). TESI will comply with the requirements of this Subparagraph by implementing Attachment 13 (Total Environmental Solutions, Inc. Compliance Department Procedures & Protocols) beginning on the Effective Date of the Consent Decree Modification.

2. After an STP-Specific Process Control Plan has been developed and fully implemented at an STP pursuant to LTC Plan Paragraphs 3 or 7 (as applicable), the measures TESI will take at that STP to implement this Subparagraph will additionally include implementation of the requirements set forth in the applicable STP-Specific Process Control Plan which will include the specific equipment lists, a Sanitary Sewer Overflows and Bypass Response Plan, Emergency Operations, and Safety Procedures (see Sections 2.c. (Site-specific equipment list (s)), 5 (Sanitary Sewer Overflows & Bypass Response Plan), 6 (Emergency Operations), and 7 (Safety Procedures) of Attachments 5 (Template for STP-Specific Process Control Plan for Mechanical STPs) and 8 (Template for STP-Specific Process Control Plan for Pond STPs)).

Any future modifications of Attachment 13 (Total Environmental Solutions, Inc. Compliance Department Procedures & Protocols) or an STP-Specific Process Control Plan for a Mechanical or Pond STP shall be consistent with requirements of this Subparagraph.

iv. Procedures for diagnostic testing and water quality monitoring activities. The measures TESI will take to implement this Subparagraph are set forth in Attachment 13 (Total Environmental Solutions, Inc. Compliance Department Procedures & Protocols). TESI will comply with the requirements of this Subparagraph by implementing Attachment 13 (Total Environmental Solutions, Inc. Compliance Department Procedures & Protocols) beginning on the Effective Date of the Consent Decree Modification. Any future modifications of Attachment 13 (Total Environmental Solutions, Inc. Compliance Department Procedures & Protocols) shall be consistent with requirements of this Subparagraph.

v. TESI has submitted and EPA and LDEQ have reviewed the Uniform Solids Wasting Manifest attached hereto as Attachment 14. The measures TESI will take to implement this Subparagraph are to use Attachment 14 (Uniform Solids Wasting Manifest) for all solids wasting events. Any modification of Attachment 14 (Uniform Solids Wasting Manifest) shall, at a minimum, include places to record the same information included in the attachment.

24. **Staffing Assessment and Training.** TESI shall ensure the implementation of this Long Term Compliance Plan through the assessment, hiring, and training of staff consistent with requirements of this Paragraph.

a. Not later than 12 months following the Effective Date of the Consent Decree Modification, TESI shall also undergo and submit for EPA and LDEQ review and approval a staffing assessment to determine the staffing necessary to properly operate all of STPs listed in Attachment 1 (Inventory) under both dry and wet weather conditions and to comply with the remedial measures and reporting requirements of this Long Term Compliance Plan. The staffing assessment shall identify the number, skill set, and certifications needed of its employees to achieve and maintain compliance with this order and the requirements of its LPDES permits. The assessment shall include common tasks such as:

i. Site visits by TESI personnel.

ii. Ongoing operations and maintenance activities for the STPs and Collection Systems.

iii. Wet weather, spill, leak, and emergency response.

iv. Compliance monitoring and sampling.

v. One-time and ongoing assessment and remedial measure activities.

vi. The staffing assessment shall specifically identify if, and how many, additional staff are necessary and with what qualifications.

Upon EPA and LDEQ approval, TESI shall immediately begin the hiring process, if required, and shall work to fill necessary vacancies as soon as technically feasible but not later than 28 months following the Effective Date of the Consent Decree Modification.

b. Not later than 18 months following the Effective Date of the Consent Decree Modification, TESI shall have trained each staff member such that the staff member has the necessary training for the staff member's responsibilities affecting and/or related to implementation of the remedial measures contained in this Long Term Compliance Plan. Thereafter, training shall be conducted for all employees at a minimum frequency of yearly, and within one month following the onset of employment for new hires. Training shall specifically include:

i. Both the Holistic and STP-Specific Process Control Plans.

ii. Solids Wasting, STP Inspection, and Operations and Maintenance SOPs.

iii. Enhanced Collection System Maintenance Plan components.

iv. Enhanced LPDES Self-Monitoring Program and associated Quality Assurance Project Plan.

v. Operations and Maintenance Procedures.

vi. The use and importance of accurately completing field forms, data entry, and reports.

vii. Procedures for identifying, responding to, and reporting sanitary sewer overflows, building backups, spills and leaks.

TESI shall retain records of the training including agendas, syllabi, and staff who attended the training consistent with the Reporting requirements in Paragraph 26.

25. **Professional Engineer with wastewater experience and/or Class 4 Operator.** Not later than six months following the Effective Date of the Consent Decree Modification, TESI shall ensure that at least one individual who is a Professional Engineer with wastewater experience, a Class 4 Operator, or both is employed or readily available. Readily available shall mean the individual can be on-site at a TESI STP within 24 hours of request.

26. **Reporting Requirements.** The table attached hereto as Attachment 15 specifies the reporting requirements associated with the remedial measures to be implemented under this Long Term Compliance Plan ("Reporting Table"). Attachment 15 (Reporting Table) includes the following information:

a. Remedial measures item (e.g., Staff Training).

b. Paragraph number.

c. Sub-Paragraph number, if applicable.

d. Report/submission name.

e. Due date.

f. Frequency of submission, if applicable.

g. Requirements for updating, if applicable.

h. Report content.

i. Report format.

j. Applicable requirements related to review and/or approval of the submittal by EPA and LDEQ and data and/or documents required to be retained by TESI.

TESI shall complete and submit the required information at the schedule and frequency identified within Attachment 15 (Reporting Table). By written agreement of the Parties, the requirements of Attachment 15 (Reporting Table) can be modified.

All records and/or reports submitted under Paragraphs 1 through 26 (including Attachment 15 (Reporting Table) shall be submitted electronically in a searchable format.

27. **Certification Statement**. Each submittal by TESI to EPA and LDEQ required under Paragraph 26:

    a. Will be signed by an official of the submitting party and will include the following certification:

> *I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*

    b. All reports will be submitted to the persons designated in Section XIX (Notices) of the 2000 Consent Decree. EPA, LDEQ, and TESI may modify this method for submitting reports by written agreement.

Long Term Compliance Plan

List of Attachments

UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF LOUISIANA

UNITED STATES OF AMERICA and

STATE OF LOUISIANA, through THE DEPARTMENT OF ENVIRONMENTAL QUALITY,

Plaintiffs,

v.

ACADIA WOODS ADD. #2 SEWER CO.,

ACADIANA TREATMENT SYSTEMS, et al.,

Defendants,

and

TOTAL ENVIRONMENTAL SOLUTIONS, INC.,

Intervening Defendant.

Civil Action No. 6:98-0687

AGREEMENT AND ORDER REGARDING MODIFICATION OF THE CONSENT DECREE WITH RESPECT TO TESI

APPENDIX B

LONG TERM COMPLIANCE PLAN

Attachment 1

Inventory of Mechanical and Pond Sewage Treatment Plants

ATTACHMENT 1
Inventory of Mechanical and Pond Sewage Treatment Plants

	Facility/Permit #	AI No.	Facility Name	Facility Type	Location	Comments
1	LA0074853	20033	Abadie Oaks	M	D	
2	LAG540087	18837	Acadian Acres	M	D	
3	LAG540040	41842	Albany Heights	O	BR	Collection System pipes constructed of clay, not PVC plastic.
4	LA0062791	20032	Arrowhead	M	D	
5	LAG570243 (formerly LA0078166)	18829	Atchafalaya Acres	O	D	
6	LA0118656 (formerly LAG560020)	97646	Atwood Acres	O	D	
7	LAU049000	51898	Audubon Village	O	BR	TESI sold the STP to Livingston Parish on 05/23/2013.
8	LA0077739	40450	Avanti	M	D	
9	LA0074951	20030	Avies Knoll	M	D	
10	LAG540736	18790	Beau Chene	O	HT	
11	LA0078450	18813	Beau Parterre	M	D	
12	LAG570104	18603	Beau Pre	M	BR	
13	LAG560073	31150	Beaujolais Sewerage	O	HT	
14	LAG540088	20029	Beaux Champs	M	D	
15	LAG540875)	41852	Beechwood	M	BR	
16	LA0074870	20028	Bellemont Estates	M	D	
17	LAG541195 (formerly LA0078158)	18826	Bois Bechet	M	D	
18	LAG560157	40845	Brandywine Subdivision	O		On 01/05/2005, the LPDES permit for Brandywine Subdivision STP was terminated. Sewage from the homes previously serviced by the Brandywine Subdivision STP was rerouted to the Grand Marnier Wastewater Treatment Plant (LAG570171; AI 42293), an STP owned by TESI but not included in Appendix A to the Consent Decree.
19	LA0062804	20027	Cajun Estates	O	D	
20	LA0076104	19015	Cajun Village	M	D	
21	LAG540090	18836	Carencro North	M	D	
22	LA0062812	20026	Carencro Village	M	D	
23	LAG540047	40973	Cedar Bend Villas	O	D	
24	LAG570231 formerly LAG560008)	38241	Cedar Grove	O	D	
25	LAG560329 (formerly LA0075116)	20025	Charleston Place	M	D	
26	LAG540091	18861	Chelsea Ridge	M	D	
27	LAG540584	38188	Chenal Estates	O	BR	
28	LA0075086	52399	Cherrywood or Lone Oak Park	O	BR	
29	LAG560330 (formerly LA0060801)	20024	Clearview Estates	M	D	
30	LA0077895	40467	Coach House Manor	M	D	
31	LAG541183 (formerly LA0077755)	18853	Comeaux Estates	M	D	
32	LAG540239	41103	Community Sewer/Dugas	M	HT	
33	LAG560042	41102	Community Sewer/St. Maurice	M	HT	In 2001, flow from the Community Sewer/St. Maurice STP (Appx. A #33, LAG560042, AI 41102) was redirected to the St. Maurice Addendum #3 STP (Appx. A #147, LAG540028, AI 40640). The LPDES permit for the Community Sewer/St. Maurice STP (Appx. A #33, LAG560042, AI 41102) was terminated.
34	LAG540093	18841	Cote Gelee Apt.	M	D	
35	LAG570045	41840	Cotton Fields	M	BR	
36	LAG540621	31147	Country Acres	O	BR	(LIV)
37	LAG540094	20023	Country Acres (LAF)	M	D	
38	LAG540095	18828	Country Acres (STM)	M	D	
39	LAG560224 (formerly LAG540970)	18788	Country Hollow	M	HT	
40	LAG542051 (formerly LA0062910)	40454	Country Lane	M	D	
41	LAG570564 (formerly LA0078875)	19003	Country Meadows/Windy Meadows	M	D	
42	LAG540371	41844	Country Place/Tall Oaks	M	BR	
43	LAG540097	18824	Country Run	M	D	
44	LA0062839	20022	Country Square	M	D	
45	LA0074748	20021	Cross Creek	M	D	
46	LAG560179	43625	Crozier Heights	M	HT	
47	LAG540098	18800	Cypress Land	O	D	
48	LAG540099	20020	Cypress Point	M	D	
49	LAG541209 (formerly LA0078425)	40452	Deer Park	M	D	
50	LA0073946	20019	Derby Heights	O	D	
51	LA0074772	20018	Diamondhead Estates	M	D	
52	LAG570018	41432	Eureka Heights #1 & #2	M	HT	
53	LA0074730	20017	Fairway Village	M	D	
54	LA0062847	20016	Flanders Garden	M	D	
55	LA0078051	40453	Fox Run	M	D	
56	LA0077798	40451	Frenchmens Creek	M	D	
57	LAG540101	18823	Golden Grain	M	D	
58	LA0062898	20015	Grande Stakes	M	D	
59	LAG540102	20014	Green Acres	M	BR	
60	LAG560023	31241	Green Bayou	M	BR	
61	LAG570554 (formerly LA0075132)	20013	Green Meadows	M	D	

ATTACHMENT 1
Inventory of Mechanical and Pond Sewage Treatment Plants

	Facility/Permit #	AI No.	Facility Name	Facility Type	Location	Comments
62	LAG540340	31020	Greenbrier Sub	O	HT	
63	LA0078204	40455	Hackberry Place	M	D	
64	LAG560077	43544	Half Oak	O	HT	
65	LAG540103	20012	Hernandez Heights	M	D	
66	LAG540104	20011	Highland Acres	M	D	
67	LAG540368	41841	Highland Ridge	M	BR	
68	LAG540618	41838	Hillshire	O	BR	
69	LAG542026 (formerly LA0078034)	40456	Hummingbird Plaza/Wolf Creek	M	D	
70	LAG570145	41847	Hunstock Hills	O	BR	
71	LA0074781	20010	Ile des Cannes/Champions/West Park/Westwinds	M	D	
72	LAG560014	19053	Irish Bend	O	D	
73	LAG560167	41628	Island Woods	O	BR	
74	LA0078263	40458	Jackson Square/Pontalba	M	D	
75	LAG570088	41848	Jones Estates	M	BR	
76	LAG560019	20009	June Park	M	D	
77	LAG540105	18822	Kindco	M	D	
78	LAG540106	18834	L.O. Peck/E. Bayou	M	D	TESI sold the STP to Lafayette Utilities (LUS) by instrument recorded 01/05/2016.
79	LAG540375	41846	La Amite	O	BR	
80	LAG540837	19092	La Place Masion	M	D	
81	LAG570144	41845	Lakeside East	M	BR	
82	LAG540107	18821	Lakeside Village	M	D	
83	LAG541206 (formerly LA0078212)	40468	Lakeview Estates	M	D	
84	LA0074764	20008	Lancaster Estates	M	D	
85	LAG540108	18831	Lanexang Village	M	D	
86	LAG570121	43193	Lazy River	O	BR	
87	LAG540109	18820	Lexington Heights	M	D	
88	LAG540372	41850	Madison Place	O	BR	
89	LAG530027	18827	Magenta Plantation	M	D	
90	LAG541201 (formerly LA0074802)	20007	Magnolia Farms I&II	M	D	
91	LA0054500	20006	Magnolia Hills	M	D	
92	LA0066486	43546	Magnolia Park Service (Magnolia Park/St. Maurice)	O	HT	The Collection System for this STP includes the collection systems formerly associated with the Community Sewer/St. Maurice STP (Appx. A #33, LAG560042, AI 41102) and the St. Maurice Addendum #3 STP (Appx. A #147, LAG540028, AI 40640).
93	LAG540110	20005	Magnolia Wood	M	D	
94	LA0078387	40459	Marion Heights	O	D	
95	LAG540370	38152	Martin	O	BR	
96	LAG540619	41839	Martin Lake Resort	O	BR	
97	LAG541005 (formerly LAU1139830)	83642	Maryland Park	M	D	
98	LA0078484	52278	Med South	M	D	
99	LAG540737	18789	Midway	O	HT	
100	LAG570214 (formerly LAG540511)	42540	Mobile Estates	M	HT	
101	LA0075094	20004	Monticello	M	D	
102	LA0077721	40449	Mouton Estates	M	D	
103	LAG541992 (formerly LA0077763)	40460	Nottingham Square	M	D	
104	LAG570229 (formerly 560078)	43542	Oak Grove	M	HT	
105	LAG540376	41851	Oak Hills #1 (Oak Hills Lot 59)	M	BR	TESI sold the STP to Livingston Parish on 05/23/2013.
106	LAG540373	41849	Oak Hills #2 (Oak Hills Lot 35)	M	BR	TESI sold the STP to Livingston Parish on 05/23/2013.
107	LAG540068	20003	Oak Shadows	M	D	
108	LA0074845	20002	Oak Trace	M	D	
109	LAG541208 (formerly LA0077321)	40473	Oakshire /Wimbledon	M	D	
110	LAG540620	41853	Old Perkins Place	M	BR	
111	LAG540113	20001	Oregon Trail	M	D	
112	LAG570548 (LA0062880)	20000	Ossun Heights	M	D	
113	LAG540114	18819	Park 90	M	D	
114	LAG570099	43966	Payne	O	D	
115	LA0078000	18835	Pecan Acres	M	D	
116	LAG540965	81818	Pen's Place (Penn's Place)	O	BR	
117	LAG540374	40641	Pirie Landing	M	BR	TESI sold the STP to Livingston Parish on 01/12/2011.
118	LAG540067	40646	Plantation Gardens	M	BR	
119	LAG570026	41848	Plantation Park	M	BR	TESI sold the STP to Livingston Parish on 01/12/2011.
120	LA0081809	43545	Plantation Trace/Leighton	O	HT	
121	LAG560013	43965	Point Place	O	D	
122	LAG540066	19853	Port East	M	D	
123	LA0078247	18818	Quail Hollow/LA Vill	M	D	
124	LAG540117	19999	Ray Heights	M	D	

ATTACHMENT 1
Inventory of Mechanical and Pond Sewage Treatment Plants

	Facility/Permit #	AI No.	Facility Name	Facility Type	Location	Comments
125	LAG541006 (formerly LAU113361)	83903	Ridgeland Estates	M	D	
126	LAG540145	40643	Rigolets Sports Marina/ Rigolet's Harbor Inn	M	BR	
127	LAG570093	19311	Rigolets Utilities (Rigolets Estates)	M	BR	
128	LAG541207 (formerly LA0074811)	19997	River Road	M	D	
129	LAG560193	42870	Riverbend #1 & #2	O	BR	
130	LA0074586	19998	Rivergreen	M	D	
131	LA0077003	40461	Riverview Estates	M	D	
132	LA0078883	40465	Riverwoods	M	D	
133	LAG560204	84052	Robichaux Ridge	M	D	
134	LA0074861	19996	Rosehill	O	D	
135	LAG540738	19983	Rosethorne	M	HT	
136	LAG541192 (formerly LA0078123)	40457	Royalton Park	M	D	
137	LAG540119	40462	Sandest Plaza	M	D	
138	LA0076678	18936	Sandest Terrace/Place	M	D	
139	LAG540880	40642	Sandy Ridge	M	BR	
140	LA0077925	40466	Sarah Dee	M	D	
141	LA0075281	19995	Shadowwood	M	D	
142	LAG560018	18830	ShangriLa	M	D	
143	LA0075477	19994	Shenandoah Estates	M	D	
144	LA0077771	40469	Southfield Square	M	D	
145	LAG540121	40470	Southfork	M	D	
146	LAG560001	43559	St. Mary Baptist	O	BR	
147	LAG540028	40640	St. Maurice Add. #3	O	HT	Prior to April 2004, TESI combined the treatment systems for the St. Maurice Addendum #3 STP (Appx. A #147, LAG540028, AI 40640) and the Magnolia Park/St. Maurice Subdivision STP (Appx. A #92, LA66486, AI 43546) into a single treatment system with one outfall. The combined system was incorporated into the LPDES permit for the Magnolia Park/St. Maurice Subdivision STP (Appx. A #92, LA66486, AI 43546). The permit for the St. Maurice Addendum #3 STP (Appx. A #147, LAG540028, AI 40640) was terminated.
148	LAG540122	19993	Stanford Place Apartments	M	D	
149	LAG560240 (formerly LAG570089)	43626	Suburban Estates (Suburban Estates Subdivision)	M	HT	
150	LAG540123	18854	Sun Village	M	D	
151	LA0078409	40471	Sundown Place/Robicheaux	M	D	
152	LAG540125	18814	Sunrise Mobile Home	M	D	
153	LAG570131	18673	Tara	O	HT	
154	LA0077917	40474	The Glade	M	D	
155	LAG570233 (formerly LA0104442)	40639	The Meadows	M	BR	
156	LAG570091	43543	Thoroughbred Park	O	HT	Collection System pipes constructed of clay, not PVC plastic.
157	LAG541165 (formerly LAU551005)	87177	Timberly Terrace	M	D	TESI sold the STP to the City of Lake Charles on 07/27/2010.
158	LAG560156	18816	Tournai Gardens	M	D	
159	LAG570557 (formerly LA0076023)	19019	Township South/Sharlo (Township South)	M	D	
160	LA0078182	40472	Trewhill	M	D	
161	LAG560239 (formerly LAU068365)	52439	Twelve Cedars Sub	O	HT	
162	LAG541989 (formerly LA0074829)	19992	Twin Lakes	M	D	
163	LAG541210 (formerly LA0074888)	19991	Vermillion Palms	O	D	
164	LA0077518	38200	Victoria Village	M	D	
165	LAG540128	18842	West Side Strip	M	D	
166	LAG560015	43627	Willowdale	M	HT	
167	LAG540052	18995	Windy Heights	M	D	
168	LAG541184 (formerly LA0075787)	19027	Windy Acres	M	D	
169	LAG540130	19080	Woodland Estates	M	D	
170	LAG540803	19034	Woodlands, The	M	D	
171	LAG540131	18817	Woodridge Estates	M	D	TESI sold the STP to Lafayette Utilities (LUS) effective 06/06/2016.
172	LAG540132	18815	Young Acres	M	D	

UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF LOUISIANA

UNITED STATES OF AMERICA and

STATE OF LOUISIANA, through THE DEPARTMENT OF ENVIRONMENTAL QUALITY,

Plaintiffs,

v.

ACADIA WOODS ADD. #2 SEWER CO.,

ACADIANA TREATMENT SYSTEMS, et al.,

Defendants,

and

TOTAL ENVIRONMENTAL SOLUTIONS, INC.,

Intervening Defendant.

Civil Action No. 6:98-0687

AGREEMENT AND ORDER REGARDING MODIFICATION OF THE CONSENT DECREE WITH RESPECT TO TESI

APPENDIX B

LONG TERM COMPLIANCE PLAN

Attachment 2

Holistic Process Control Plan for Mechanical STPs

Chapter 5 –Operations & Maintenance Programs

All components of the wastewater treatment system shall, at all times, be maintained in the same configuration as permitted, in working order and operated efficiently to minimize upsets, discharges of excessive pollutants, bypassing of discharges from the system, and health hazards and nuisances.

The bypass of any raw or partially treated sewage from a wastewater treatment system is prohibited, except where unavoidable to prevent a potential threat to public health and safety, or severe property damage, and where no feasible alternatives to bypass exist. The use of alternatives to bypassing, such as auxiliary pumping equipment, retention of untreated wastes within unit processes (so long as doing so does not result in backup of sewage into serviced buildings), maintenance during scheduled periods of equipment downtime, or installation of adequate backup equipment shall be utilized to the maximum extent feasible to avoid bypassing.

5.1 Plant Operations

5.1.1 Initial Plant Survey

This section is intended to present a suggested plan of operation for the operator as if he pulls up to the plant in his pickup, opens the front gate, and starts his daily duties after being away from the plant for 16 hours or more.

Sight, sound, smell, and touch are the senses the operator must learn to use in making a quick inspection of the plant. Close observation of the plant during normal operation will enable the operator to identify during the plant survey any possible problems.

Some of the things to take note of are:

1. Does everything look right? Is there any evidence of vandalism, high flows, foaming tanks, or other visual signs or problems?
2. A plant has a characteristic sound while operating. If this characteristic sound is not evident upon arrival, possibly something has gone wrong mechanically.
3. As with sound, the treatment plant should have a characteristic but not unpleasant smell. An abnormal, unpleasant odor may indicate problems.
4. Are the motor bearings too hot to touch? The operator, with experience, will learn the "feel" of housings covering moving parts so that any unusual vibration or temperature change will be noticed.

By making use of the senses to notice the possible problems, the operator should be able to verify quickly that everything is working properly.

If problems should appear, the operator must locate the source of the problem and determine if outside help is needed. The goal is to return the plant to proper operation as soon as possible-no matter how large or small the problem. If the trouble is in the treatment process, either mechanically or biologically, the section on troubleshooting will be helpful in correcting the problem.

5.1.1.1 Site Security

Enclosure of the plant site with a fence and signs designed to discourage the entrance by animals and unauthorized persons is required by the State-adopted wastewater treatment system design guidelines. Immediately upon arriving at the plant, the operator shall assess whether or not the gate is securely locked and the integrity of the entire fence around the site is sufficient so as to preclude access by unauthorized persons. Operators should also ensure that the required signage appears on the exterior of all sides of the plant yard. The signage is to include TESI's name or logo, potential hazards of accessing the facility (e.g., "Wastewater Treatment Facility"), and a phone number to contact in the event of an emergency or overflow.

5.1.1.2 Sewer Spills, Leaks, and Overflows

Spills, leaks, and overflows of untreated sanitary sewer and solids are considered violations of State Regulations, including the facility's LPDES discharge permit. All such unwanted and unauthorized discharges must be reported in accordance with applicable LDEQ regulations, including any special requirements listed in the facility's LPDES discharge permit.

During each site visit, the operator or technician should visually assess each pond site to determine whether spills, leaks, or overflows have occurred since the last visit to the site. The operator or technician should not only inspect the areas immediately adjacent to the pond(s) but also those areas (e.g., ditches and surface waters) where spilled materials may have flowed or otherwise accumulated. The areas where spill materials are identified to have contacted the ground surface are referred to as the "spill zone". The spill, including the description of the spill zone, must be noted on the facility's Spill/Upset report within 24 hours. Following notification of a possible spill, leak or bypass, a crew is dispatched to conduct an investigation. The initial response team is responsible for assessing the cause of the problem and determining the level of effort needed to correct the problem. If the overflow is confirmed, TESI's Manager of Compliance shall complete an online report required by LDEQ. Within 5 days of completion of the online report, the Manager of Compliance shall submit a certified Unauthorized Discharge Notification Report form to LDEQ. Both forms are presented within Appendix 5-1. At a minimum, the information reported shall include:

1. Name and phone number of the responsible person reporting the release;
2. Name of the STP;
3. Date and time of the release;
4. Estimated volume of the release;
5. Location of the release and general description of the spill zone;
6. Name of any affected receiving stream;
7. Whether the release is ongoing at the time of the report; and
8. Photographs of the spill zone and any surrounding surface waters within 20 yards of the spill zone.

In the event of an unauthorized discharge to private lake or waterway, TESI shall notify the management company responsible for each affected lake or waterway. The management company will then determine appropriate response measures for each lake or waterway and will have the responsibility for performing such actions. Response measures may include isolating water supply pumps, posting warning signs around lakes/waterways, residential notifications, lake/waterway sampling, etc.

Within one week of a confirmed spill, leak, or overflow, TESI will complete the removal and proper disposal of all spilled materials (e.g., sewage, solids, rags) and will disinfect the affected area. TESI is to document the cleanup activities on facility's O&M report and shall include photographs of the same areas photographed as part of the initial reporting effort. If the unauthorized release occurred as a result of a leak, then all identified leaks are to be repaired within 14 days of identification.

If everything appears to be operating normally upon initial inspection, the operator should continue with the routine operation and maintenance procedures outlined in the following sections. To organize the daily duties, the plant operator should utilize the outline presented in Section 5.1.8 so that the operator will not overlook certain areas in his or her daily duties.

5.1.2 Sensory Observations

Walking around the plant following the normal flow route gives the operator an idea of the type of wastewater the plant has received since the last visit. Following are some of the indicators of the quality of the wastewater being received and of the plant's performance.

5.1.2.1 Odors

Odors in the area may indicate evidence of septic sewage, scum buildup, or a strong industrial waste in the wastewater. If so, a temporary solution is to wash down the entire area to remove the scum. If grease or industrial waste becomes a problem, the operator should locate the source and attempt to control it at its source through the use of existing ordinances or discussions with the contributor.

Other sources of the odor may be an accumulation of rags and other debris on the comminutor or bar screen. Frequent removal (i.e., daily) and disposal by removing to offsite containers will help to control the odor.

5.1.2.2 Color

The color of the influent tells a lot about the waste. A black color accompanied by a septic odor may indicate that part of the wastewater is staying in level sewer lines during low flow periods. The low flow results in solids settling out and slowing down the flow. Manholes should be inspected for the buildup of sludge and/or sand. These lines and man- holes require periodic flushing. A source of information on how to locate and flush the lines is TESI's manual entitled *Management, Maintenance, & Operations Program: Wastewater Collection Systems.*

A reddish or brown color may indicate silt getting into the lines which, in turn, increases the wear on and requires more frequent maintenance of pumps and other mechanical items. Source of the silt may be a broken line or a side sewer excavation.

5.1.2.3 Water Level

A high-water mark greater than normal in the inlet channel may indicate that a high flow condition occurred during operator's absence or may also indicate plugging downstream in the bar screen or

comminutor. These areas should be checked for proper operation. Comminutor or grinder pump blades may be dull and may not be providing good cutting action.

5.1.2.4 Turbulence

The operator should observe the entire aeration tank surface for turbulence. Though some of his conclusions will be based on past experience, the extent of surface activity will show if the contents are thoroughly mixed throughout the entire aeration tank. Watching the surface for dead spots will tell if mixing is the same throughout the aeration tanks.

Any attempt at equipment modification for eliminating dead spots in the aeration tank should be coordinated with the Manager of Operations and the Manager of Engineering for prior approval. The operator should raise or lower air usage based on Dissolved Oxygen (DO) readings.

If the DO does not increase above 1.0 mg/L when all aeration equipment is operating, it may be due to plugged air lines, or blower not sized right, or high strength waste. If normal air feed fails to raise DO over a 24-hour period, a further check of the mechanical air system may be needed.

5.1.2.5 Surface Foam and Scum

The type of foam or scum, if any, on the aeration tank surface, and to a lesser extent, the color of the mixed liquor gives the operator a clue to how well the process is working.

Fresh, Crisp, White Foam: Only a modest accumulation of white, or at least light colored, crisp appearing foam is usually present on aeration tank surfaces when an excellent final effluent is produced. The operator should take note of the conditions in the process and keep them within these ranges because whatever is happening is just right.

Excessive, Billowing White Foam: If the aeration tanks are covered by thick billows of white sudsy foam, the opera- tor can be quite certain that the sludge is too young and that sludge age should be increased by reducing the sludge wasting rate. Operators who have actually gone through this white foam cycle realize that not all foam is caused by detergents.

Thick, Scummy, Dark Tank Foam: At the other extreme, the operator may observe a dense and somewhat greasy scummy layer of deep tan to brown foam covering the entire aeration tank surface. Such foam almost always indicates that the sludge is too old and possibly over oxidized. In this case, the answer is to increase sludge wasting rates. Here again, the sludge wasting rate should usually be increased gradually, possibly 20 percent of return rate per day, on a day-to-day basis while watching the graph plot to see how the .changes affect the effluent and mixed liquor solids.

Sludge Color and Odor: At times a poor quality, extremely dark brown colored sludge, releasing hydrogen sulfide odors may be seen in the aeration tanks. It does not take much experience to recognize this problem. The solution is to increase air discharge rates immediately to provide a 2·3 mg/L DO in the aerator. A time clock may be necessary to keep the DO up.

When the system is operating well, it will generally have a dark brown aeration tank color and will be accompanied by an earthy odor. If the mixed liquor solids level becomes too low, the odor will either disappear or change to that of fresh grease or lard.

5.1.2.6 Final Effluent Appearance

The operator should also observe the final effluent and the clarifier water surface to see how the process is working.

If the final effluent appears clear or is improving day by day, obviously the operator should continue to do what he has been doing. However, if it appears turbid or contains noticeable solids, trouble may be just around the corner. Visual observations and process control tests will help to show what needs to be done.

At this time, the operator should also take time to assess the condition of the outfall sewer. The outfall sewer was designed, and approved by State Agencies, to discharge treated wastewater to an approved receiving stream based on certain considerations which may include, but not limited to:

a. Preference for free fall or submerged discharge at the site selected;
b. Utilization of cascade aeration of effluent discharge to increase dissolved oxygen; and
c. Limited or complete across-stream dispersion as needed to protect aquatic life movement and growth in the immediate reaches of the receiving stream.

Additionally, the sewer outfall is to be constructed and maintained so as to be reasonably protected against the effects of floodwater, tide, ice, vegetation, or other hazards. During the assessment of the outfall sewer the operator should determine if it is feasible, with the available resources at the time of the site visit, to perform repairs or modifications necessary to return the discharge pipe to its intended functionality. If not feasible, then the operator shall note the need for such repairs on the Sewage Treatment Plant O&M Report and initiate a work order to correct the issue(s).

5.1.2.7 Final Clarifier Surface Appearance

Sludge Bulking: Operators who have experienced true classic sludge bulking find it all too easy to remember and identify. It will usually show up as a uniform sludge blanket that lies a few inches below the surface of the entire clarifier and could even cause the mixed liquor solids to pour out over the final effluent weirs. It may be due to shock loadings and inefficient aeration devices; however, classic sludge building usually is caused by improper operational control rather than by inadequate plant capacity.

This type of bulking, which is practically always associated with young sludge, usually can be eliminated by reducing sludge wasting rates and changing return sludge rates. If a centrifuge is used to find RAS concentrations, the goal should be to adjust the return rate to equal the concentration found in the settlometer settling test after 2-3 hours of settling. This concentration can be found by multiplying the mixed liquor concentration by 1,000 and dividing by the volume settled after 2-3 hours. Adjust the return rate either up_ by 20 percent to cause the desired change and recheck after 24 hours. If this causes improvement, keep going in this direction. If not, move return in other direction. Sludge blanket

in the clarifier should be watched for improvement too. Some sludge may still be lost in the effluent, but the goal is to bring the sludge quality back into a good range.

Sludge Solids Washout: Excessive sludge washout over the final effluent weirs, when the upper surface of the sludge blanket is more than three feet below the clarifier water surface and when sludge settles properly in the process control tests, should not be confused with classic sludge bulking.

Solids washout is generally caused by hydraulic overloading, improper clarifier inlet port arrangements, or faulty final effluent weir locations or a combination of these.

Clumping: At times, large masses of sludge, possibly four inches in diameter, may be seen rising, then bursting, and finally spreading over the clarifier surface. This has sometimes been called "clumping." This may also indicate a need to scrape the sides of sloping clarifiers that do not have mechanical sludge removal.

Ashing: At other times, smaller sludge particles usually deep brown to gray in color, may rise and then spread over the tank surface. Some operators call this "ashing."

This problem occurs when sludge age is too old and it can usually be eliminated by increasing sludge wasting rates. Reducing air discharge rates to the minimum levels that will still maintain aerobic conditions in the aeration tanks may also be helpful.

Straggler Floc: At times, small, almost transparent, very light fluffy, buoyant sludge particles (1/8 to 1/4 inch in diameter) may rise to the clarifier surface near the outlet weirs. This condition is usually worse in a shallow clarifier and may be especially noticeable at high return sludge flow rates. When this type of straggler floc is observed while the final effluent is otherwise exceptionally clear, and if it is present even during relatively low discharge periods, sludge age should be increased. Since this type of straggler floc usually occurs at relatively low mixed liquor solids concentrations and is usually worse during the early morning hours, it may be reduced by cutting back on sludge wasting rates 10-20 percent. This will increase sludge age. Return sludge and air discharge rates are controlled by results calculated from other process control tests.

Pin Floc: Very small compact pin floc, usually less than 1/32 of an inch in diameter, may be observed suspended throughout moderately turbid final clarifier tank contents. This is a strong indication that sludge age is too high and the sludge has become over oxidized. This results from high return rates which cause the sludge to make too many passes through the aeration in 24 hours.

The settlometer test will confirm this if rapidly-settling, discrete sludge particles appear as individual “grains" or granular rather than clumping together. The sludge tends to accumulate rather than compact while forming a settlometer sludge blanket. In essence, granular sludge particles are falling through turbid liquor rather than compacting and squeezing out a clear final effluent. When final clarifier characteristics are confirmed by the settlometer test, the sludge wasting rate should be increased while return sludge flow is adjusted to meet other control test demands.

5.1.2.8 Return Activated Sludge

The Return Activated Sludge (RAS) condition should be observed as it discharges into the aeration basin. A good RAS has a brown color, no offensive odor and good settling in the clarifier prior to pumping to the aeration tank.

A black and odorous sludge indicates that it has turned septic. Two possible causes are an excessively low rate of sludge return and not enough air supplied to the aeration basin. The first results in the sludge remaining in the clarifier too long and since it doesn't receive aeration, the sludge turns septic. The aeration basin should be checked for dissolved oxygen to see if low DO (less than 0.5 mg/L) is the cause.

Sludge should be returning from the clarifier all the time unless it is necessary to shut it off to waste and then only for short periods of time (1-2 hours maximum). Material that blows into the clarifier may plug the suction line. This requires rodding out of the RAS line.

Air lift pumps may not operate because the air control valve vibrates shut. Valves should be checked each time the operator passes them. Handles and stems should be adjusted so they are tight and not knocked out of adjustment by bumping or vibration.

The meter or measuring device for return sludge should be read and a record kept on rate of return as well as total pumped each day.

Float type meters need to be checked daily to be sure nothing interferes with free operation of the float. Grease and sticks sometimes cause the float to stay in one place regardless of the flow, causing false readings.

Weirs that measure flow must be kept clean. Grease, weeds, trash, or thick sludge that collects on the weir edges will cause falsely high readings. The weirs should be checked and cleaned daily.

5.1.2.9 Solids Accumulation in Chlorine Contact Chamber

During each site visit, TESI personnel shall inspect each chlorine contact chamber for the presence of floatable and settled solids. Any floatable solids in the chlorine contact chamber shall be removed by skimming on the same day the problem is identified. If settled solids are present in the chlorine contact chamber, they shall be removed if, at any location within the chlorine contact chamber, the settled solids are deep enough to register when measured with a Sludge Judge sampling device. Removal of floatable and settled solids within the chlorine contact chamber shall be documented by TESI personnel on the applicable plant's Operation and Maintenance Report ("O&M Report").

5.1.3 General Facility Operation

5.1.3.1 Pretreatment

Pretreatment facilities, such as the comminutor and/or bar screen typically operate without any daily adjustment provided they are maintained according to the information given in TESI's plant checklist and according to manufacturer's recommendations if any mechanical equipment is involved in the pretreatment process.

All walkways in the pretreatment as well as other areas should be kept clean and free of grease.

5.1.3.2 Aeration Basin

One of the keys to proper activated sludge operation is maintaining the correct Dissolved Oxygen (DO) concentration throughout the aeration basin. Two items are beneficial in insuring that the aerators supply the correct amount of oxygen. These are a timer and a method for measuring DO. The amount of oxygen that the treatment system needs varies throughout the day due to the changing flow into the plant. A blower supplying air to diffusers or a surface aerator may be connected to a timer so that air can be regulated as needed. The DO measurements are used to verify the settings on the timer. A possible operating scheme for a municipality or residential area is as follows:

7 a.m.- 9 p.m.: Blower or Aerator On All the Time

9 p.m.- 2 a.m.: On 15 Minutes, Off 10 Minutes

2 a.m.- 7 a.m.: On 10 Minutes, Off 10 Minutes

A DO reading should be taken at 8 a.m.:

If above 4.0 mg/L, cut back on the air at night.

If below 1.0 mg/L, increase aeration time at night.

Besides the normal daily variations in flow, other major effects on the operation of the aeration basin are:

1. Hydraulic overload (flow is greater than that for which the plant is designed) which may be due to a growth in the service area of the treatment plant or to infiltration into the sewer lines during storms and high groundwater levels. The effect can be reduced by installing a surge basin ahead of the treatment plant to equalize the flow throughout the day. A representative of the state regulatory agency or the consulting engineer should be consulted for assistance before building a surge basin.
2. Organic overload usually occurs during the 7 a.m. to 9 p.m. period when the treatment plant is already receiving its heaviest load and someone dumps a strong waste into' the sewer. If this is suspected, the operator should make a survey of places such as schools and other institutions to see if food waste, dishwashing water, and/or shower drainage is entering the sewer at the same time. If so, the problem should be explained to institution officials and alter- natives suggested. These might include scheduling dumping during low flow period or installing a holding tank to allow waste discharge to be spread over longer periods.
3. Slug loads, such as cooking fat or oil, can cause problems because the bugs may not be able to use it as food fast enough. It can also be unsightly and odorous. Restaurants and large institutions should be checked as possible sources of fat. Motor oil may also come to the plant from service station sumps that are illegally connected to the sewer system.
4. The amount of activated sludge returned to the aeration basin is important to having good treatment. Return sludge pumps should be properly maintained and the settlometer test

should be run daily to tell if the sludge is settling properly.

5. Sludge should be periodically wasted to maintain the proper balance in the system. The settlometer test and amount of solids in the system should be used to gain information on when to waste.

5.1.3.3 Clarifier and Return Activated Sludge

The key to good clarifier performance is maintaining calm conditions so that the solids will settle to the bottom. Two things that might upset these calm conditions are:

1. Too high a sludge return rate (over 100 percent of influent rate) tends to disturb the sludge blanket at the bottom of the clarifier and causes solids to rise and flow over the effluent weir. The rate should be set to maintain the concentration found after 1.5 to 3.0 hours settling in the settlometer when the plant is producing clear effluent.
2. If a plant is operating at or near its hydraulic capacity, the wastewater isn't detained as long in the clarifier and the efficiency of the settling is affected. Continuous operation of the scum skimmer could provide enough additional turbulence to further hinder settling. If such is the case, the operator should try operating the skimmer just often enough to keep from losing scum in the effluent.

The return activated sludge should be pumped either continuously at a steady rate or at regular intervals. Care must be taken not to pump the sludge so fast that it becomes too thin or disturbs the clarifier. Neither should it be so slow that the sludge blanket builds up.

In a rectangular clarifier, the operator might experience sludge building up in the corners and turning septic. If such is the case, the operator may have to scrape the corners daily with a long handled scraper so that the sludge will be picked up by the return sludge pump.

5.1.3.4 Sludge Wasting

Activated sludge plants may occasionally build up excess sludge and require periodic wasting. Process control tests, such as the settle- meter and MLSS solids, should be used to determine when and how much to waste. All wasting should be done in small amounts, not more than 20 percent of the total sludge volume per day until the desired level is reached. Larger waste amounts may upset the balance maintained by the biological system.

Sludge age, which is controlled by the sludge wasting rate, indicates the approximate number of days that an aver- age activated sludge "bug" remains in the system before being wasted. Too much sludge wasting will reduce sludge age by increasing the relative amount of newly developed floc in the system. If wasting rates are too low, it will increase the number of days the sludge is kept in the system and will increase the relative amount of older sludge.

Sludge wasting rates should be reduced gradually on a day-to-day basis to correct the problem of excessive white foam. Best results are usually found by reducing the wasting rate approximately 20 percent of return flow on each successive day until the mixed liquor is back to normal. When things

are correct, the operator should keep the lowered wasting rate for about three more days to allow the sludge to stabilize. The operator should plot volume settled sludge and sludge settling time on a graph as shown in Section 3 Settlometer, which will alert him or her to future control adjustments that may be needed. Wasting usually should not be stopped completely. When sludge is settling very poorly and sludge is bulking at the same time white foam is forming, it may be corrected by reducing the air feed rate to 1 .0 mg/L or less DO.

Following is a method for wasting sludge from plants without an aerobic digester or holding tank: Shut the return sludge pump off but still allow the mixed liquor to flow to the clarifier. This action concentrates the solids in the bottom of the clarifier. The volume of sludge should then be estimated by the depth of the sludge layer. A portable pump or an adapter on the return sludge line could be used to transfer the sludge to a tank truck for hauling to an approved site designated by the regulatory agency. Assistance should be obtained from a consultant and the regulatory agency.

Refer to Chapter 6 of this manual for a detailed discussion of TESI's Sludge Management Plan, including more detailed sludge wasting procedures.

5.1.3.5 Disinfection

Disinfection of the wastewater, usually by tablet chlorination, must be a continuous process. Chlorine residual tests should be run as described in the testing equipment manufacturer's instructions to ensure proper disinfection of the effluent stream is occurring.

The following items are important to effective and safe operation of the disinfection process:

1. An adequate detention time, generally 15 minutes, is necessary to allow the chlorine to contact and kill the bacteria. Fifteen minute detention and effective mixing can be verified by adding dye at the point of chlorine discharge and check the time required for the majority of the dye to appear in the effluent. Baffles should be maintained in satisfactory condition to prevent short circuiting, or reduction of the detention time.
2. Addition chlorine tablets should be brought the facility at each site visit by a Technician or Operator. The amount of chlorine tablets used should be recorded on the Sewage Treatment Plant O&M Report in order to establish typical chlorine consumption rates for the facility.
3. The tablet chlorinator, and connections to, should be checked at each site visit for leaks. The tablet chlorinator and all connections thereto, shall be self-supporting to prevent undue stress on the joints which can result in decrease life of the equipment and/or leaks.

5.1.4 Final Plant Survey

Before leaving for the day, one final inspection should be made around the plant. The following questions may help in seeing that the operator has left the plant in a condition that it will operate properly until the next time it is attended.

1. Are there any pieces of equipment that are running poorly that may have to be checked before the next scheduled day of operation (hot bearings, loose belts, etc.)?
2. Are return sludge rates set at correct level?

3. Are flow measurement devices, such a flowmeters or V-notch weirs, clean and operating?
4. Are inlet gates set properly in case of high flows before the next plant visit?
5. Are air flow rates set properly?
6. If some processes are time-clock controlled, are time clocks set?
7. If remote alarms are used to warn someone about power or equipment failures, are these set to turn on?
8. Is equipment stored and locked so as to prevent vandalism?
9. Are outside lights on or set to come on?
10. Is plant secured to prevent vandalism?

5.1.5 Plant Checklist

TESI has provided each operator and technician with a detailed checklist for the operation and maintenance schedule for a package plant. Although it is not a complete list of everything the operator could possible observe it operating a mechanical treatment facility, it will serve as an excellent guide for setting up a schedule for his or her own plant. The schedule will help the operator organize work in a step-by-step fashion and it will also help relief operators or new personnel who are not familiar with the plant.

A blank Sewage Treatment Plant O&M Report is to be used as a guide for the minimum duties required. Most of the items are visual observations or maintenance needs that take little time if performed according to schedule. With regular attendance, the operator will develop ways to combine some of the duties. In many package plants that are looked after regularly by a conscientious operator, the scheduled items can be accomplished in one to one and one-half hours a day, allowing the balance of the time for lab and other duties.

5.2 Process Control, Analysis, and Interpretation

After the general theory of the activated sludge process and the plant units necessary for operating the system become familiar, one must learn to control them. The purpose of the Process Control, Analysis, and Interpretation section of this chapter is to help the operator learn how to control this process. By using test results and calculations to provide needed information on the activated sludge process, the operator will be able to make the necessary decisions to achieve the degree of treatment the plant is designed to provide.

The operator, in coordination with the Manager of Operations and the Manager of Engineering, must make an overall evaluation of the plant and then decide on an operating strategy. TESI is in the process of developing procedures and operating strategies for each, individual mechanical system. In the absence of such a system-specific Process Control Plan, the following factors must be considered.

5.2.1 Summary of Process Control Parameters

The following is a summary of the process control parameters, and their typically accepted ranges, that are monitored and controlled by TESI's Operations and Compliance staff. The acceptable range of the process control parameters can vary from facility to facility – possibly other than the range shown

below; therefore, Operators should consult with the Manger of Engineering and/or the system-specific MOM Program document (under development) for more specific guidance.

Table 5-1: Extended Aeration Process Control Parameters

Parameter	Minimum Value	Maximum Value	Units
Dissolved Oxygen	2	4	mg/L
RAS Rate	50%	150%	Of Average Daily Flow
MLSS	2000	6000	mg/L
F/M Ratio	0.05	0.15	lb BOD/lb MLVSS
Cell Residence Time	15	20	days
30-minute Settleability	20%	50%	
Clarifier Sludge Blanket Depth	1 ft	40% of clarifier depth	
Residual Chlorine	0.2	1.5	mg/L

5.2.2 Summary of Process Control Sampling Locations, Frequency, & Responsible Positions

Listed below are sampling locations and positions responsible for tests that can be performed at a treatment plant. The list includes both those for operational control of the plant and are used to confirm conditions suspected in plant observation, and those that measure the efficiency of the treatment system and are used for reporting to the state regulatory agency. The tests indicated in bold type are those for which the procedure is described in this Section.

Note: Sampling requirements and procedures for compliance purposes is covered under a separate TESI manual entitled, *Compliance Department Procedures and Protocols*. (See Appendix 5-2).

Table 5-2: Sampling Locations, Frequency, & Responsible Positions

Parameter	Location	Frequency	Responsible Position
Dissolved Oxygen	Aeration Basin • Front • Middle • Rear Chlorine Contact Chamber • Effluent	(*applies to all*) Each Compliance Sampling Event	(*applies to all*) Compliance Sampling Staff
RAS Rate	Discharge of RAS line into aeration basin	Weekly	Operators & Technicians

MLSS	Aeration Basin • Front • Middle • Rear	(*applies to all*) Each Compliance Sampling Event	(*applies to all*) Compliance Sampling Staff
Cell Residence Time		Monthly	Calculated by Manager of Engineering
30-minute Settleability	Aeration Basin	1. Weekly 2. Each Compliance Sampling Event	1. Operators & Technicians 2. Compliance Sampling Staff
50% Dilution Test	Aeration Basin	As needed based on 30-minute settleability test results	1. Operators & Technicians 2. Compliance Sampling Staff
Sludge Blanket Depth(s)	Clarifier • @ RAS intake Chlorine Contact Chamber	(applies to both locations) 1. Weekly 2. Each Compliance Sampling Event	(applies to both locations) 1. Operators & Technicians 2. Compliance Sampling Staff
Residual Chlorine	Chlorine Contact Chamber Effluent	Each Compliance Sampling Event	Compliance Sampling Staff

5.2.3 Process Control Analysis and Interpretation

5.2.3.1 Dissolved Oxygen Level in the Aeration Basin

Dissolved oxygen is one of the most important ingredients of the mixture in the aeration chamber. Oxygen is necessary for aerobic bacteria to use organic material; without it, septic conditions will result. The amount (concentration) of oxygen that can be dissolved in the mixed liquid is temperature dependent; the colder the water, the greater the amount of oxygen that can be dissolved. The oxygen concentration is measured in milligrams per liter (mg/L); the ideal oxygen concentration in the aeration chamber is 2 mg/L. The dissolved oxygen in a clarifier should be at least 1 mg/L to prevent septic conditions, which would result in gas bubble formation, rising sludge, and unpleasant odors. When wastewater flows are erratic, aeration will be difficult to yield the ideal oxygen concentration. It is, therefore, better to have a dissolved oxygen concentration that is greater than 2 mg/L than to let it become completely depleted, as fewer unpleasant consequences result.

DISSOLVED OXYGEN METER

It is necessary to maintain an aerobic environment for the microorganisms at all times. A range must be selected for the dissolved oxygen level in the aeration tanks. This range should be a minimum of 2 mg/L and never higher than 4 mg/L at the effluent point of the aeration tank. If the dissolved oxygen at the effluent port of the aeration tanks drops below 2 mg/L, the operator should provide more air to the system. If the dissolved oxygen gets as high as 4 mg/L, the amount of air is way in excess of what is needed and can be reduced. With this kind of control, the bacteria will always be living in an aerobic environment and proper mixing will be taking place in the tank. One way to look at dissolved oxygen is that it is excess or residual oxygen. The 2.0 mg/L ensures that there is oxygen available for microbe use. At 4 mg/L, energy is probably being wasted. The odor will indicate when there is too little oxygen. A

sour odor will exist at conditions approaching septicity; however, if the odor is of rotten eggs or sulfur, septicity is occurring and the response is to put the aerators in hand and run them full time. The operator should also be checking for air leaks that may have robbed the process of its air.

The test for dissolved oxygen is performed on the mixed liquor from the aeration chamber for operational control and may have to be conducted on the plant effluent for regulatory control. Because oxygen is required in the aeration chamber at all times, plants that are aerated intermittently must be sampled near the end of the "off" aeration period, to indicate the minimum oxygen dissolved in the water. The best method for testing dissolved oxygen in the aeration chamber is to use a dissolved oxygen meter. If the probe is placed at mid-depth in the aeration chamber, the dissolved oxygen concentration can be read directly. The meter eliminates the need to obtain a sample from the aeration chamber, a common source of error. Sampling is ineffective when

- Samples are inadvertently agitated, which induces oxygen;
- The sample is taken near the surface, which does not give a true indication of the oxygen content in the aeration chamber; or
- The sample is not tested immediately.

Dissolved oxygen levels are recorded on the Sewage Treatment Plant O&M Report during each site visit by TESI Compliance Staff.

5.2.3.2 Return Activated Sludge Rate

The RAS rate is an indicator of how fast and how much settled biosolid material is being removed from the bottom of the clarifier. The quality of settled sludge in different activated sludge modifications typically determines the starting point for RAS rate determinations. Package plants use the extended aeration modification of the activated sludge process, and a 100% RAS rate is considered to be the benchmark rate. This means that if raw wastewater flow is 50,000 GPD, RAS flow is also 50,000 GPD. Because most package plants do not have the means to measure RAS rate, the operator must visually set flow to the proper rate. To find that rate, a simple bucket and stopwatch check may be made. Once the proper rate range is hit, the operator notes the intensity of flow out of the RAS pipe on the Sewage Treatment Plant O&M Report during each site visit. It is inexact and simple, but it is typically the best the package plant operator has on a day-to-day basis. Another simple rule of thumb is to set the RAS rate as lows as it will go and still keep pumping over a period of days. This will typically result in the most consistent performance; at too low a rate, the pipe will plug. At too high a rate, the sludge blanket in the clarifier will raise and overflow.

5.2.3.3 Sludge Inventory

Just as the quantity of incoming load is important, so is the total quantity of organisms available to treat the load. The term used to refer to the total biological mass (or biomass) is sludge inventory. It is expressed as MLSS inventory and as a volatile, or mixed liquor volatile suspended solids (MLVSS), inventory. It is determined as follows.

$$MLSS\ inventory\ (lbs) = (volume\ of\ aeration, mil\ gals\ x\ 8.34\ x\ MLSS, mg/L) + \left(volume\ of\ clarifier\ blanket\ x\ 8.34\ x\ MLSS, \frac{mg}{L}\right) + (volume\ of\ clarifier\ transition\ x\ 8.34\ x\ MLSS, mg/L)$$

TESI is currently in the process of developing detailed procedures for determining MLSS levels within the clarifier of the treatment systems. MLSS levels are recorded on the Sewage Treatment Plant O&M Report during each site visit by TESI Compliance Staff. Sludge age should be calculated at least once each month, or when there are sudden and significant changes in the clarifier sludge blanket depth, based on the current MLSS inventory. The calculations are performed by TESI's Quality Assurance Coordinator or Manager of Engineering.

5.2.3.4 Sludge Age or Cell Residence Time (CRT)

The sludge age or CRT (the terms sludge age and CRT are used interchangeably in this chapter) is an indication of the amount of time the activated sludge is held in the aeration system. Because time is needed by the bacteria to assimilate the food and stabilize it before they are returned back to or wasted from the aeration system, time in the aeration system is important. Sludge age should be considered as a tool for controlling the time required for microorganisms to assimilate the available food (BOD). Sludge age is a measurement of the time required for the existing biomass to be completely removed from the system through proper wasting procedures. It is simply how much time the activated sludge solid remains in the system. Sludge age or CRT is calculated as follows.

$$CRT\ (days) = \frac{\text{total lbs of MLSS inventory}}{total\ lbs\ of\ solids\ removed\ per\ day}$$

Cell residence time has also been termed solids (sludge) retention time or mean cell residence time. Minor variations exist in the calculations of sludge age, CRT, and SRT. Some operators use MLVSS. Some consider the effluent suspended solids as part of the solids removed each day. The important thing is that the remains consistent with the strategies and calculation methods chosen by TESI's Engineers. Cell or sludge residence time, sludge age, and F/M are all controlled by the WAS system. When solids are wasted to maintain these controls, microorganisms are kept at a relatively constant level of activity. Maintaining a proper level of activity ensures the operator of predictable reductions of BOD through the aeration system.

The target sludge age should be selected on the basis of the wastes coming into the plant. If the plant is subject to frequent organic shock loads or is required to nitrify, the sludge age should be 20 to 30 days. If the plant receives a normal wastewater flow and load, a shorter sludge age of 15 to 20 days is typically sufficient.

Sludge age should be calculated at least once each month based on the average wasting and current MLSS inventory.

5.2.3.5 Settleability

The settleability test, or 30-minute settling test, should be considered the major process control test for small package plants. A 1000-mL graduated cylinder is to be used to determine the percent of settled sludge by volume.

A sample from the aeration chamber (taken after blower has operated for I0 minutes) is allowed to settle in the jar for 30 minutes, after which the percent of settled solids is determined. The samples should be taken at the same location in the aeration chamber and at the same time of day to allow for comparison of tests taken on different days. The sample should not be taken near the plant influent or near a return sludge line. When the settleability test is conducted, the graduated cylinder should be placed in the shade, on a level surface, and away from any vibration caused by the blowers.

The operator should observe the settleability test for the first five minutes. How the sludge settles is just as important as the final amount that settles. During the first five minutes of the settleability test, a healthy sludge should compact slowly, forming a screening blanket and squeezing clear liquid from the sludge. A good settling sludge will settle at 20 to 50% of its original volume after 30 minutes. A problem may exist if the sludge settles quickly, leaving finer particles in the supernatant, even though the final percent solids reading is within the acceptable range. A rapidly settling sludge, cloudy supernatant and dark brown color typically indicates an old sludge with a large amount of inorganic solids; in this case, initiating TESI's Sludge Management Plan would then be recommended. If the settleability test results are less than 20% and the supernatant is cloudy, but the sludge settles slowly and the color is light brown, than a young sludge is probably present. In this situation, the system could simply be lightly loaded.

At times, the settleability test results will be above the recommended range. This condition could be caused by either too much or too little sludge in the system. The particular problem can be determined by the 50% dilution test. If the wastewater treatment plant is just experiencing startup, microorganisms are growing rapidly and have not developed enough weight to settle well. The sludge will have a light brown color and very little setting will occur after 30 minutes. If this is the case, then sludge wasting should be reduced or eliminated until the microorganism population produces a good settling floc. At that time, sludge wasting could be initiated as described in Chapter 6.

A high sludge reading could also be produce by an old sludge. If sludge wasting is inadequate, the sludge will become old, denser, and will compact easily. Initially, the percent solids may seem to decrease. If inadequate wasting is continued, the old sludge will eventually accumulate, even though it compacts well. The percent solids reading will continue to increase above the recommended range.

The 30-minute settling test should be performed at during each site visit by TESI's field personnel. The 30-minute settling test should also be performed immediately prior to, and upon completion of, sludge wasting activities. Lastly, the 30-minute settling test should be performed by TESI's compliance staff at the same time that compliance samples are collected from the treatment plan effluent.

5.2.3.5.1 50% Dilution Test

Because the plant effluent will be less than optimum, it is important for the operator to determine which condition exists so that corrective measures may be taken. The 50% dilution test will provide this information. This test is conducted by filling one-half of the graduated cylinder with a sample from the aeration chamber, and filling the remaining one-half with unchlorinated clarifier effluent. Clear tap water should not be used for dilution, as it tends to make the sludge rise. The typical settleability test is the run on this sample. If the 50% diluted sample does not settle any better than in the first test, then the sludge is young. If, however, the diluted sample settles significantly better than the original test, the sludge is old and sludge wasting should be initiated. It should not be assumed that the original sample settled poorly simply because there were too many solids in the system.

5.2.3.6 Sludge Blanket Depth

Sludge blanket depth, with in the clarifier and the chlorine contact chamber, should be measured and recorded on the Sewage Treatment Plant O&M Report during each site by TESI's Operations and Compliance staffs. TESI's operator have been equipped with a sludge judge (a long clear plastic tube that has a ball check valve at the bottom) to take the measurement. The ball check allows water to flow into the tube as it is lowered vertically into the tank; but once the tube hits the bottom of the clarifier and is brought up, the ball check prevents the water in the tube from flowing back out again. Inspection of the tube's contents will typically reveal a clear water (secondary effluent) portion throughout most of the tube, while the bottom of the tube will have a layer of thickened activated sludge solids (solids blanket). Ideally, there is always a distinct separation between the clear water layer on the top and the solids layer on the bottom. If the test is performed correctly, the depth of these layers in the tube will be the same as that in the operating clarifier. Measuring the depth of the solids layer in the plastic tube, then, will be the same as measuring the solids blanket depth in the clarifier.

Typically, clarifiers are operated so that the solids blanket depth is between 0.5 and 3.0 feet up from the bottom, with optimal depths typically between 1 and 2 feet. A blanket depth allowed to increase too high could be picked up by a sudden hydraulic surge to the clarifier and sent over the clarifier weirs, resulting in effluent compliance violations. However, some blanket depth is desirable to allow solids to thicken in the clarifier and reduce the return of secondary effluent to the biological reactor. Keep in mind these are only guidelines, which will be true most of the time, but it may be necessary to occasionally operating differently. However, should the clarifier sludge blanket depth exceed 60% of the total height of the clarifier sidewall, or if the depth exceeds 40% of the total height and settleability tests data indicating the presence of young sludge is not available, operators should initiate implementation of TESI's Sludge Management Plan as described in Chapter 6 of this manual.

In a properly operated extended aeration package plant, sludge should not accumulate to levels that are measurable by use of a sludge judge. However, for verification purposes, TESI operators are to attempt to measure the depth of sludge within the chlorine contact chamber, using a sludge judge, and report the levels on the Sewage Treatment Plant O&M Report for each site visit.

5.2.3.7 Color

The color of the aeration chamber is one of the quickest ways to check the system operation; the color should be brown (similar to coffee with cream). If the aeration chamber is this color and has a musty odor similar to a damp basement or mushrooms, the sludge is probably healthy. If the color is gray, the plant is not receiving enough air. Possible reasons for this include the following: the plant is receiving too much food, control time clocks are not allowing the aerators to operate enough, diffusers may be partially plugged, or the plant may have received some toxic material. A black color accompanied by a rotten egg odor indicates that the plant is septic. When this occurs, the plant should be placed on constant aeration until the light brown coffee color returns. A septic plant is typically the result of poor attention by the operator. Although aerator and power failures, plugged diffusers, and toxic material will cause the plant to go septic, the most common cause is neglect.

Other colors that may be observed occasionally are white, red, and purple. A white aeration chamber occurs when the plant is extremely lightly loaded. The sludge, in this case, is completely oxidized and only ash remains. Feeding the plant is not recommended. A red color may be encountered when the plant is over-aerated, and a filamentous bacterium called *leptothrix* is present. The sludge will settle poorly and thick matt foam will form. A purple color is not natural, but has been encountered when iron removal water systems, which use potassium permanganate to regenerate the media, use the wastewater system to dispose of backwash and flushing water. Therefore, the operator should know what is connected to the wastewater system. Remember: the package extended aeration treatment plant is designed to treat domestic waste only; anything else can cause an operating problem.

5.2.3.8 Residual Chlorine

The residual chlorine test should be run during site visits by TESI Compliance Staff to determine whether sufficient chlorine is being fed to consistently disinfect the plant effluent. The required chlorine residual range is typically between 0.2 and 1.5 mg/L; other values may be required if bacteriological tests show disinfection to be adequate or inadequate. The effectiveness of disinfection at a given residual level will vary, depending on the concentration of solids or nitrogen. Changes in the concentrations can cause the chlorine residual to change with a given feed rate. It is important, therefore, to monitor residual chlorine often and make feed adjustments as needed. The most common field test kit used is the n-diethyl-p-phenylenediamine (DPD) kit; this kit is sold commercially by several companies. As always, the instructions on the kit should be followed carefully, the kit should be clean, and all test data should be recorded. Samples for the chlorine residual test are to be taken at the point nearest to the receiving stream or at the exit point of the chorine contact tank.

5.2.3.9 Flow

Flow in small plants is typically expressed in gallons per day. Because flow information is important for plant operation, a means for measuring flow through the system is required. At the plant effluent, a continuous flow recorder is recommended, while a V-notch weir is satisfactory and a calibrate 1-gallon bucket is allowable. It is highly desirable to have a flow recorder that displays instantaneous flowrates and cumulative flow. The chart will show peak and low-flow periods that may radically affect not only the clarifier, but overall plant operation. Flows that exceed the hydraulic capacity of the clarifier or other process units can be detected. A single peak-flow period occurring daily can cause solids washout in the

clarifier and prevent the activated sludge process from becoming established. If this condition exists, peak flows must be reduced by increasing plant size, adding flow equalization, or diverting flow elsewhere. Daily flow records should be maintained, with readings taken at the same time each day. Although peak flows will not be reflected, water meter readings will give a good indication of the average flow to the plant.

Flow measurement reporting shall be document on the Sewage Treatment Plant O&M Report at each routine site visit by TESI's field personnel.

5.3 Troubleshooting

Troubleshooting begins by knowing the system. The operator needs to know:

1. What each part of the system is supposed to do.
2. How each process or piece of equipment operates normally.
3. How to recognize abnormal conditions.
4. What alternatives are available when trouble develops.

Briefly, to recognize when something is bad, the operator must know how it works when no trouble exists. The purpose of this section is to present a ready and quick operator's reference to process problems and their solutions. The table is arranged in columns as explained below:

- **Condition:** The information in this column shows what has been indicated or observed by the operator.
- **Possible Cause:** This shows the most likely cause of the indicated upset.
- **Solutions:** The operator should arrange the suggested solutions in the order that he wants to try them and proceed from the easiest to the most difficult.

A more comprehensive presentation of TESI's Quality Assurance Program (QAP), which focuses on a root cause analysis procedure, it presented in more detail in Chapter 8 of this manual. The QAP should be followed for more difficult or recurring operational issues.

Condition	Possible Cause	Solution
Controls		
1. Pump fails to start	1. Overload relays tripped; starter coil damaged; HOA switch off; blown fuse; breaker off; alternator damaged.	1. Call electrician.
2. Overloads trip	2. *High amperage draw.*	2. Clean, inspect or replace contacts
3. Starters chatter	3. Starter contacts burned; dirty contacts in alternator.	

Pumps		
1. Unusual noise	1. Plugged impeller or suction; reciprocating pump pumping water instead of sludge (knocking noise).	1. Clean intake screen; remove pump housing and unclog impeller, turn off pump & check clarifier sludge blanket; too fast a pumping can suck a hole in the sludge blanket.
2. Vibration	2. Plugged pump priming line; see 1 above.	2. Remove & unplug line; check impeller for debris.
3. Reduced pumping rate	3. Broken impeller; worn wear rings; see 1 above.	3. Disassemble, replace impeller; *measure wear rings*.
Mechanical Seals		
1. Clogged filter	1. Inner seal leaking; bad motor bearings & vibrations causing seal failure.	1. Repair bearing and seal(s).
Motors		
1. Noise and/or vibration	1. Damaged, broken fan vanes.	1. Inspect & replace, if necessary.
2. Run hot	2. Excessive bearing grease; wrong type of grease; overloaded; lack of grease.	2. See manufacturer's recommendations to verify correct amount & type of grease.
3. High amperage	3. Drive motor too light for head requirements; too low discharge pressure; plugged impeller; damaged bearings; power imbalance; high or low voltage condition; misalignment.	3. Match equipment to load. Clean & repair impeller as necessary.
Pretreatment		
1. Septic conditions upstream of bar screen.	1. Infrequent cleaning causes organic material to settle out upstream. Comminutor functioning improperly or debris present which the equipment cannot remove.	1. Clean screen & flush sewer. Divert flow. Shut unit off & remove blockage.
2. Odors around bar screen.	2. Collected screenings not disposed of frequently enough.	2. Remove screenings & bury with 6-12 inches (15-30 cm) earth cover.
3. Leakage around drum of comminutor.	3. Rubber seal worn or not seated.	3. Inspect, adjust or replace.
4. Organics settling out in grit chamber.	4. Flow too slow.	4. Reduce number of channels used during low flow. Introduce air into chamber to keep organics suspended.

Biological Treatment		
1.Turbid clarifier supernatant (effluent)	1. Return rate out of balance.	1. Adjust sludge return rate to match 1.5 to 3 hour settling concentration.
2. Black MLSS, septic odor & supernatant	2. Not enough air; possibly localized septic pockets due to incomplete mixing.	2. Increase air supply. Check & clean diffusers.
3. Black MLSS & turbid supernatant	3. Abnormal pH; possibly due to industrial waste.	3. Check pH. Add acid or sodium bicarbonate if pH is low.
4. Reddish MLSS & return sludge	4. Overaeration; check DO to verify.	4. Reduce air to aeration tank.
5. Light brown aeration tank liquid & thinner solids	5. Insufficient sludge return.	5. Increase rate of sludge return to aeration tank.
6. Clumps of black odorous solids on clarifier	6. Solids remaining too long in clarifier & septic conditions occurring; sludge return line possibly plugged. Sides of hopper-type clarifier not scraped enough.	6. Check sludge return lines for proper operation & increase sludge return rate.
7.Black aeration tank content	7. Septic conditions.	7. Increase aeration.
8.Excessive foaming	8. Too much activated sludge solids wasted at once; insufficient air during high storm flows; plant recovering from overload or septic conditions; overaeration.	8. Can be controlled until eliminated by using a water spray. Solutions is generally to stop wasting until solids are back up to normal.
9.Activated sludge bulking (activated sludge not settling in clarifier)	9. Too low solids level in system; strong stale septic sewage received after storm following a long dry spell; poor grease trap cleaning (restaurant wastes); alkaline wastes from a laundry.	9. Check solids level with settling test. Increase sludge wasting. Increase air rate if test shows less than 0.5 milligrams per liter (mg/L) dissolved oxygen near the surface of the settling tank. Hold when DO reaches approximately 1.0 mg/L.

5.4 Scheduling, Prioritization, and Documentation of Inspection, Corrective Maintenance, & System Rehabilitation Activities

Routine treatment system inspection and maintenance planning is performed and coordinated by the Manager of Operations and assisted by the District and Field Supervisors and the Construction and Maintenance and Operations crews, as required by LTC Plan Paragraph 3. System with consistent, or frequent, excursions from LPDES permit limits receive the highest priority, followed by other emergency repairs, scheduled maintenance in problem areas, and then regular maintenance.

Major system rehabilitation or corrective maintenance actions are to be scheduled and initiated by TESI's Manager of Engineering (MOE), with assistance from the Quality Assurance Coordinator (QAC).

These individuals will oversee the flow monitoring, process control sampling, analysis interpretation efforts and to use this data to make recommendations pertinent to changes in process control strategies and system rehabilitation. The Manager of Engineering will also oversee the rehabilitation, including inspection and incorporation of the rehabilitation results into the comprehensive system-specific process control plan. The Quality Assurance Coordinator will manage the MOM documents and ensure that the tasks described within are performed and that recordkeeping is properly performed.

The purpose of this is effort is to establish priorities, by service area, for assessing the condition and capacity of the wastewater collection and treatment systems. The goal is to efficiently restore the system to optimum capacity and performance through rehabilitation of the treatment system and provide information for planning purposes.

The MOE and QAC will use the findings of service orders, flow monitoring studies, and process control sampling to develop a listing of priorities for further investigation.

The MOE and QAC will review the following information:

- **Service Orders** - The reports generated from will indicate drainage basins with back-ups and sewer system overflow problems.
- **Flow Monitoring Reports -** Reports covering at least a 60-day period should include several rainy periods and should indicate drainage basins with high wet weather flow to dry-weather flow ratios.
- **Preliminary Treatment Assessments** - Any field observations and process control data made by work crews or operators that may indicate problem areas within the treatment system.
- **Public Health and Environmental Issues** - Concerns created by sewer defects, insufficient capacity, or a need for wastewater collection system expansion that are raised by LDEQ, including receiving water use designations.

The MOE and QAC will prioritize the systems based upon the information obtained from the above data groups to develop a schedule for cleaning, inspection, and changes in the control strategies of the wastewater systems. The results of the process control analyses are compiled in a Treatment System Assessment report that prioritizes the order of treatment systems for rehabilitation and/or corrective maintenance. This report is utilized to establish a capital improvement plan that must be balanced with the financial capabilities of TESI. However, any defects requiring immediate attention in other areas will be corrected on an ongoing basis.

Note: *Any system for which recorded or observed peak flows exceed the peak flows that would be anticipated based on the application of the peaking factor determined as described in Section 4.5.2, shall be included as a Tier I, or highest priority designation, within the report by the MOE and/or QAC, and requires prompt inspection and evaluation for potential inflow and infiltration.*

5.5 Documentation of O&M Activities

Keeping adequate performance records is an integral part of good plant operation. Accurate plant and laboratory records can help the operator determine the best facility operating procedures. Records can indicate when problems develop and help identify the source of the problem. They provide an excellent

way to check which things are already done and which need to be finished. Significant details of day-to-day experience have important historical value if they form a running account of treatment system operation.

Documentation regarding sewer blockages, bypasses and overflows, routine and emergency repairs, etc. is maintained regarding all of these repairs and kept in files in the main office in Baton Rouge.

TESI primarily documents the activities of the Construction, Maintenance and Operations staff through the use of Customer Service call reports, work orders and wastewater overflow reports. The Customer Service Representatives receive calls from the direct call number. These calls are then reported to the Manager of Operations who assigns priority to the call and designates the response. The Manager then follows up to ensure that the proper response has been made to the call.

For more routine responses to issues in the sewer system, a work order is generated and assigned to a crew. The Field Supervisor (if present) or designated crew leader is then responsible for documenting the response, the nature of the problem and the corrective action taken. The Manager of Operations is responsible for follow up to ensure the work is performed and documented in a timely fashion.

All records must be kept in TESI's system-specific files. All operations and maintenance activities must be properly and neatly documented on a TESI-approved Sewage Treatment O&M Report for Mechanical systems, presented in LTC Plan Attachment 4. TESI also maintains an inventory of operational and backup equipment needed to ensure the proper safety of TESI and contractor personnel and the availability of equipment necessary for timely responses at an STP to spills, leaks, power failures, and situations requiring emergency bypass pumping. This inventory must be maintained current and, therefore, must be updated following any usage of such equipment. During a widespread emergency, equipment is to be deployed to systems on the basis of a prioritization ranking that is determined by TESI Engineering/Management. The priority ranking is to be a subjective ranking based on flow quantity of the system, proximity to residential area(s), proximity and potential impacts to sensitive environmental receptors/areas, and other event-specific conditions. In such case as TESI's current asset inventory is insufficient to ensure an adequate response, then TESI will make every effort to secure additional emergency equipment (e.g., generators) from equipment rental vendors, or from neighboring STP owners/operators – whichever will allow for more prompt response.

Your LPDES permit requires you to retain all records for at least three years. Records include DO and pH meter calibrations, lift station pump capacity calculations and laboratory sheets. The LDEQ may request that you keep the records for a longer period.

Chapter 6 – Sludge Management Plan

6.1 Overview

TESI currently owns and operates approximately 140 facilities in the state of Louisiana that require sludge removal at some point. These facilities range in sizes from 10,000 gallons per day to 216,000 gallons per day. They are all operated in the Extended Aeration Activated Sludge Process, most having one large aeration tank, secondary clarification and adequate disinfection as described in the Overview section above. Out of 139 facilities, approximately 29 of them have aerobic digesters.

Removal of organic material in these systems will result in the production of new biomass (sludge) and the accumulation of inert solids. Excess biomass (sludge) production must be removed from the system in order to maintain appropriate solids concentrations in the aeration basin, maintain solid loading conditions on the secondary clarifier, and prevent the accumulation of inert solids. The time the solids remain in the plant is called the solids retention time (SRT). The operating SRT of the system determines the wasting volume and frequency. The decision to waste sludge must be based upon an evaluation of several factors and triggers that will be illustrated below and included in attachments.

Specifically, at a minimum for mechanical package plants, the 30-minute Settleable Solids Test (SST), Mixed Liquor Suspended Solids (MLSS) and Sludge Depth in the Clarifier (Sludge Judge Test) are used to determine when sludge should be wasted. Wasting of sludge should be determined by Engineering or the chief operator in charge. For example, in certain situations wasting may not be advisable, i.e., during severe cold weather, low loading conditions, and/or after a washout event due to pump failure or Inflow/Infiltration (I/I) events. Also, solids retained in the Chlorine Contact Chamber due to unforeseen mechanical failures or I/I events will be immediately disposed of by way of a certified sludge hauler or pumped and contained in the sludge holding tank if equipped.

When sludge is wasted it is usually either pumped to a pumper truck or a sludge holding tank. The aerated sludge holding tank may be an integral part of the plant or it may be a separate unit located near the aeration chamber. The sludge holding tank is constructed with air diffusers that operate when the plant blower is operating; this keeps the sludge aerobic until final disposal. The over-flow from the tank is called the supernatant return. The supernatant is routinely returned to the aeration chamber. Wasting sludge is usually accomplished by diverting a portion of the return sludge from the clarifier. This is done by opening the waste sludge control valve to the sludge holding tank and closing the return sludge control valve to the aeration chamber.

The thickened sludge in the aerated sludge holding tank may be disposed at an approved landfill, a large municipal treatment plant, or approved land application sites. Transportation of the sewage sludge will be performed by duly authorized transporters.

The U.S. Environmental Protection Agency's report, EPA-430/9-77-005, is suggested as another source of information for wasting sludge.

6.2 Sludge Management Triggers

In order to determine the optimum sludge volume at each WWTP, the operators and samplers must perform the following process control sampling and observations during O&M and sample visits so Compliance and Engineering can review and track:

1) Operator (Performed at least Once/week)
   a) 30-minute Settleable Solids Test (SST)
   b) Clarifier Sludge Depth via sludge judge
      i) 50% dilution SST, if sludge depth is >40% of total height of clarifier sidewall
   c) Observation of movement of Mixed Liquor from aeration basin to clarifier inlet baffle
   d) Observation of RAS rate and sludge blanket in clarifier
   e) Observation of overflow rate and clarity of water flowing over overflow weir
   f) Observation of solids in chlorine contact chamber
2) Sampler (Performed During Every Sampling Event)
   a) MLSS
   b) Dissolved Oxygen in Aeration
   c) Observation of overflow rate and clarity of water flowing over overflow weir
   d) Observation of solids in chlorine contact chamber

The sludge depth measurement, the 30-minute SST, and the 50% dilution SST must performed during the same visit to the STP. All collected data is to be compiled and entered into the STP-specific process control spreadsheet by Compliance Department personnel. At a minimum, the STP-specific process control spreadsheet is to contain STP Identification Information (i.e., the STP name, NPDES permit number, Agency Interest ("AI") number), raw process control data (i.e., date(s) of data collection, dissolved oxygen, MLSS, RAS rate, sludge depth in feet, the clarifier sidewall height in feet, 30-minute settleability test results, 50% dilution settleability test results), as well as calculated process control parameters (i.e., the sludge depth as a percentage of clarifier sidewall height, sludge volume index (SVI), mean cell residence time (MCRT), amount of solids wasted to digester or other facility). The Manager of Engineering (MOE) is responsible for developing and analyzing of trend charts of both compliance data and process control data in order to determine the most appropriate solids levels that should be maintained at each STP. The optimum levels of each of the parameters are to be noted in the Site-Specific Management, Operation, & Maintenance Plans referenced in Section 1.4 of this manual.

At a minimum, and regardless of other parameters, sludge wasting is to occur within one week each time sludge depth is found to exceed 40% of the total height – unless a 50% dilution settleability test does not show greater settleability than the standard 30-minute SST results. Sludge wasting is required, regardless of the 50% dilution SST, if sludge depth exceeds 40% of the total height of the clarifier sidewall and:

1. TESI is unable to perform the 30-minute SSSST and the 50% dilution SST during the same visit to the STP as the visit during which the sludge depth is measured, or
2. The depth of sludge in the clarifier exceeds 60% of the sidewall height.

Once it found that a STP has met the criteria for sludge removal based on the triggers the MOE is to send a Sludge Removal Work Order to Operations for Sludge Removal. Operations then contact a designated Sludge Hauler to properly pump and haul and dispose of. The same action is taken for WWTPs with aerated digesters with exception of sludge hauling. Each time sludge wasting at an STP is required, sludge shall be removed from the clarifier such that the total depth of the sludge in the clarifier is no more than 1/3 of the total height of the clarifier sidewall.

6.3 Sludge Wasting Procedures

Sludge holding and disposal methods consist of the following elements:

1. At least 1 hour before wasting sludge, close the air valve to the diffuser in the sludge holding tank. This will allow the sludge already in the tank to settle, leaving a clear liquid (supernatant) on top. If the diffusers are not turned off, the same amount of sludge that entered the tank will leave the tank, and the settleable solids test in the aeration chamber would show no reduction in solids. Do not begin wasting sludge until the sludge in the sludge holding tank has settled enough to make room for the new sludge.
2. Run a 30-minute settleable solids test on the mixed liquor solids. Remember: only 10% of that reading is to be wasted. Be sure the blower has been on long enough to completely re-suspend the aeration chamber contents.
3. Open the valve on the waste sludge line that leads to the sludge holding tank and then close the valve on the return sludge line leading to the aeration chamber. Valves must be operated in this order, or the clarifier could be backflushed if the blower were operating.
4. Waste sludge for approximately 15 minutes. This is an approximate time; with experience, the proper wasting time for each wastewater treatment plant can be determined.
5. Open valve on the return sludge line leading to the aeration chamber and then close the valve on the waste line that leads to the sludge holding tank.
6. Open air valve to the diffuser in the sludge holding tank to obtain good mixing. Once a good rolling action has been established, do not open the air valve any further. It is critical that this valve be opened after wasting sludge. If the valve is not opened, the sludge holding tank will become septic and produce foul odor.
7. Allow the wastewater treatment plant to operate approximately 1 hour before conducting a mixed liquor settleable solids test in the aeration chamber. No more than 10% of the solids in the aeration chamber should be wasted at a time. Sludge should not be wasted twice in 1 day.
8. Be aware that sludge will eventually become so concentrated in the sludge holding tank that when the diffusers are turned off, very little clear liquid will appear over the sludge. When this occurs, the sludge holding tank should be pumped by a septic tank pumping truck for proper disposal.

If a treatment plant does not have a sludge holding tank, the local contracted sludge hauler is called and pumps out a certain amount of sludge calculated by the engineering department.

Reminder: Each time sludge wasting at an STP is required, sludge shall be removed from the clarifier such that the total depth of the sludge in the clarifier is no more than 1/3 of the total height of the clarifier sidewall.

Designated Sludge Haulers (by location in LA)

Flow Moore Sewer 49508 Bailey Loop Rd Loranger, LA 70446 (985)345-9411	Baton Rouge, Houma/Thibodaux, Duson
McDonald Well Service 312 Cherry Drive Thibodaux, LA 70301-7145 (985) 447-2955	Houma/Thibodaux
Big Mamou Bio Solids, Inc. 5144 Veteran Memorial Hwy Mamou, LA 70554 337-468-2985	Duson

If TESI documents that it has contact at least three (3) sewage sludge hauling contractors within two business days after a determination that wasting of sludge is required at an STP and none of the sewage sludge hauling contractors were able to remove the sludge from the STP by the deadline, then TESI may invoke force majeure with respect to that deadline.

When responding to excessive sludge buildup in excess of target levels suspected to be caused by a power or mechanical malfunction, TESI Operations personnel are to follow the "Mechanical WWTP Sludge Removal Protocol Due to Power & Mechanical Deficiencies Affecting Clarifier", as presented Appendix 6-1.

6.4 Record Keeping

Sludge hauling and wasting activities are documented in the form of a manifest (Appendix 6-2) by contracted sludge haulers and TESI District Supervisors. These completed manifest forms are placed in the local offices and filed. Also, the Data Input Clerk will keep record of all sludge hauling and wasting. Records shall be maintained for 5 years.

UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF LOUISIANA

UNITED STATES OF AMERICA and

STATE OF LOUISIANA, through THE DEPARTMENT OF ENVIRONMENTAL QUALITY,

Plaintiffs,

v.

ACADIA WOODS ADD. #2 SEWER CO.,

ACADIANA TREATMENT SYSTEMS, et al.,

Defendants,

and

TOTAL ENVIRONMENTAL SOLUTIONS, INC.,

Intervening Defendant.

Civil Action No. 6:98-0687

AGREEMENT AND ORDER REGARDING MODIFICATION OF THE CONSENT DECREE WITH RESPECT TO TESI

APPENDIX B

LONG TERM COMPLIANCE PLAN

Attachment 3

Mechanical WWTP Sludge Removal Protocol Due to Power and Mechanical Deficiencies Affecting Clarifier ("the Malfunction Protocol")

TOTAL ENVIRONMENTAL SOLUTIONS, INC.

MECHANICAL STP SLUDGE REMOVAL PROTOCOL DUE TO POWER AND MECHANICAL DEFICIENCIES AFFECTING CLARIFIER

TESI Mechanical STPs use positive displacement blowers to inject compressed air into the aeration basin and clarifier as a means of aerating, mixing and moving activated sludge from one tank to another. The compressed air is injected into the aeration basin by way of diffusers that provide oxygen to aid bacteria and other microorganisms to thrive and multiply there as they consume food (organic material) in the wastewater.

For a package STP to achieve optimum treatment efficiency, the final clarification unit (clarifier) must effectively separate the biological solids from the mixed liquor. If these solids are not separated properly and removed from the clarifier in a timely manner, operating problems will result, causing an increased load on the receiving stream and a decline in treatment efficiency. A power or mechanical malfunction may cause an excessive buildup of sludge in the clarifier that would not have occurred but for the abnormal or upset condition resulting from the malfunction.

This protocol is designed to assist TESI Operations Team Members (Operator, Field Technicians, and Sampling Personnel) in identifying, communicating, documenting and recovering Mechanical STPs from the specific mechanical deficiencies that will cause abnormal or upset conditions (excessive sludge buildup) in clarifiers. Examples of potential power and mechanical deficiencies include:

- Power
  - Outages due to severe weather conditions (e.g., hurricanes, tornadoes, etc.)
  - Motor malfunctions (e.g., improper power input, blown capacitor)
  - Lift Station Pump Malfunctions (e.g., power outage, control panel failure, level float failure)

- Mechanical
  - Blower malfunction (e.g., seized lobes, clogged filter, loss of oil)
    - Blower/motor malfunction (e.g., worn or broken belt)
    - Broken return activated sludge ("RAS") line
    - Obstructed RAS line
    - Lift Station Pump Malfunctions (e.g., clogged pump, level float failure)
    - Airline malfunction (e.g., broken airline, leaking airline, clogged airline)
    - Gate Valve Malfunction (e.g., broken or clogged gate)
- Other
    - Tampering - Sabotage

TOTAL ENVIRONMENTAL SOLUTIONS, INC.

MECHANCIAL STP SLUDGE REMOVAL PROTOCOL DUE TO POWER AND MECHANICAL DEFICIENCIES AFFECTING CLARIFIER

These abnormal or upset conditions can have a direct effect on the clarifier causing a rise in sludge levels.

TESI Operations Team Members will follow the following protocol when responding to excessive sludge buildup in excess of target levels suspected to be caused by a power or mechanical malfunction:

1. **Identify the malfunction within 24 hours of the observation of sludge level height in excess of 40% of the total height of the clarifier sidewall. If a malfunction is identified within this 24 hour period proceed to step 2; otherwise, follow the sludge wasting procedures in the Order and waste solids accordingly.**

2. **(a) If a mechanical malfunction other than a power outage has been identified, then within 48 hours of identification of malfunction (prior to April 30, 2015 an interim deadline of "within five days of identification of malfunction" shall apply in lieu of the 48 hour deadline), proceed to step 4; and**
   (b) If a power outage has been identified, then within 24 hours of restoration of electrical power (prior to April 30, 2015 an interim deadline of "within five days of restoration of electrical power" shall apply in lieu of the 48 hour deadline), proceed to step 4. Unless the force majeure provisions of Section XIV (Force Majeure) of the 2000 Consent Decree apply, TESI will restore power using a temporary power source within 24 hours of identifying the loss of power.

3. **Conduct the following monitoring and system adjustments for five (5) days immediately following completion of malfunction repair:**
   - **Monitor Sludge Levels in the Clarifier by Sludge Judging daily**
     - **Adjust RAS rate accordingly**
   - **Monitor Settleability in aeration daily**
     - **Adjust RAS rate accordingly**
   - **Monitor Dissolved Oxygen Levels in aeration basin daily**
     - **Adjust aeration and/or RAS rate accordingly**
   - **All corrective actions, process control measures, and adjustments made shall be documented and recorded on a "Mechanical STP Upset Report Due To Power/Mechanical Deficiency" form.**

4. **If the sludge depth still exceeds 40% of the total height of the clarifier sidewall, follow the sludge wasting procedures in the Order and waste solids accordingly.**

   TESI is aware that the clarifier is an extremely important part of the wastewater treatment plant. If it does not operate properly, the clarifier will cause poor effluent quality. The clarifier must remain quiet so that settleable and floating solids can be removed from the mixed liquor. The skimmer and return lines must be operated properly to remove solids from the clarifier in a timely manner. In the event that a mechanical deficiency is found and causes an adverse effect on the clarifier, TESI will take the immediate and appropriate steps above to remediate and repair the problem.

UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF LOUISIANA

UNITED STATES OF AMERICA and

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Plaintiffs,

v.

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ACADIANA TREATMENT SYSTEMS, et al.,

Defendants,

and

TOTAL ENVIRONMENTAL SOLUTIONS, INC.,

Intervening Defendant.

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APPENDIX B

LONG TERM COMPLIANCE PLAN

Attachment 4

O&M Report for Mechanical STPs

MECHANICAL SEWAGE TREATMENT PLANT O & M REPORT

☐ ROUTINE O&M ☐ NPDES SAMPLING ☐ PROCESS CONTROL SAMPLING ☐ RE- EVALUATION PROCESS CONTROL

Date: _____ **Facility Name:** _____ **Time in:** _____am/pm, **Time Out:** _____am/pm

Rain Gauge _____ **Inches** | **Spill Insp.: Y / N** | **Spill Detected: Y / N** | **Leak Insp.: Y / N** | **Leak Detected: Y / N**

Site Visit Assessment of STP for Operators & Technicians	Y	N	N/A	Comments
Is fencing around facility able to prevent public access:				
Are signs displayed which indicate TESI's ownership, the potential hazards of accessing the STP & a phone # to contact in case of an emergency or overflow:				
Is the effluent being discharged at the proper outfalls:				
Are erosion control structures and riprap in satisfactory condition:				

LIFT STATION #_____					LIFT STATION #_____				
Items	**F**	**I**	**N/A**	**Comments**	**Items**	**F**	**I**	**N/A**	**Comments**
#1 Pump and/or Motor					#1 Pump and/or Motor				
#2 Pump and/or Motor					#2 Pump and/or Motor				
V-Belts					V-Belts				
Electrical Components					Electrical Components				
Level Floats					Level Floats				
L/S RUN TIME HOUR METERS				Hours	*L/S RUN TIME HOUR METERS*				Hours
#1 Pump Meter					#1 Pump Meter				
#2 Pump Meter					#2 Pump Meter				

*USE ADDITIONAL O&M REPORT FOR ADDITIONAL LIFT STATIONS

Legend: F=Functional I=Inoperative N/A = Non-Applicable

Additional Comments:

BAR SCREEN	**F**	**I**	**N/A**	*Remove debris from bars and place in covered container.* Debris removed? ☐ YES ☐ NO
***AERATION CHAMBER** *30 min SST _____%* *Dilution 30 min SST _____%*				Color of aeration: ☐ Dark ☐ Medium ☐ Light Color of sludge return: ☐ Dark ☐ Medium ☐ Light Aeration: ☐ Light ☐ Medium ☐ Aggressive **Front MLSS _____mg/L DO _____mg/L** **Middle MLSS _____mg/L DO _____mg/L** **Rear MLSS _____mg/L DO _____mg/L**
***CLARIFIER** *Sludge Depth #1_____* *ft. Sludge Depth #2 ____* *ft.*				*Clean sidewalls as needed, adjust return sludge rate as needed, adjust skimmer as needed* Baffle conditions: ☐ Clean ☐ Caked *(needs cleaning)* Sludge/Debris removed? ☐ YES ☐ NO *Clean overflow weir as needed.(remove algae & sludge/debris)* Return Line #1 ☐ F ☐ Clogged Sludge Rate: ☐ Slow ☐ Medium ☐ High ☐ Adjusted RAS Rate Return Line #2 ☐ F ☐ Clogged Sludge Rate: ☐ Slow ☐ Medium ☐ High ☐ Adjusted RAS Rate
***CHLORINE CONTACT CHAMBER (CCC)** **Effluent DO _____** **mg/L Water Temp ____** **°C** **DO Drop: ☐ On ☐ Off ☐** **N/A TRC _____mg/L pH ___**				Chlorine tablets added: (Y / N), # of tablets added: _____ (inspect chlorine chamber for solids) Chlorinator: ☐ Clean ☐ Debris Present Debris removed? *(Y / N)* CCC - Floatable Solids Present? *(Y / N)*, Floatable Solids removed? *(Y / N)* Settled Solids Present? *(Y / N)*, Settled Solids Measured w/Sludge Judge? *(Y / N)* Settled Solids Depth: _____feet/inches (circle one), Settled Solids Removed: *(Y / N)* **If Settled Solids Removed, circle location & estimated amount of solids removed below:** (Circle one): digester/head of aeration/pump truck, Estimated amount removed: _____gallons ***If solids are hauled away by sludge hauler, attach manifest!***
MECHANICAL EQUIPMENT				*Check time clock for correct time of day. Check air release valves and inspect air piping for leaks*
#1 BLOWER/MOTOR				Check air filter & clean or replace as needed ___ Oil & Lube ___ Air Filters ___ Belts
#2 BLOWER/MOTOR				Check air filter & clean or replace as needed ___ Oil & Lube ___ Air Filters ___ Belts

FLOW MEASUREMENT REPORTING	*TURN OFF POST AERATION BEFORE MEASURING, IF EQUIPPED..*	
V-Notch Sample Box (Record Inches)	Continuous Flow Monitor (Record Reading)	1-Gallon Bucket & Stop Watch (Record Seconds to Fill)
		1. 2. 3.

Additional Comments:

_____

_____

_____

TESI Personnel Signature:	**Date Report Reviewed:**

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TOTAL ENVIRONMENTAL SOLUTIONS, INC.,

Intervening Defendant.

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APPENDIX B

LONG TERM COMPLIANCE PLAN

Attachment 5

Template for STP Specific Process Control Plans for Mechanical STPs

STP-Specific Process Control Plans (Management, Operations, & Maintenance (MOM) Program: Mechanical Treatment Systems, Chapter 1.4 - Site-Specific Management, Operation, & Maintenance Plans)

The equipment and processes to provide conveyance and treatment of wastewater can vary from facility to facility. To address this issue, TESI is currently in the process of developing site-specific MOM Program Manuals for each of their facilities. Once developed, these site-specific Manuals should be reviewed and followed by TESI's Operators and Technicians for proper facility operations and maintenance, rather than the more general, holistic approach described within this current manual. TESI anticipates that the site-specific MOM program manuals will follow the same outline as the general MOM program manual; specifically, the site-specific program will include the following sections:

1. Introduction to the Facility
    a. Location information
    b. Process schematic
    c. LPDES permit information
    d. Relevant contact information
2. Introduction to the Process
    a. Process description
    b. Design requirements
    c. Site-specific equipment list(s)
3. Staffing Requirements
    a. Organizational chart
    b. Description of positions and responsibilities
    c. General routing information
    d. Training requirements
4. Descriptions of Routine Operations and Maintenance Activities
5. Sanitary Sewer Overflows & Bypass Response Plan
6. Emergency Operations
7. Safety Procedures
8. Quality Assurance & Root Cause Analysis

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APPENDIX B

LONG TERM COMPLIANCE PLAN

Attachment 6

Holistic Process Control Plan for Pond STPs

Chapter 5 –Operations & Maintenance Programs

The Louisiana Pollutant Discharge Elimination System (LPDES) permit states:

"The Permittee shall at all times, properly operate and maintain the facilities and systems of treatment and control,and the appurtenances related to them which are installed or used by the Permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures."

A properly designed and operated controlled discharge stabilization pond system for the typical Louisiana climate should provide the operator with the necessary tools to produce an effluent (with the exception of total phosphorus and ammonia nitrogen) that will meet TESI's LPDES effluent limits.

A stabilization pond system operator must manage and operate the pond system in a way that produces an effluent that meets the facility's specific LPDES permit limits. Sometimes, because of design limitations, excessive influent loading, or issues within the collection system (mainly excessive inflow and infiltration), this may not always be possible. In that case, TESI will initiate the Quality Assurance Program, which focuses primarily on Root Cause Analysis, as described in Chapter 8 of this Manual.

5.1 Theory of Operation

To operate a stabilization pond system correctly, the operator must understand the basic principle that relates to all biological treatment units. The basic principal is that all biological treatment systems require the following four items:

- A home (the pond system)
- Microorganisms (sometimes referred to as bugs or critters)
- Food (organic waste contained in the influent)
- Dissolved oxygen (produced by aeration or algae)

Microorganisms make their home in the pond system. They use oxygen dissolved in the water as they feed on and decompose organic waste entering the ponds. As organic waste is decomposed and solids settle to the bottom, the water becomes treated. Eventually, with proper water level control, the water is treated enough to a nearby surface water body.

If any of these - home, microorganisms, food, or oxygen -is absent, a biological treatment system will not perform properly and the operator will have a difficult time producing an effluent that meets LPDES permit limits.

5.1.1 Home (Stabilization Pond System)

Home is the water within the stabilization pond system in which the food and microorganisms mix, for the most part, in an environment of dissolved oxygen. Constructing a pond system following specific design criteria will provide enough capacity and detention time to allow the reactions to occur and allow for discharge at the proper rates. Most of the influent waste decomposes and settles in the primary pond(s). The secondary pond provides additional water clarification, fecal coliform reduction, and storage in preparation for discharge.

5.1.2 Microorganisms

The microorganisms (bugs or critters) that decompose the organic waste in pond systems are the same as those found in many secondary biological wastewater treatment units with long detention times. Normally, incoming wastewater contains enough bugs to promote treatment. Only in very rare cases, possibly associated with certain high strength wastes, will an operator need to add microorganisms or nutrients to develop an active biological mass. This would only be a short-term solution. In that situation, you would likely add more aeration capacity.

5.1.3 Food (Organic matter)

Stabilization pond systems are designed for an organic (food) loading rate of 15-35 pounds BOD/acre/day of primary pond surface area. The influent normally supplies all the food (organic matter) the microorganisms need to support their life process. Microorganisms convert the food to a product that settles.

5.1.4 Dissolved Oxygen

When a pond system is functioning properly, algae and wind action supply enough dissolved oxygen (DO) for aerobic organism activity. By operating and maintaining the system properly, the operator ensures that a good community of algae exists.

Even though warmer water holds less oxygen, it supports algal growth. More algae (aided by sunlight) keep oxygen readily available. However, if an excessive amount of algae is discharged, it will eventually die and cause the DO levels in the receiving waters to drop to very low levels.

5.2 Reducing BOD, TSS, and Fecal Coliform

In a properly designed and operated stabilization pond system that is receiving an organic load within design conditions, biological oxygen demand (BOD), total suspended solids (TSS) and fecal coliform levels will decrease. To be successful, an operator must know how and why this happens and how to operate the system in summer and winter in a way that encourages reduction. General mechanisms for reducing BOD, TSS and fecal coliform include:

- Bacterial action by microorganisms in the primary pond(s) uses up most of the organic demand.
- Within a few days, settling removes the majority of the influent TSS in the primary pond(s).
- TSS, in the form of algae produced in the primary pond, is reduced in the primary pond, and further reduced in the secondary pond by dying off and by being eaten by zooplankton and daphnia. By slowly transferring the primary pond water to the secondary pond, you will avoid transferring excessive phosphorus from the sludge layer. The phosphorus acts as a nutrient to the algae and promotes its rapid and excessive growth. Keeping a slow transfer rate between the primary and secondary ponds prevents excessive phosphorus from the sludge layer from moving into the secondary pond. The phosphorus that promotes algal growth will not be available in the secondary pond, resulting in more die off. (A slow transfer is defined as six inches or less from the upstream pond.)
- Fecal coliform organisms are removed by die off in an unfavorable environment, ultraviolet light from sunlight, algae toxins and predation by other microorganisms.

Some of the BOD entering a pond system remains suspended in the water and is decomposed by the interaction of the bacteria and algae in the primary pond(s) - i.e., symbiotic cycle. The BOD portion that enters in the form of settleable solids sinks to the bottom of the pond and is decomposed in the anaerobic sludge layer. In the primary pond(s), most of the BOD will be decomposed by aerobic and anaerobic bacteria and converted to more stable compounds (sludge) within 30-45 days. By the time water is transferred to the secondary pond, most of the BOD should have already decomposed in the primary pond(s).

Influent wastewater also contains TSS that settles within a few days in the primary pond(s) and then undergoes anaerobic decomposition in the sludge layer. The TSS load to the secondary pond consists mainly of algae and bottom sediment held in suspension within the pond. Since the TSS tends to accumulate in the bottom one and one-half feet of the pond, it is not subject to excessive mixing. To reduce the carry-over of TSS during transfer:

- Ensure the transfer-piping inlet is two feet above the bottom of the pond
- Avoid transferring water during excessive windy conditions

- Transfer at a slow rate of no more than six inches per day from the upstream pond

Properly transferring the water through a vertical intake at least two feet above the pond bottom should reduce the TSS load (particularly phosphorus within the sludge layer) to the secondary pond.

Natural die off, predation, algae toxins, and ultraviolet light from the sun normally reduce fecal coliform organisms. Although most fecal organisms are eliminated in the primary pond(s), water transferred to the secondary pond may contain enough to violate LPDES permit limits. Water that has been properly transferred to the secondary pond will appear visually clearer than the water in the primary. Direct sunlight can then penetrate more deeply into the water and almost totally destroy the fecal organisms.

5.3 Operational Strategy: Create "Old" Water

Pond system design determines the flow pattern and how water levels are controlled in the pond system.

The operational strategy is all about controlling water levels in the pond system to create "old" water. "Old" water is water that has not had substantial amounts of raw wastewater (influent) added to or mixed with it. Depending upon whether the pond is a primary or secondary pond, the flow rate into the ponds, and the size of the ponds, creating old water could take as little as a few days, or, in cases of excessive BOD loading, as long as 30 days.

An operator must monitor the volume of water in the ponds to ensure pond depth reaches and maintains an appropriate level above any sludge bed. Water supports the overall treatment process and helps protect the system because it:

1. Discourages vegetation growth
2. Protects the seal
3. Provides dilution
4. Permits a greater population of microorganisms

In a properly designed pond system, primary and secondary ponds together should be able to store at a minimum of 90 to 120 days of wastewater between the two-foot (minimum) and eight-foot (maximum) depth. To improve the efficiency of creating "old" water, operators may run a system in series or in parallel mode. Both types of operations are discussed in the next section. Operators should consult with TESI's Manager of Operations and Engineering prior to implementing operations in parallel mode.

5.4 Proper Pond Operation

How a pond system typically operates is described below. This information is offered as guidance. After some experience, you may find that your system can deviate from this procedure and still produce a quality effluent. Deviations from this procedure require the approvals of both the Manager of Operations and Engineering.

5.4.1 Operating a Pond System in series

For a system with more than one pond in series operation, wastewater is discharged first to one of the primary pond(s). Then it is transferred in succession to each additional downstream pond in the system. Series operation is the recommended operation because of increased algae levels caused by excessive nutrients, sunlight, and Louisiana's warmer climate. Series operation allows more of the solid material, including algae, to settle out before the semi-treated wastewater is transferred to a subsequent pond. Using a slow, steady transfer rate keeps most algae and nutrients in the upstream pond. Since algae increase the suspended solids in the effluent, minimizing algae in the transferred water will ensure water in the subsequent pond will have a lower suspended solids content.

Note: *Do not allow the secondary to remain at a depth of less than three feet for an extended period. Keeping the secondary at a depth of three feet or more will avoid excessive weed growth and solids carry over into effluent.*

5.4.2 Operating a Pond System in parallel

To operate in parallel, influent wastewater is discharged equally to all primary ponds by splitting the influent flow and loading equally. Parallel is the recommended operation type during periods of prolonged or extreme winter conditions because the overall pond system is usually anoxic due to lack of algae. Parallel operation distributes the solids and organic loading over a larger area, providing more treatment area when the biological activity is low. Distributing the BOD loading helps avoid organic overload to one pond.

Notes: A two-pond system cannot be operated in parallel

Do not allow the secondary to remain at a depth of less than three feet for an extended period. Keeping the secondary at a depth of three feet or more will avoid excessive weed growth and solids carry over into effluent.

5.4.3 Control Structures

Operators use control structures to regulate water levels to reach their goal of producing old water in order to produce a quality effluent that meets all LPDES permit requirements. Some control structures can be used not just to control the water level, but also to measure flow and water depth, sample, as an access point for pumping, and, when necessary, to add and mix chemicals.

Water level is controlled by adjusting slide gates, valves, or similar devices in the structure. Using slide gates or a telescoping valve allows the operator to pre-select the desired water depth.

5.4.3.1 Slide Gate Adjustments

A double slide gate system allows the operator to adjust the downstream gate without having to work against the head pressure of the upstream pond. The double slide gate system also provides better protection against leakage between the ponds. A valve on the downstream side provides additional assurance against leakage.

The downstream slide gate is adjusted to a lower level. Then the upstream gate is raised to allow the ponds to be lowered to that level. When the ponds have reached the lower level, the operator lowers upstream slide gate and readjusts the downstream slide gate to the next lower level. Then the upstream slide gate is raised again to allow more water to transfer. The operator continues adjusting the gates until the ponds reach the desired level.

Note: *If water pressure makes the upstream slide gate difficult to raise up, fill the area between the gates with water to equalize the pressure and allow for easier removal of the upstream slide gate. Also, grease or lubricate both slide gates guides to allow for easier removal.*

5.4.3.2 Telescoping Valve Adjustment

If your system has telescoping valves, you adjust the desired water level by the rotation of the mechanism from the outside of the control structure. The actual position (depth) of the telescoping valve is typically noted on the protruding valve stem.

5.4.4 Guidelines for controlling water levels

An operator needs to be mindful of these general rules for controlling water levels in a stabilization pond system:

- To allow maximum time to clarify the transfer water, fill the secondary pond to maximum operating depth and isolate it as far ahead of the intended discharge as possible.
- The secondary pond is generally the first to deteriorate from excessive vegetation growth because it has the clearest water (allowing more sunlight to penetrate) and is usually the last pond to reach a three-foot water depth (adequate to discourage weed growth).

- You may want to insulate control structures at the top to allow you to transfer water during the winter. Not insulating may allow the structures to freeze, causing significant problems when you try to transfer water.
- Do not allow water levels (especially in the secondary) to become less than three feet deep

5.4.5 Components Inventory Management

5.4.5.1 "As-Built" Plans Maintenance

"As-Built" plans are developed for all wastewater treatment systems. Printed copies of these plans are filed in the project files in the Engineering Department and are indexed by name and project number. Plans are scanned into a digital format and are archived in TESI computer system.

5.4.5.2 Equipment and Supplies

TESI maintains an inventory of operational and backup equipment need to ensure the proper safety of TESI and contractor personnel and the availability of equipment necessary for timely responses at an STP to spills, leaks, power failures, and situations requiring emergency bypass pumping. During a widespread emergency, equipment is to be deployed to systems on the basis of a prioritization ranking that is determined by TESI Engineering/Management. The priority ranking is to be a subjective ranking based on flow quantity of the system, proximity to residential area(s), proximity and potential impacts to sensitive environmental receptors/areas, and other event-specific conditions. In such case as TESI's current asset inventory is insufficient to ensure an adequate response, then TESI will make every effort to secure additional emergency equipment (e.g., generators) from equipment rental vendors, or from neighboring STP owners/operators – whichever will allow for more prompt response.

5.4.5.2.1 Spare Parts Inventory

Spare parts and supply inventories are purchased and maintained by the Operations Administrators for each service district.

5.4.5.2.2 Equipment and Tools Inventory

Equipment and tools inventories are purchased and maintained by the Operations Administrators for each service district.

5.5 Process Control, Testing, and Interpretation

When operating a pond system, a trained operator may be able to determine the overall condition of the pond system by observing the water color, odors, vegetation growth and scum mats. These observations, along with results of a dissolved oxygen test, should provide enough information to estimate the overall condition of the pond system.

Process control data, including CBOD, BOD, TSS, and VSS, shall be collected from the ponds shall be collected at least quarterly. Sampling plans, which will include sample locations, will be developed as part of the site-specific operations and maintenance manuals mentioned in Section 1.4 of this manual. Sampling procedures are defined in the Compliance Department Procedures and Protocols Manual – Appendix 5-2.

5.5.1 Color

The color of pond water can indicate proper operation or a system imbalance. Many color variations may occur in a pond. Table 6-1 summarizes the most common cause of a color issues. However, the operator may need to observe the system more closely to determine the exact cause of the coloration.

Table 5-1: Common Pond Colors and Causes

This color	Often Indicates
Dark green	Normal primary pond operation

Light green	Normal secondary pond operation; indicates proper transfer and reduced loading
Dark Pea Soup	Sometimes occurs in primary ponds during the summer
Black or Grey	Normal right after extreme cold event If in summer, indicates organic overloading- too much BOD
Blackish green	Indicates presence of blue-green algae
Red streaks or pink	Red streaks are typically caused by daphnia under stress due to inadequate oxygen levels Pink could indicate presence of purple sulfur bacteria in anaerobic conditions or red algae in aerobic conditions

5.5.2 Odor

At the end of winter or in the very early spring, anoxic conditions will produce a rotten egg odor due to the presence of hydrogen sulfide. When the pond switches from an anaerobic to aerobic conditions - a process that takes three to ten days-the odor should disappear. If the odor does not disappear, the primary pond has received too much of an organic load over or has an excessive amount of sludge accumulation.

In summer, a properly functioning pond system will have no odor or possibly a slightly musty odor. When odors do occur in summer, they are usually caused by organic overload, excessive sludge, or algae mats that are floating on the pond or washed up on the dikes.

5.5.3 Vegetation and Floating Mats

Properly operating a stabilization pond requires the operator to minimize the vegetative growth or floating mats within the pond. Vegetative growth may cause operational problems such as short-circuiting (incomplete treatment), lack of mixing, improper distribution of influent load, insect breeding and, if the vegetation has deep roots, extensive seal damage.

The main problem with dense mats floating on a pond system is that they reduce the amount of sunlight that can enter the water column. Reduced sunlight limits algae activity, which, in turn, limits the amount of dissolved oxygen produced for use by the aerobic bacteria. Floating mats also limit the effects of wind action. Reduced wind action limits the mixing of pond contents and the amount of dissolved oxygen added through the mixing process. See the Maintenance chapter for more information on vegetation control and floating mats

5.5.4 Dissolved Oxygen Test

Use the dissolved oxygen meter to determine whether problems exist or are developing within the pond system. The operator must use a DO meter and take the readings directly in the pond from various locations. A normal active aerobic pond system should have a minimum of 1to 2 mg/L of dissolved oxygen. If an operator observes odors, color changes, excessive mats, or vegetation, check the dissolved oxygen concentration to determine how it affects the system.

5.5.5 Residual Chlorine

The residual chlorine test should be run during site visits by TESI Compliance Staff to determine whether sufficient chlorine is being fed to consistently disinfect the plant effluent. The required chlorine residual range is typically between 0.2 and 1.5 mg/L; other values may be required if bacteriological tests show disinfection to be adequate or inadequate. The effectiveness of disinfection at a given residual level will vary, depending on the concentration of

solids or nitrogen. Changes in the concentrations can cause the chlorine residual to change with a given feed rate. It is important, therefore, to monitor residual chlorine often and make feed adjustments as needed. The most common field test kit used is the n-diethyl-p-phenylenediamine (DPD) kit; this kit is sold commercially by several companies. As always, the instructions on the kit should be followed carefully, the kit should be clean, and all test data should be recorded. Samples for the chlorine residual test are to be taken at the point nearest to the receiving stream or at the exit point of the chorine contact tank.

5.5.6 Flow

Flow in small plants is typically expressed in gallons per day. Because flow information is important for plant operation, a means for measuring flow through the system is required. At the plant effluent, a continuous flow recorder is recommended, while a V-notch weir is satisfactory and a calibrate 1-gallon bucket is allowable. It is highly desirable to have a flow recorder that displays instantaneous flowrates and cumulative flow. The chart will show peak and low-flow periods that may radically affect not only the clarifier, but overall plant operation. Flows that exceed the hydraulic capacity of the clarifier or other process units can be detected. A single peak-flow period occurring daily can cause solids washout in the clarifier and prevent the activated sludge process from becoming established. If this condition exists, peak flows must be reduced by increasing plant size, adding flow equalization, or diverting flow elsewhere. Daily flow records should be maintained, with readings taken at the same time each day. Although peak flows will not be reflected, water meter readings will give a good indication of the average flow to the plant.

Flow measurement reporting shall be document on the Sewage Treatment Plant O&M Report at each routine site visit by TESI's field personnel.

5.6 Pond Maintenance

A stabilization pond system requires routine maintenance of dikes, control structures, and lift stations to ensure structural integrity and preservation of the facility. Although maintaining a pond system can become very labor intensive if not done regularly, maintenance is extremely important. If neglected, a pond system can deteriorate in a very short time, resulting in costly repairs and even reconstruction. Neglecting maintenance will result in LPDES permit violations.

Proper maintenance is needed to:

- Protect the seal
- Reduce odor and insect problems
- Prevent short-circuiting
- Increase sunlight penetration

Necessary and regular pond system maintenance includes:

- Controlling and removing vegetation- both submerged and floating (mats)
- Mowing grass
- Controlling erosion
- Controlling rodents
- Maintaining control structures
- Monitoring for seepage
- Maintaining entrance road, fences, gates and signs

5.6.1 Sewer Spills, Leaks, and Overflows

Spills, leaks, and overflows of untreated sanitary sewer and solids are considered violations of State Regulations, including the facility's LPDES discharge permit. All such unwanted and unauthorized discharges must be reported in

accordance with applicable LDEQ regulations, including any special requirements listed in the facility's LPDES discharge permit.

During each site visit, the operator or technician should visually assess each pond site to determine whether spills, leaks, or overflows have occurred since the last visit to the site. The operator or technician should not only inspect the areas immediately adjacent to the pond(s) but also those areas (e.g., ditches and surface waters) where spilled materials may have flowed or otherwise accumulated. The areas where spill materials are identified to have contacted the ground surface are referred to as the "spill zone". The spill, including the description of the spill zone, must be noted on the facility's *Spill/Upset report* within 24 hours. Following notification of a possible spill, leak or bypass, a crew is dispatched to conduct an investigation. The initial response team is responsible for assessing the cause of the problem and determining the level of effort needed to correct the problem. If the overflow is confirmed, TESI's Manager of Compliance shall complete an online report required by LDEQ. Within 5 days of completion of the online report, the Manager of Compliance shall submit a certified *Unauthorized Discharge Notification Report* form to LDEQ. Both forms are presented within Appendix 5-3. At a minimum, the information reported shall include:

1. Name and phone number of the responsible person reporting the release;
2. Name of the STP;
3. Date and time of the release;
4. Estimated volume of the release;
5. Location of the release and general description of the spill zone;
6. Name of any affected receiving stream;
7. Whether the release is ongoing at the time of the report; and
8. Photographs of the spill zone and any surrounding surface waters within 20 yards of the spill zone.

In the event of an unauthorized discharge to private lake or waterway, TESI shall notify the management company responsible for each affected lake or waterway. The management company will then determine appropriate response measures for each lake or waterway and will have the responsibility for performing such actions. Response measures may include isolating water supply pumps, posting warning signs around lakes/waterways, residential notifications, lake/waterway sampling, etc.

Within one week of a confirmed spill, leak, or overflow, TESI will complete the removal and proper disposal of all spilled materials (e.g., sewage, solids, and rags) and will disinfect the affected area. TESI is to document the cleanup activities on facility's O&M report and shall include photographs of the same areas photographed as part of the initial reporting effort. If the unauthorized release occurred as a result of a leak, then all identified leaks are to be repaired within 14 days of identification.

If everything appears to be operating normally upon initial inspection, the operator should continue with the routine operation and maintenance procedures outlined in the following sections. To organize the daily duties, the plant operator should utilize the outline presented in Section 5.1.8 so that the operator will not overlook certain areas in his or her daily duties.

5.6.2 Vegetation

Any herbicide used to control vegetation must be approved by the LDEQ and the product registered with the Louisiana Department of Agriculture. Before using an herbicide, you must identify the plant type so you know the correct herbicide to use and the proper time and method to apply it. Questions are often asked about the use of Roundup™. Roundup™ can only be used in the riprap to eliminate excessive weed growth. The use of copper sulfate is not recommended. If you use copper sulfate, you must meet potential water quality limits for copper. This will require sampling during the discharge of both the pond and the receiving water. Before using copper sulfate, contact LDEQ.

It is necessary to control harmful vegetation growth in the dike system, near the water line, and within pond system. Shallow water areas at the water line encourage the growth of cattails, willows, cottonwoods, and similar plants. You may be able to remove small plants by pulling or cutting. In some cases, you will need to use approved herbicides.

Whatever type of vegetation control method you use, it is important to remove the plant material from the pond. If you leave it in the pond, it will decompose and increase the oxygen demand, add to the sludge layer at the bottom of the pond, create unsightly conditions and may reseed, making the problem worse.

You will need to ask yourself the following two questions concerning the growth of any vegetation:

1. Is it deep-rooted?
2. Does it have potential to affect the dissolved oxygen level in the pond (oxygen less than an average of 2 mg/L)?

If you answered yes to either of these questions, you should remove the vegetation immediately.

5.6.2.1 Types of Vegetation

Consider both floating and submerged vegetation:

- Floating - plants that grow to the surface create areas where scum, floating sludge, and other debris tend to congregate, eventually causing mats that block sunlight. Reduced sunlight reduces the amount of oxygen algae produce. The mats may cause odors and encourage insect breeding problems.
- Submerged - some plants have extensive and deep root systems that can penetrate the seal and cause seepage problems.

If pond water depth is not below three feet for an extended period, submerged vegetation should not be a problem. However, when the pond water level drops below three feet for an extended period of time, the operator should start regularly inspecting for plant growth that may start to develop. Typically, if the water level drops below the three-foot minimum in the primary pond, water is often turbid (murky) enough that the amount of sunlight reaching the pond bottom will be too little for plant growth. Of more concern is the secondary pond in which water will be considerably clearer. Therefore, carefully inspect the secondary pond - even when the minimum three feet of water is maintained - to ensure vegetation does not develop.

Dense stands of vegetation, both floating and submerged, may cause short-circuiting and incomplete treatment within the pond, and reduce wind action and mixing of the pond contents.

Keep vegetation in the ponds to a minimum to prevent it from:

- Destroying the pond seal
- Attracting burrowing animals
- Restricting wind action
- Harboring insects

Hydrilla

Under development

Grass cover on dike slopes

The grass cover on dikes discourages erosion. Frequently mowing dike slopes is the best way to preserve the integrity of the dike system.

Appropriate grasses for use on inner dikes are fast growing, spreading and shallow rooted; however, dense types such as rye, brome, and quack are not acceptable. Use grass with long root structures, such as alfalfa or reed canary grass, only on the outer dikes. The roots of these plants can alter the compaction of the inner dike and impair the water-holding capacity of the seal, eventually causing structural failure and costly repair.

When planting additional grass on the dike, use netting or mulch material to hold the grass seed and moisture while roots become established.

Mow the grass on the dikes at least monthly; twice a month is the recommended rate. Frequent cutting promotes a thicker strand of grass and allows the operator to observe developing problems on both sides of the dike slopes.

Cattails

Cattails are the most troublesome deep-rooted plants found in Louisiana pond systems. Cattails easily become established in the shallow water along the dikes, or wherever the water level is below three feet for an extended period. Cattails' extensive root system can damage the seal. They provide habitat for rodents, reduce circulation and cause short-circuiting.

You can use several methods to control cattails; however, you must choose a removal method appropriate to the amount of plant growth and the time of year.

- Pulling - Pull cattails early in their first year of growth when they are young and before they become established.
- Cutting and drowning - Cut off the cattails as close to the bottom as possible. Immediately after cutting, drown them by raising the water level to at least three feet above the top of the cut cattails. If you cannot cut them close to the bottom, cut them at least three feet below the usual water level. Raising the water level to at least three feet will reduce the amount of sunlight that penetrates the water to the plants. This in turn will hinder the root system from continuing to grow. Cutting and drowning is most effective if done mid-June to mid-July when the cattail flowers are actively growing. Cattail flowers are developing when you see a dark green and pebbly textured flower on top of the stalk, with a pale green flower just below it.
- Spraying with an approved herbicide - Use herbicides only as a last resort; however, if cattails are extensive and dense, using herbicides may be the only practical and effective way to eliminate them. Only use herbicides approved by the Louisiana Department of Agriculture. Follow manufacturer's application directions exactly. Most herbicides should not be applied until the plants are 18 inches above the water to ensure adequate leaf surface for chemical contact and allow the use of a wetting agent. Successful methods for spraying a pond include high-pressure spraying rigs mounted on dikes or fire trucks and portable spraying rigs mounted in boats. Although initial cost may be high, using the proper herbicide will likely result in increased savings in time and money overall.

5.6.2.2 Floating Mats

Floating mats are common on a pond system in the late summer, especially in areas where there is very little wind action. Floating mats may consist of a combination of sludge, blue-green algae, grease and oil, and duckweed.

Heavy mats may cause problems, such as:

- Reduced sunlight penetration, which lessens algae activity and lowers dissolved oxygen
- Odors
- Loss of aesthetics
- Creating insect breeding areas

Blue-green algae

Although blue-green algae could exist in ponds at all times during the summer, mats form mainly during August and early September. The presence of blue-green algae usually is associated with high organic loading, low dissolved oxygen, and warm water conditions. Mats can be poisonous to animals that drink the water. Rotting mats can cause odor problems.

Removal is usually not necessary. If it is, first try to break the mat up so it settles. If the pond containing blue-green algae is the first pond receiving the influent waste, diverting the influent to the other primary for a week or so may reduce the problem. Normally the blue-green mats will not occur if the ponds receive adequate mixing by the wind. As nights become cooler, the mats should dissipate naturally.

Filamentous algae

One common type of algae occurring in the summer is filamentous algae. They are long strings of algae that clump together to form a greenish/gray mat. They tend to accumulate in corners or along the dike where there is little wind action. They are typically not large enough to cause a dissolved oxygen problem and do not have to be removed.

Duckweed

Duckweed is a small floating light green plant that looks somewhat like very small clover. It is very common in pond systems. You will usually see it in smaller ponds and those that do not receive enough wind action. About the size of an eraser on a pencil, duckweed may be of the singular or three-leaf type. Close observation will clearly show a two-inch long root attached to the underside of the plant. Duckweed growing on a pond will look like a velvety green carpet floating on the surface. Generally, duckweed does not cause problems, and absorbs nutrients such as nitrogen and phosphorus. In some cases, because it restricts sunlight penetration, it actually limits excessive algae growth, but usually not enough to cause a DO problem.

Sludge clumps

Black or grey sludge clumps normally are seen right after extreme cold in the winter or heavy rains in the spring. They develop during the process of anaerobic digestion near the pond bottom. Gas by-products tend to accumulate in the sludge layer causing the sludge clumps to float. Enough wind action will break up the sludge and release the gas, which allows the sludge to sink. If the sludge does not break up and settle, mix the clumps using a long pole, fire hose or boat. This should release enough gases to allow settling. When sludge clumps reoccur during the summer, look for other possible causes, such as an organic overload.

Grease, oil or gasoline

Excessive grease, oil, or gasoline on a pond surface can cause the water to be slippery, hindering wind and wave action to mix and aerate the pond. Remove oil and grease by skimming it off the surface or using pads, straw, or corn cobs to absorb it. After cleaning up the grease and oil, an operator's primary concern should be to identify and eliminate the source of the problem before there is a recurrence. If you suspect something is being discharged into your collection system, you should discuss this with LDEQ.

5.6.3 Controlling Erosion

TESI policy requires that dikes and discharge locations be inspected weekly for signs of erosion. Take special note of potentially weak areas at the point of discharge, along the dike, and:

- Around control structures
- In the corners
- In areas where vegetative cover on the dike is inadequate
- In areas where dikes were not sufficiently compacted during construction

Because of increased wave action from wind traveling across the pond, erosion problems can be more serious on the downwind side of the pond. Therefore, inspect these areas more frequently. Any indications of erosion that may adversely impact the performance or integrity of the system must be noted on the Pond-STP O&M Report. Any repairs or modifications will be initiated by TESI's Engineering Department, with input from operations.

Erosion problems greatly reduce the design life of a pond system. Erosion may:

- Wash away the liner cover material or possibly the actual liner
- Create difficult maintenance areas along the dikes
- Increase the potential for muskrat habitat and damage to the dikes

The most practical method of controlling erosion is using riprap material. Riprap, or some other acceptable method of erosion control, is required on all inner dike slopes for new pond systems. Before placing riprap on existing pond systems the first time, you must make sure the seal's integrity is intact. Riprap material is placed from the toe of the dike to at least one foot above the high water line. A current design criterion recommends placing riprap all the way to the top of the dike.

The type of riprap you use depends upon what material is readily available. Riprap materials used for erosion control should include:

- Durable, clean rocks in assorted sizes, such as fieldstone or quarry (angular, crushed bedrock). Most rocks should be between two and nine inches in diameter and placed a minimum of six to 12 inches deep.
- Materials like silt fences or straw and hay bales may be used as a temporary measure in an emergency situation. They must be replaced by permanent riprap.

Materials that should not be used as riprap include:

- Asphalt material from streets - it would have to be replaced after a few years because it breakup into small pieces and may leach toxic and oil materials into the water
- Unclean rubble from demolished buildings and street improvement projects such as bricks or chunks of concrete sidewalks - they make excellent habitat for rodents to burrow into the dike
- Sandstone rock - over time it erodes easily
- Tires - they shift on the dike, rodents can get through them to burrow into the dike, they provide excellent breeding habitat for insects, and hazardous chemicals may leach off the tires into the pond

5.6.4 Controlling Rodents

One critical part of weekly dike inspections is to look for burrowing animals, such as nutria, that can cause serious damage to the dike system. Nutria are the leading troublemakers for pond operators. They often can be eliminated simply by preventive maintenance. Since many types of vegetation are major food sources for nutria, controlling vegetation can help to get rid of them. Nutria makes their homes by burrowing in dikes to provide an entrance to their den which is above the water line. Tunnels (runs) begin below the water line and penetrate the inner dike and liner/seal at an upward angle. A tunnel will end up in a dry chamber (den) above the water line. Because tunnel entrances are underwater, you will need to inspect carefully after a discharge or transfer of water to detect their presence.

If riprap is present, locating a nutria run is difficult. Nutria have been seen entering very small areas between the riprap. Operators may use several methods to find entrances to nutria runs and nutria dens:

- Observe where the muskrat swims to the dike; this is normally close to the tunnel entrance

- When the water level is very low, to help locate the tunnel entrance, look for muskrat tunnels below the water line
- If you have grass dikes, walk along the dike and look for any depressions in the dike; tunnels and dens are often shallow enough that you can find a depression

Discuss with your local Department of Wildlife and Fisheries and Agricultural Extension Office to determine the best way to remove nutria. After eliminating the nutria, carefully repair the damaged areas of the dike. Normally, repair requires removing the riprap and liner, digging open the tunnel, replacing the clay or vinyl liner that was removed, re-compacting the area, and then placing rip rap material at the closed tunnel entrance and den.

5.6.5 Control Structures

Control structures are essential for controlling water levels and flow paths, and include cell baffles, transfer piping, and any other ancillary equipment such as turtle excluders. An operator must make sure they always function the way they should. Problems with control structures are typically erosion, corrosion and leaking. Reduce corrosion problems by frequently lubricating gates and valves and by moving the gates and valves often enough to ensure mobility. Another way to reduce corrosion is to increase ventilation by replacing solid manhole covers on the structures with grated covers.

Leaks in structures are usually hard to fix. An operator may use gasket material, grout, or sewer plugs to try to stop the leak. However, to get rid of the problem you may need to replace gates, slides, or telescoping valves.

Controlling erosion issues are addressed in Section 5.6.2 of this manual.

5.6.6 Controlling Insects

Insects, which naturally occur around water, may discourage the use of stabilization ponds. However, in a well-maintained system, insects usually are not a problem.

U.S. Public Health Service studies found that insect population in a pond is directly proportional to weed growth; the more weeds, the more insects, since insects tend to multiply in quiet water conditions. In ponds with negligible weed growth that does not restrict wind action, insects tend not to be a problem. To control insects, eliminate their breeding habitat. This means controlling vegetation along the dike and in the ponds, regularly mowing and removing grass, and breaking up floating materials. Use a chemical or a natural biocide such as *bacillus thuringiensis* to kill insect larva only in cases of severe infestation.

5.6.7 Solids Accumulation at the Inlet Pipe

The settleable portion of suspended solids in wastewater tends to accumulate near or in the inlet pipe, particularly when the inlet is a vertical, rather than a horizontal pipe. Because the velocity of incoming wastewater is too low to disperse it, incoming grit and sand forms an island around a vertical inlet pipe. If allowed to accumulate, the grit and sand will plug the line.

If solids constantly accumulate at the end of the influent line, you must remove them or push them away from the pipe. Removal methods to consider include:

- Pump the excessive grit and sludge from around the inlet
- Break up the island and push the grit away from the inlet

You also need to check the collection system. Cracked collection system piping or possibly an industrial-related problem could be allowing excess grit to enter the collection system. Determine the source of the problem and eliminate it, so the problem does not reoccur.

There should not be a vertical inlet coming into the primary pond(s). The only time this happens is if there is a force main coming directly into the pond system, which is the case in most of TESI's pond systems. Besides solids accumulation, another concern with a force main coming into the pond system is a force main break. If that happens all the water from the primary pond(s) will drain back through the force main and into nearby surface water or private property.

5.6.8 Roads, Signs, Gates, and Fences

All pond systems must have an adequate all-weather road to allow the operator to conduct weekly inspections all year. Ponds must have signs placed on each side of the pond site and one every 500 feet on the perimeter. The sign must inform of the nature of the facility and against trespassing. Specifically, the signage is to include TESI's name or logo, potential hazards of accessing the facility (e.g., "Wastewater Treatment Facility"), and a phone number to contact in the event of an emergency or overflow. An entrance gate of sufficient size to allow mowing equipment to enter the pond site must be locked whenever it is not actually in use to prevent unauthorized access. Enclose the entire pond area inside a stock-tight fence to prevent livestock from entering and discourage trespassing. The fence is to be located so that it does not get in the way of maintenance vehicles and mowing equipment travelling along the top of the dike. Immediately upon arriving at the plant, the operator shall assess whether or not the gate is securely locked and the integrity of the entire fence around the site is sufficient so as to preclude access by unauthorized persons.

5.6.9 Operation of Disinfection Equipment

Disinfection of the wastewater, usually by tablet chlorination, must be a continuous process. Chlorine residual tests should be run as described in the testing equipment manufacturer's instructions to ensure proper disinfection of the effluent stream is occurring.

The following items are important to effective and safe operation of the disinfection process:

1. An adequate detention time, generally 15 minutes, is necessary to allow the chlorine to contact and kill the bacteria. Fifteen minute detention and effective mixing can be verified by adding dye at the point of chlorine discharge and check the time required for the majority of the dye to appear in the effluent. Baffles should be maintained in satisfactory condition to prevent short circuiting, or reduction of the detention time.

2.Addition chlorine tablets should be brought the facility at each site visit by a Technician or Operator. The amount of chlorine tablets used should be recorded on the Sewage Treatment Plant O&M Report in order to establish typical chlorine consumption rates for the facility.

3.The tablet chlorinator, and connections to, should be checked at each site visit for leaks. The tablet chlorinator and all connections thereto, shall be self-supporting to prevent undue stress on the joints which can result in decrease life of the equipment and/or leaks.

During each site visit, TESI personnel shall inspect each chlorine contact chamber for the presence of floatable and settled solids. Any floatable solids in the chlorine contact chamber shall be removed by skimming on the same day the problem is identified. If settled solids are present in the chlorine contact chamber, they shall be removed if, at any location within the chlorine contact chamber, the settled solids are deep enough to register when measured with a Sludge Judge sampling device. Removal of floatable and settled solids within the chlorine contact chamber shall be documented by TESI personnel on the applicable plant's Operation and Maintenance Report ("O&M Report").

5.6.10 Final Effluent Appearance

The operator should also observe the final effluent to see how the process is working.

If the final effluent appears clear or is improving day by day, obviously the operator should continue to do what he has been doing. However, if it appears turbid or contains noticeable solids, trouble may be just around the corner. Visual observations and process control tests will help to show what needs to be done.

At this time, the operator should also take time to assess the condition of the outfall sewer. The outfall sewer was designed, and approved by State Agencies, to discharge treated wastewater to an approved receiving stream based on certain considerations which may include, but not limited to:

a. Preference for free fall or submerged discharge at the site selected;
b. Utilization of cascade aeration of effluent discharge to increase dissolved oxygen; and
c. Limited or complete across-stream dispersion as needed to protect aquatic life movement and growth in the immediate reaches of the receiving stream.

Additionally, the sewer outfall is to be constructed and maintained so as to be reasonably protected against the effects of floodwater, tide, ice, vegetation, or other hazards. During the assessment of the outfall sewer the operator should determine if it is feasible, with the available resources at the time of the site visit, to perform repairs or modifications necessary to return the discharge pipe to its intended functionality. If not feasible, then the operator shall note the need for such repairs on the O&M Report and initiate a work order to correct the issue(s).

5.7 Documentation & Records

Keeping adequate performance records is an integral part of good pond operation. Accurate pond and laboratory records can help the operator determine the best facility operating procedures. Records can indicate when problems develop and help identify the source of the problem. They provide an excellent way to check which things are already done and which need to be finished. Significant details of day-to-day experience have important historical value if they form a running account of pond system operation.

All records must be kept in TESI's system-specific files. All operations and maintenance activities must be properly and neatly documented on a TESI-approved Sewage Treatment O&M Report for pond systems. See Appendix 5-4 for a copy of the current TESI-approved O&M Report.

Your LPDES permit requires you to retain all records for at least three years. Records include DO and pH meter calibrations, lift station pump capacity calculations and laboratory sheets. The LDEQ may request that you keep the records for a longer period.

5.8 Scheduling and Prioritization of Inspection, Corrective Maintenance, & System Rehabilitation Activities

Routine treatment system inspection and maintenance planning is performed and coordinated by the Manager of Operations and assisted by the District and Field Supervisors and the Construction and Maintenance and Operations crews, as required by LTC Plan Paragraph 7.. System with consistent, or frequent, excursions from LPDES permit limits receive the highest priority, followed by other emergency repairs, scheduled maintenance in problem areas, and then regular maintenance.

Major system rehabilitation or corrective maintenance actions are to be scheduled and initiated by TESI's Manager of Engineering (MOE), with assistance from the Quality Assurance Coordinator (QAC). These individuals will oversee the flow monitoring, process control sampling, analysis interpretation efforts and to use this data to make recommendations pertinent to changes in process control strategies and system rehabilitation. The Manager of Engineering will also oversee the rehabilitation, including inspection and incorporation of the rehabilitation results into

the comprehensive system-specific process control plan. The Quality Assurance Coordinator will manage the MOM documents and ensure that the tasks described within are performed and that recordkeeping is properly performed.

The purpose of this is effort is to establish priorities, by service area, for assessing the condition and capacity of the wastewater collection and treatment systems. The goal is to efficiently restore the system to optimum capacity and performance through rehabilitation of the treatment system and provide information for planning purposes.

The MOE and QAC will use the findings of service orders, flow monitoring studies, and process control sampling to develop a listing of priorities for further investigation.

The MOE and QAC will review the following information:

- **Service Orders** - The reports generated from will indicate drainage basins with back-ups and sewer system overflow problems.
- **Flow Monitoring Reports** - Reports covering at least a 60-day period should include several rainy periods and should indicate drainage basins with high wet weather flow to dry-weather flow ratios.
- **Preliminary Treatment Assessments** - Any field observations and process control data made by work crews or operators that may indicate problem areas within the treatment system.
- **Public Health and Environmental Issues** - Concerns created by sewer defects, insufficient capacity, or a need for wastewater collection system expansion that are raised by LDEQ, including receiving water use designations.

The MOE and QAC will prioritize the systems based upon the information obtained from the above data groups to develop a schedule for cleaning, inspection, and changes in the control strategies of the wastewater systems. The results of the process control analyses are compiled in a Treatment System Assessment report that prioritizes the order of treatment systems for rehabilitation and/or corrective maintenance. This report is utilized to establish a capital improvement plan that must be balanced with the financial capabilities of TESI. However, any defects requiring immediate attention in other areas will be corrected on an ongoing basis.

Note: *Any system for which recorded or observed peak flows exceed the peak flows that would be anticipated based on the application of the peaking factor determined as described in Section 4.5.2, shall be included as a Tier I, or highest priority designation, within the report by the MOE and/or QAC, and requires prompt inspection and evaluation for potential inflow and infiltration.*

Chapter 6 – Troubleshooting

Tables 6-1 through 6-9 summarize problems that stabilization pond operators often encounter. The tables are a guide. For more information, refer to the appropriate sections in this or other manuals. This manual has not addressed all possible problems nor has it answered all possible questions. When you have problems for which you don't have a solution, try the following:

- Discuss it with Manager of Operations or Manager of Engineering
- Discuss the situation with Louisiana Rural Water Association
- Contact your consulting engineer
- With management approval, discuss with LDEQ

Table 6-1: Weeds and Trees

Problem	Observation	Effect	Probable Cause	Possible Solution
Cattails and bulrushes	Excessive growth along dikes in shallow water area; usually in water less than 3 ft deep	• Damages seal • Reduces circulation • Provides insect habitat • Encourages nutria • Causes short- circuiting • Reduces wind action	• Low water level • Lack of proper maintenance • Seed crop of cattails or bulrushes close to ponds	• Pull new growth • Lower water level and cut; then raise water 3 ft above the top of the plant • Spray with approved herbicide • Remove dead vegetation
Small trees	Normally found on dike in shallow water or on dikes	• Roots are deep penetrating and will damage seal • Reduces wind action • Provides insect & muskrat habitat • Produces unsightly appearance • Weakens dike compaction	Lack of proper maintenance	• Pull new growth • Frequently mow new growth • Spray older trees to kill; cut and remove trees • Apply granular brush killers to roots if water at tree base is shallow
Duck weed	• Clover- like floating plant • Looks like velvety green carpet • Shallow roots • Singular or three-leaf types	• Thick mats may hinder sunlight penetration • Less than SO% coverage usually not a problem • Thick mats may rot and cause odors	• Normal July through September • Warmer water • Quiet water; lack of wind action	• Check pond DO; if more than 2 mg/L, should not cause problem • Increase wind action by removing weeds, trees, etc. • Skimming helps short term (7-10 days) • Herbicides may help short term • Normally dies off with cool fall nights

Table 6-2: Algae, Grease/Oil, and Floating Mats

Problem	Observation	Effect	Probable Cause	Possible Solution
Algae	• Blackish green directly after ice out indicated cold water algae bloom • Normally on primary(s)	• Depends on duration • May become difficult to meet TSS limit	• Anaerobic/aerobic conditions	• Wait for algae to die *off;* then proceed with normal discharge(5-15 days) • If a chronic problem, investigate excessive phosphorus within the sludge layer
Algae (spring discharge)	Paler green color	• Indicates aerobic pond, beginning summer cycle	• Natural growth (symbiotic cycle)	
Algae (summer)	Dark green color	• Normal • Necessary for proper treatment	• Natural growth (symbiotic cycle)	
Algae (fall)	Light to medium green color	Possible violation of TSS limit	•Warm fall • Improper pond operation; did not create old water • Excessive nutrients in influent/sludge • No riser outlet pipe in primary(s)	• Wait until algae clears (usually October) • Install riser pipe to prevent recurrence • Check nutrient loading • Make older water in primary(s) • May need chemical treatment
Blue-green algae mats	• Appears as bright green mat *Y2* to 4 inches thick • Occurs in small clumps or in large mats	• Reduces sunlight penetration, wind action and mixing • May be toxic to animals drinking water • Rotting mats create odors	• Low DO • High organics and nutrients • Low pH • Excessive warm water	• Break up mat with fire hose, motorboat with air- cooled engine • Use herbicides • For small amount, wait for natural die-off with cool fall nights
Greases and oils	• Pond may appear very quiet (little wave action) • Visible accumulation in corners • Thick oils tend to clump	• Reduced wind action and mixing • Thick layer reduces sunlight penetration	• Industrial discharge or spill • Flushing accumulated oils from collection system • Tank truck accidents	• Skim *off* • Contain with floating booms • Use absorbent pads, straw or corn cobs to pick up materials; then remove • Contain and remove at lift station or manhole before plant

Table 6-3: Animals and Insects

Problem	Observation	Effect	Probable Cause	Possible Solution
Nutria	• Dips in dike top or slope • Entrance holes in dike slope (if grass covered) • Nests built of cattails within pond	• Damage seal • Seepage into ground water causing contamination	• Migration to pond during dry weather • Pond vegetation (mostly cattails) provides food and shelter • Marsh area close to pond • Improper maintenance	• Remove food (plants) supply • Get permission from LDWF to shoot or trap animals • Keep pond clear of vegetation • Lower water level to expose entrance and re- establishing existing seal by closing off tunnels/runs with existing seal material • Use proper riprap on dikes to discourage burrows • Poison by approved methods
Cattle		• Structural damage to dikes • Damage seal	• Broken fence • Gate to ponds left open	• Remove cattle • Repair fence • Keep gate locked
Mosquito	• Excessive mosquitoes present • Excessive larvae in water sample	• Nuisance condition • May carry disease	• Scum, algae or sludge mats on pond • Vegetation • Stagnant water • Lack of wind action	• Keep pond clear of weeds • Ensure adequate wind action • Remove mats and scum • Last resort: spray with larvacide (Use approved chemicals and procedures)

Table 6-4: Overloading – Hydraulic & Organic

Problem	Observation	Effect	Probable Cause	Possible Solution
Hydraulic	• Exceed design flows • Bypass or overflow during heavy rain conditions	• Reduces detention time • Increase erosion potential • Sewer backups into customer services • Excessive wear on lift station	• Excess industrial/commercial flow • Infiltration • Inflow • Increased population • Combined sewers • Water main break	• Work with industry/commercial users to reduce flows • Disconnect sump pumps, footing drains ,roof drains and catch basins from sanitary sewer • Repair or replace leaking manhole covers • Repair broken sewer lines • Repair water main
Organic	• Odor problem • Possible excessive sludge mats • Water color is milky, gray, brown, black or red • Low DO	• Exceed permit discharge limits • Odor issue with adjacent land owner	• Excess industrial/commercial BOD loading • Increased population •Algae kill • Bacteria kill	• Work with industry/commercial users to reduce loading • Check for toxic materials that may have killed biological community; eliminate source • Recirculate fresh oxygen-rich water to affected pond • Install supplemental aeration

Table 6-5: Underloading – Hydraulic & Organic

Problem	Observation	Effect	Probable Cause	Possible Solution
Hydraulic	Flow data shows continuous low influent flows Low water depth; always less than 3 feet	If levels are too low, problems can develop (weeds, odor, etc.)	• Flow measurement equipment in error •Overdesigned •Broken sewer line (exfiltration) • Excessive pond seepage • Excessive evaporation Population decrease	•Calibrate flow measurement equipment; repair if incorrect • Add water •Re-evaluate design; reconstruct system • Possible water balance to determine seepage
Organic	Quarterly influent test indicates light CBOD loading Pond never turns dark green	Normally not a problem on controlled discharge ponds	Overdesigned	

Table 6-6: Odors

Problem	Observation	Effect	Probable Cause	Possible Solution
Spring odors	• Hydrogen sulfide (rotten egg) odor of more than 10 days • Pond water is black, brown or gray color	Issues with surrounding land owners	• Normal change from winter anaerobic to summer aerobic condition if less than 10 days • Normal change if longer than 10 days and weather has been colder than normal • Excessive organic BOD load	• Wait for 3-10 days after heavy to determine whether change to aerobic condition occurs • May need to add chemical in severe cases (hydrogen peroxide, sodium nitrate) • Installing aeration equipment after ice out makes problem worse, but may shorten duration
Summer odors	• Odors • Excessive sludge mats (over 5O %) • Excessive blue-green algae mats (over 5O %) • Low DO (under 2 mg/L in the afternoon)	Issues with surrounding land owners	• Decaying mats or vegetation • Organically overloaded pond system • Extended period of cloudy or rainy weather • Seasonal industries may cause periodic overloading or toxic problems	• Break up or remove mats • Check pond DO to see if algal activity is adequate • Check for adequate wind mixing • Check if odors are caused by other source • Apply hydrogen peroxide or sodium nitrate • If cause is organic overload, determine the source and work to reduce it

Table 6-7: Permit Violation at Discharge

Problem	Observation	Effect	Probable Cause	Possible Solution
BOD5	Above permit limit	May cause loss of DO in receiving stream	• Organic overload • Improper sampling technique • Lab error • No riser pipe on discharge line • Improper pond operation; did not create old water	• Check sampling and handling techniques • Resample • Check organic loading to pond system • Install riser pipe so problem does not recur • If possible, wait to discharge until BOD meets limits
TSS	Above permit limit	May cause loss of DO in receiving stream	• Excessive algae • Strong winds before or during sampling • Excessive nutrients for algae Improper transfer; too fast • Improper pond operation; did not create old water	• Check sampling and handling techniques • Resample Check organic loading to pond system • Install riser pipe so problem does not recur • If possible, wait to discharge until TSS meets limits • Add recommended chemical
Fecal coliform	Above permit limit	May cause excessive bacteria count in receiving stream	• Did not take sample in a sterilized container • Excessive wildlife population	• Determine whether samples were taken in separate sterilized container • Resample • Remove wildlife • If possible, wait until natural die off • If possible, wait and discharge after fecal limit is not applicable • Check for proper disinfection of the effluent

Table 6-8: Excessive Solids Accumulation in Primary Cell

Problem	Observation	Effect	Probable Cause	Possible Solution
Sludge build-up in primary(s)	• Rising sludge mats or clumps • Black/grey water • Low DO (consistently less than 2 mg/L	• Odors • Increased solids load to secondary	• Organic overload • Normal to accumulate over winter • Bacteria/algae not in proper balance	• Check for excessive organic loading • Remove sludge
Solids buildup at end of influent pipe	Island visible during low level water	• Blockage of influent line • Odors if island is exposed • Shallow area may develop excessive vegetation	• Excessive grit problem in collection system • Poor design on influent pipe; inlet line is vertical instead of horizontal (if gravity flow is used)	• Correct broken sewer • Check influent line; repair if needed • Carefully remove island with suction pump, etc.

Table 6-9: Control Structures

Problem	Observation	Effect	Probable Cause	Possible Solution
Leakage	Less than normal pond water depth	Inadequate water levels to maintain proper treatment	• Slide gates are leaking between gate and guides • No shutoff valve after slide gates • Leak between concrete walls and control structure wall • Leak around outside of control structure	• Machine gates • Install new gates • Install gasket, if possible • Temporarily plug area between gates with bentonite or clay until permanent solution is found • Install new slides/guides • Grout concrete joints • Install shutoff valve
Corrosion	• Slide gates stuck • Pitting of metal • Metal oxide build-up on gates or slides	• Does not allow proper slide gate adjustment • Can't operate pond properly to create old water	• Poor ventilation • Anaerobic condition in structure • Gates and slides are different types of metal • Gates and slides are not corrosion resistant	• Install grated cover • Clean out to reduce biological activity in structure • Regularly lubricate gates and slides • Install new gates and slides

UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF LOUISIANA

UNITED STATES OF AMERICA and STATE OF LOUISIANA, through THE DEPARTMENT OF ENVIRONMENTAL QUALITY, Plaintiffs, v. ACADIA WOODS ADD. #2 SEWER CO., ACADIANA TREATMENT SYSTEMS, et al., Defendants, and TOTAL ENVIRONMENTAL SOLUTIONS, INC., Intervening Defendant.	Civil Action No. 6:98-0687

AGREEMENT AND ORDER REGARDING MODIFICATION OF THE CONSENT DECREE WITH RESPECT TO TESI

APPENDIX B

LONG TERM COMPLIANCE PLAN

Attachment 7

O&M Report for Pond STPs

TOTAL ENVIRONMENTAL SOLUTIONS, INC.

LAGOON SEWAGE TREATMENT O & M REPORT

☐ ROUTINE O&M ☐ NPDES SAMPLING ☐ PROCESS CONTROL SAMPLING ☐ RE-EVALUATION PROCESS CONTROL

Date: _____ **Facility Name:** _____ **Time in:** _____am/pm, **Time Out:** _____am/pm

Rain Gauge _____ Inches

Spill Insp.: Y / N **Spill Detected: Y / N** **Leak Insp.: Y / N** **Leak Detected: Y / N**

SITE VISIT ASSESSMENT OF STP FOR OPERATORS &TECHNICIANS	F	I	N/A	Comments
Is fencing around facility able to prevent public access:				
Are signs displayed which indicate TESI's ownership, the potential hazards of accessing the STP & a phone # to contact in case of an emergency or overflow:				
Is the effluent being discharged at the proper outfalls:				

LIFT STATION # ***LIFT STATION #*** **Legend: F=Functional I=Inoperative N/A = Non-Applicable**

Items	F	I	N/A	Comments	Items	F	I	N/A	Comments
#1 Pump and/or Motor _____amps					#1 Pump and/or Motor _____amps				
#2 Pump and/or Motor _____amps					#2 Pump and/or Motor _____amps				
V-Belts					V-Belts				
Electrical Components					Electrical Components				
Level Floats					Level Floats				
L/S RUN TIME HOUR METERS				Hours	***L/S RUN TIME HOUR METERS***				Hours
#1 Pump Meter					#1 Pump Meter				
#2 Pump Meter					#2 Pump Meter				

*USE ADDITIONAL O&M REPORT FOR ADDITIONAL LIFT STATIONS

Legend: F=Functional I=Inoperative N/A = Non-Applicable

Additional Comments:

	F	I	N/A	
INFLUENT PIPE				Above / Below water level (circle one)
CELLS				Cell 1 *(Y / N)*, Cell 2 *(Y / N)*, Cell 3 *(Y / N)* Trees/shrubs: Y / N Removed trees/shrubs: Y / N Pond Cell Color – (Green (G), Light Brown (LB), Dark Brown (DB), Other (O)) Cell 1 *(___)*, Cell 2 *(___)*, Cell 3 *(___)*
AERATION *(Y / N)*				Aerators operational? *(Y / N)*, Are the aerator(s) mixing the lagoon(s) properly? *(Y / N)*
TRANSFER PIPING				Cell 1 - Tee and riser on the transfer pipe? *(Y / N)*, Flowing? *(Y / N)*, Turtle Strainer in Place? *(Y / N)* Cell 2 - Tee and riser on the transfer pipe? *(Y / N)*, Flowing? *(Y / N)*, Turtle Strainer in Place? *(Y / N)* Cell 3 - Tee and riser on the transfer pipe? *(Y / N)*, Flowing? *(Y / N)*, Turtle Strainer in Place? *(Y / N)* Last Cell to CCC - Tee and riser on the transfer pipe? *(Y / N)*, Open? *(Y / N)*, Turtle Strainer in Place? *(Y / N)*
***CHLORINE CONTACT CHAMBER (CCC)** **Effluent DO _____mg/L** **Water Temp _____°C** **DO Drop: ☐ On ☐ Off ☐ N/A** **TRC _____mg/L pH _____**				*Chlorine tablets added: (Y / N), # of tablets added: _____ (inspect chlorine chamber for solids)* Chlorinator: ☐ Clean ☐ Debris Present Debris removed? *(Y / N)* CCC - Floatable Solids Present? *(Y / N)*, Floatable Solids removed? *(Y / N)* Solids Present? *(Y / N)*, Solids Measured w/Sludge Judge? *(Y / N)* Solids Depth: _____feet/inches (circle one), Solids Removed: *(Y / N)* **If Solids Removed, identify location & estimated amount of solids removed below:** Estimated amount removed: _____gallons: Solids relocation: Cell 1, Cell 2, Cell 3, Offsite
LEVEE SYSTEM				Grass Cut? *(Y / N)*, Inspect for Leakage? *(Y / N)*, Seepage? *(Y / N)*, Animal burrow present? *(Y / N)* Levee Erosion? *(Y / N)*, Levee breaches? *(Y / N)*, Trees or excessive vegetation? *(Y / N)*
CELL BAFFLES				Visible Damage? (Y / N), Intact as Installed? (Y / N) Seepage? (Y / N),
AERATOR(S)				#1 ____amps, #2 ____amps, #3 ____amps, #4 ____amps

FLOW MEASUREMENT REPORTING ***TURN OFF POST AERATION BEFORE MEASURING, IF EQUIPPED..***

V-Notch Sample Box (Record Inches)	Continuous Flow Monitor (Record Reading)	1-Gallon Bucket & Stop Watch (Record Seconds to Fill)
		1. 2. 3.

Additional Comments:

TESI Personnel Signature:	**Date Report Reviewed:**
Print Name:	**Reviewed by:**

UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF LOUISIANA

UNITED STATES OF AMERICA and

STATE OF LOUISIANA, through THE DEPARTMENT OF ENVIRONMENTAL QUALITY,

Plaintiffs,

v.

ACADIA WOODS ADD. #2 SEWER CO.,

ACADIANA TREATMENT SYSTEMS, et al.,

Defendants,

and

TOTAL ENVIRONMENTAL SOLUTIONS, INC.,

Intervening Defendant.

Civil Action No. 6:98-0687

AGREEMENT AND ORDER REGARDING MODIFICATION OF THE CONSENT DECREE WITH RESPECT TO TESI

APPENDIX B

LONG TERM COMPLIANCE PLAN

Attachment 8

Template for STP Specific Process Control Plans for Pond STPs

STP-Specific Process Control Plans (Management, Operations, & Maintenance (MOM) Program: Pond/Lagoon Systems, Chapter 1.4 - Site-Specific Management, Operation, & Maintenance Plans)

The equipment and processes to provide conveyance and treatment of wastewater can vary from facility to facility. To address this issue, TESI is currently in the process of developing site-specific MOM Program Manuals for each of their facilities. Once developed, these site-specific Manuals should be reviewed and followed by TESI's Operators and Technicians for proper facility operations and maintenance, rather than the more general, holistic approach described within this current manual. TESI anticipates that the site-specific MOM program manuals will follow the same outline as the general MOM program manual; specifically, the site-specific program will include the following sections:

1. Introduction to the Facility
    a. Location information
    b. Process schematic
    c. LPDES permit information
    d. Relevant contact information
2. Introduction to the Process
    a. Process description
    b. Design requirements
    c. Site-specific equipment list(s)
3. Staffing Requirements
    a. Organizational chart
    b. Description of positions and responsibilities
    c. General routing information
    d. Training requirements
4. Descriptions of Routine Operations and Maintenance Activities
5. Sanitary Sewer Overflows & Bypass Response Plan
6. Emergency Operations
7. Safety Procedures
8. Quality Assurance & Root Cause Analysis

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UNITED STATES OF AMERICA and STATE OF LOUISIANA, through THE DEPARTMENT OF ENVIRONMENTAL QUALITY, Plaintiffs, v. ACADIA WOODS ADD. #2 SEWER CO., ACADIANA TREATMENT SYSTEMS, et al., Defendants, and TOTAL ENVIRONMENTAL SOLUTIONS, INC., Intervening Defendant.	Civil Action No. 6:98-0687

AGREEMENT AND ORDER REGARDING MODIFICATION OF THE CONSENT DECREE WITH RESPECT TO TESI

APPENDIX B

LONG TERM COMPLIANCE PLAN

Attachment 9

Template for Enhanced Collection System Maintenance Plan

1.4 Site-Specific Management, Operation, & Maintenance Plans

The equipment and processes to provide conveyance and treatment of wastewater can vary from facility to facility. To address this issue, TESI is currently in the process of developing site-specific MOM Program Manuals for each of their facilities. Once developed, these site-specific Manuals should be reviewed and followed by TESI's Operators and Technicians for proper facility operations and maintenance, rather than the more general, holistic approach described within this current manual.

TESI anticipates that the site-specific MOM program manuals will follow the same outline as the general MOM program manual; specifically, the site-specific program will include the following sections:

1. Introduction to the Collection System
    a. Location information
    b. Process schematic
    c. LPDES permit information
    d. Relevant contact information
2. Introduction to System Operations
    a. Service Area Description
    b. Design requirements
    c. Site-specific equipment list(s)
3. Staffing Requirements
    a. Organizational chart
    b. Description of positions and responsibilities
    c. General routing information
    d. Training requirements specific to operations, maintenance, and inspection activities and documentation procedures
4. Descriptions of Routine Operations and Maintenance Activities
    a. Inspection of sewer assets (pump stations, manholes, and sewer lines)
        i. At a minimum, the Manhole/Sewer Line Inspection & Smoke Testing Report form shall be used for the manhole and sewer line inspections.
    b. Scheduling of sewer maintenance activities
    c. Cleaning of sewer assets
    d. Repair and rehabilitation of sewer assets
    e. Documentation and inspection forms to be used
5. Sanitary Sewer Overflows & Bypass Response Plan
6. Emergency Operations
7. Safety Procedures
8. Quality Assurance & Root Cause Analysis

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Defendants,

and

TOTAL ENVIRONMENTAL SOLUTIONS, INC.,

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APPENDIX B

LONG TERM COMPLIANCE PLAN

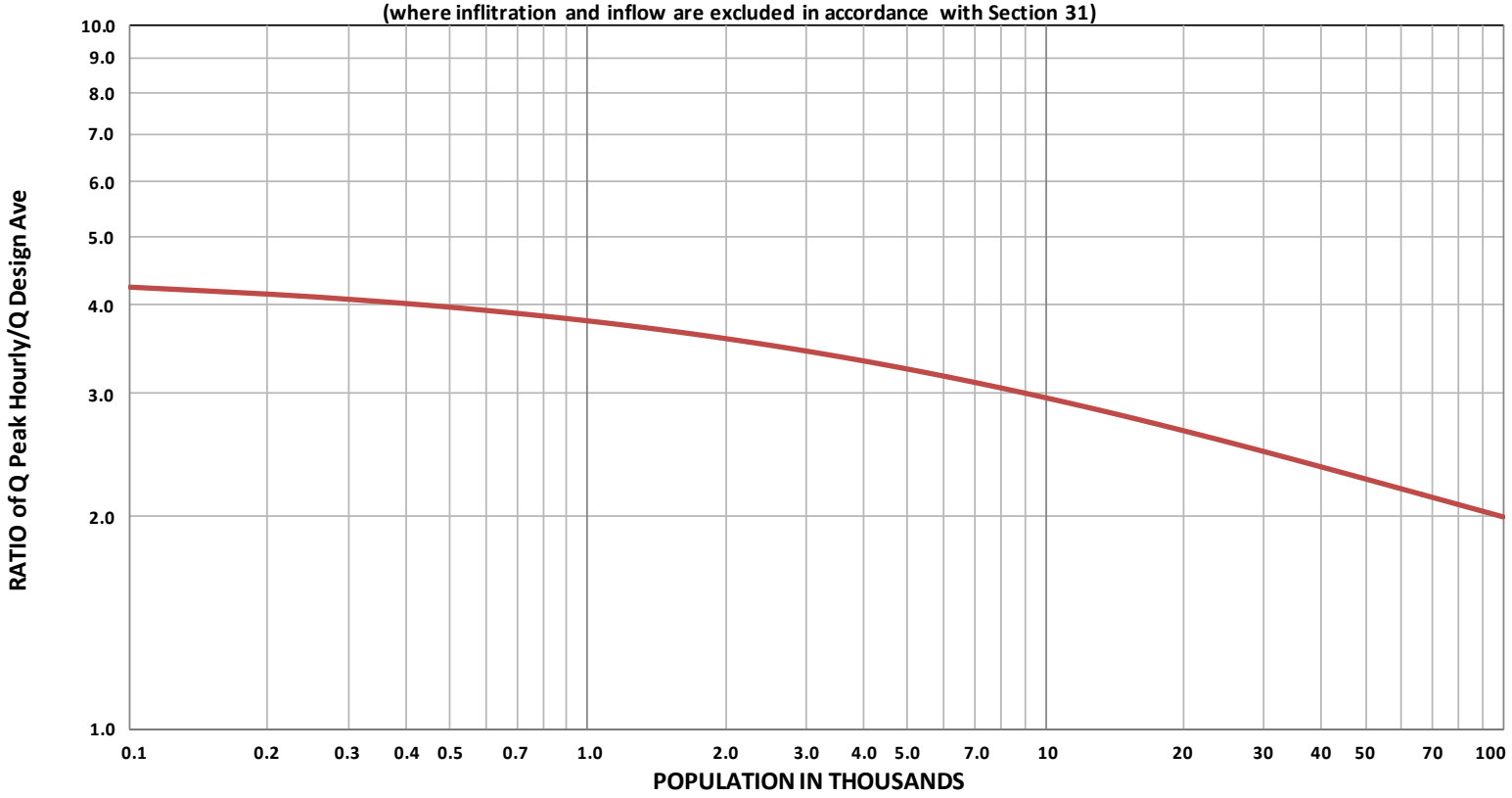
Attachment 10

Ten States Standards, "Ratio of Peak Hourly Flow to Design Average Flow" Graph

FIGURE 1

RATIO OF PEAK HOURLY FLOW TO DESIGN AVERAGE FLOW

(where inflitration and inflow are excluded in accordance with Section 31)



Q peak hourly: Maximum Rate of Wastewater Flow (Peak Hourly Flow)

Q design ave: Design Average Daily Wastewater Flow

Source: Q Peak Hourly/Q Design Ave $= \frac{18+\sqrt{P}}{4+\sqrt{P}}$ (P= population in thousands)

Fair, G. M. and Geyer, J. C., "Water Supply and Waste-water Disposal"
1 st Ed., John Wiley & Sons, Inc., New York (1954), p. 136

UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF LOUISIANA

UNITED STATES OF AMERICA and

STATE OF LOUISIANA, through THE DEPARTMENT OF ENVIRONMENTAL QUALITY,

Plaintiffs,

v.

ACADIA WOODS ADD. #2 SEWER CO.,

ACADIANA TREATMENT SYSTEMS, et al.,

Defendants,

and

TOTAL ENVIRONMENTAL SOLUTIONS, INC.,

Intervening Defendant.

Civil Action No. 6:98-0687

AGREEMENT AND ORDER REGARDING MODIFICATION OF THE CONSENT DECREE WITH RESPECT TO TESI

APPENDIX B

LONG TERM COMPLIANCE PLAN

Attachment 11

TESI "Manhole/Sewer Line Inspection & Smoke Testing Report" Form

TOTAL ENVIRONMENTAL SOLUTIONS, INC
MANHOLE/SEWER LINE INSPECTION
&
SMOKE TESTING REPORT

DATE:_____ Time:_____ **WORK ORDER NUMBER: _____** **ORIGINATOR:_____** **CREW LEADER:_____**	Line Segment ID:	Line Material:	Line Size:
	Blower Manhole #:	Upstream Manhole #:	Downstream Manhole #:
	Date of Last Rain Event:	24-Hr Rainfall (in):	Data Source:

Sketch:

N

OBS. No.	Source Address (Note all positive and suspect Locations)	Defect Location	Distance From Test Manhole (ft)	DISTANCE FROM MAINLINE		Surface Cover	Owner	Defect Type	Smoke Quality	Inflow Potential	Sewer Line CCTV Recommended ? (Y/N)
				Left	Right						
1.											
2.											
3.											
4.											
5.											
6.											
7.											
8.											
9.											
10.											

Use Page 3 for additional space for other leaks or comments. See Page 3 for approved codes.

TOTAL ENVIRONMENTAL SOLUTIONS, INC
MANHOLE/SEWER LINE INSPECTION
&
SMOKE TESTING REPORT

UPSTREAM MANHOLE INSPECTION		**Upstream Manhole Number:**	
Is previous inspection video available?	Y / N	Comments:	
Visible structural cracks or defects?	Y / N	Comments:	
Active leaks? Or Indication of past leaks or surcharging?	Y / N	Comments:	
Debris present on shelf of manhole?	Y / N	Estimate of debris present on shelf (inches):	Type of Debris Present:
Was debris removed from manhole/sewer?	Y / N	Volume of debris removed (gals):	Comments:
Describe sewer flow compared to Test Manhole: ***No Flow Increase Decreased Same***		Describe physical qualities of flow:	
Work Order Generated?	Y / N	If Yes, Work Order Number:	
DOWNSTREAM MANHOLE INSPECTION		**Downstream Manhole Number:**	
Is previous inspection video available?	Y / N	Comments:	
Visible structural cracks or defects?	Y / N	Comments:	
Active leaks? Or Indication of past leaks or surcharging?	Y / N	Comments:	
Debris present on shelf of manhole?	Y / N	Estimate of debris present on shelf (inches):	Type of Debris Present:
Was debris removed from manhole/sewer?	Y / N	Volume of debris removed (gals):	Comments:
Describe sewer flow compared to Test Manhole: ***No Flow Increase Decreased Same***		Describe physical qualities of flow:	
Work Order Generated?	Y / N	If Yes, Work Order Number:	

Use Page 3 for additional space for other leaks or comments. See Page 3 for approved codes.

TOTAL ENVIRONMENTAL SOLUTIONS, INC
MANHOLE/SEWER LINE INSPECTION
&
SMOKE TESTING REPORT

Other Leaks or Comments:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Defect Location Codes

1. *Manhole*
2. *Wet Well*
3. *Cleanout, Mainline*
4. *Cleanout, Property Line*
5. *Cleanout, House*
6. *TESI Mainline*
7. *TESI Service Lateral*
8. *Private Service Lateral*

Owner Codes

1. *TESI*
2. *Private*

Smoke Quality

1. *Good*
2. *Fair*
3. *No Smoke*
4. *Surcharged*
5. *Resident Refused Access*
6. *Other, See Comments*

Defect Types Codes

1. *Manhole Structure*
2. *Manhole Frame/Cover*
3. *Sinkhole, Hole, Fissure*
4. *Multiple Leaks*
5. *Exposed Pipe*
6. *Broken Cleanout*
7. *Missing/Broken Cleanout Cap*
8. *Abandoned Service Lateral*
9. *Abandoned Mainline Sewer*
10. *Storm Sewer Direct Connection*
11. *Storm Sewer Curb Inlet Connection*
12. *Storm Sewer Indirect Connection*
13. *Plumbing Under Building*
14. *Plumbing In Building*
15. *Roof Leader/Drain*
16. *Yard or Area Drain*
17. *Water Valve/Meter Box*
18. *Other, See Comments*

Debris Type Codes:

1. *F.O.G.*
2. *Fabric Wipes, Diapers, etc.*
3. *Engineered/Structural (bricks, concrete, plastic, etc.)*
4. *Sediment (Indicate Sanitary or Non-Sanitary in comments)*

Inflow Potential Codes:

1. *None Likely*
2. *None*
3. *Light*
4. *Moderate*
5. *Severe*

Surface Cover Codes:

1. *Paved - Street, Alley, Driveway, Parking Lot, Side Walk*
2. *Yard, Field, Trees/Woods*
3. *Unimproved Road Shoulder or Driveway*
4. *Drainage Ditch*
5. *Pool or Patio*
6. *Within Building*
7. *Under Building*
8. *Other, See Comments*

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APPENDIX B

LONG TERM COMPLIANCE PLAN

Attachment 12

Influent Wastewater Sampling SOP

TESI – INFLUENT GRAB SAMPLING SOP

PURPOSE: This document explains the procedures to be followed for the Grab Sampling of Influent Wastewater at all Sewage Treatment Plants (STPs).

OBJECTIVE: To properly collect and preserve samples of influent wastewater.

SCOPE: This procedure outlines the methods, tools/equipment, potential exposures, and dangers that personnel may encounter while performing Wastewater Influent Grab Samples at various lift stations.

REFERENCES:

CALIFORNIA STATE UNIVERSITY – SACRAMENTO. OPERATION OF WASTEWATER TREATMENT PLANTS - VOLUMES I, II, III. SACRAMENTO, CALIFORNIA.

METCALF AND EDDY, INC. 2003. WASTEWATER ENGINEERING: TREATMENT, DISPOSAL, AND REUSE.

4TH EDITION, MCGRAW-HILL BOOK CO., NEW YORK, NY

TITLE 40 CODE OF FEDERAL REGULATIONS (CFR), PART 136.3, TABLE II, MOST RECENT VERSION

CLASSIFICATION DATA:

Approved:	**Review Cycle:** Yearly
Reviewers: Local	**Approver: Operations Supervision**
Craft: Field Tech, Wastewater Operator, Wastewater Sampler	**Man-hours:** Les than 1 hour per lift station

SAFETY, ENVIRONMENTAL, AND FACILITY CONSEQUENCES

Proper safety precautions must be observed when collecting wastewater samples. Refer to the TESI Safety Manual for guidelines on safety precautions.

While onsite at the various facilities, be mindful and use appropriate judgment and precautions concerning the following hazards:

- **Slips trips or falls**
- **Caught in between**
- **Uneven and jagged surfaces**
- **Slashing of wastewater**
- **Piping and wiring while standing on top of lift stations**
- **Climbing, bending and reaching**
- **Burns, electrocution, or injury from machinery or chemicals**
- **Explosion or asphyxiation from gases in confined spaces**
- **Illness from exposure to pathogens in wastewater**

Special PPE Required (those checked are required)

x	Chemical Resistant Gloves			Additional Hearing Protection-Ear Muffs
	Face Shield			Respirator
	Chemical Resistant Goggles			Fresh Air Pack
	Chemical Resistant Apron		x	Safety Glasses

TESI – INFLUENT GRAB SAMPLING SOP

TOOLS/EQUIPMENT/METERIAL REQUIRED

Manning MSP250 Portable Sampling Pump	PVC Inlet Strainer
Ice Chest	Latex Gloves
Paper Towels	Bag(s) of Ice
1 Liter Plastic Sample Bottles (BOD, TSS)	Markers (Sharpie)
Labels from Local Lab	Chain of Custody
35-ft of ¼"-ID sample tubing	250 mL glass or plastic bottles (NH3)

SPECIAL EXECUTION CONSIDERATION

1. This document describes both general and specific methods to be used by field personnel when collecting and handling influent wastewater samples in the field. On the occasion that TESI field personnel determine that any of the procedures described in this section are inappropriate, inadequate or impractical and that another procedure must be used to obtain an influent wastewater sample, the variant procedure will be documented in the field log book, along with a description of the circumstances requiring its use.

NOTES

Procedural Precautions

The following precautions should be considered when collecting wastewater samples.

• Special care must be taken not to cross contaminate samples. This includes storing samples in a secure location to preclude conditions which could alter the properties of the sample. Samples shall be custody sealed during long-term storage.

• Collected samples are in the custody of the sampler or sample custodian until the samples are relinquished to another party.

• If samples are transported by the sampler, they will remain under his/her custody or be secured until they are relinquished.

• Chain-of-custody documents shall be filled out and remain with the samples until custody is relinquished.

• All samples must be collected during periods of peak flow. In the absence of additional data to the contrary, the period of peak flow may be assumed to be between the hours of 7 am to 9 am for all systems.

• Samples are to be collected from the wet well of the lift station(s) immediately upstream of the STP. In the case of multiple lift stations pumping directly to the STP, then the samples are to be composited by laboratory personnel in proportion to the flows from each lift station. TESI field personnel should not attempt to composite or in any way combine samples.

SPECIAL SAMPLING CONSIDERATIONS

Special Precautions for Wastewater Sampling

• A clean pair of new, non-powdered, disposable gloves will be worn each time a different location is sampled and the gloves should be donned immediately prior to sampling.

• If possible, one member of the field sampling team should take all the notes and photographs, fill out tags, etc., while the other members collect the samples.

• The field sampling team must operate and maintain the potable sampling pump in accordance with the Manufacturer's Operation Manual at all times.

Sample Handling and Preservation Requirements

1. All sample collection and preservation procedures will comply with the requirements outlined in *40 CFR, Part 136.3 (e),* Table II, and Figure 3-1 of the US EPA Region 4 Analytical Support Branch Laboratory Operations and Quality Assurance Manual (ASBLOQAM), Most Recent Version.

2. Wastewater samples will be collected by filling the sample container from the discharge end of the tubing on the portable sampling pump. The extended pole samplers to directly fill sample containers as well as the use of "sample thieves" or sludge judges is prohibited for the purposes of this SOP.

Documentation

Information generated or obtained by TESI personnel will be organized and accounted for. Field notes, recorded in a bound field logbook, will be generated, as well as chain-of-custody documentation to include the following information:

- Sample identification
- Sample location (sampling point)
- Type of sample (grab, number of grab samples)
- Sampling equipment and a brief description of sampling procedure
- Date and time of collection
- Weather conditions
- Analyses required
- Notes on unusual conditions or deviations from established protocols

Sample Labeling

After a sample is collected, it is placed into a container or containers that are provided by the contracted laboratory for the intended analyses. Sample collection sheets or chain-of-custody sheets are used to identify samples for analysis in the lab. However, sample containers themselves must be labeled to correspond to the information recorded on the custody sheet. Also, the sample containers are to be labeled in a manner that clearly identifies the sample without referring to the custody sheet. The following information should be included on container labels:

- Sample identification
- Date and time of collection
- Sample type (grab)
- Sample location
- Person collecting sample
- Preservative
- Required test(s)

COLLECTION OF INFLUENT WASTEWATER SAMPLES

It is important that raw influent wastewater be sampled in a location where it is well mixed and represents the actual wastewater going into the treatment plant. The sample tubing is to be lowered in the lift station(s) immediately upstream of the STP in such a manner as to place the inlet strainer as close to the intake of the pumps as possible. The inlet strainer must not be allowed to contact the bottom of the wet well, and must also be fully submerged below the water surface.

EQUIPMENT PREPARATION AND CLEANING

Before using sampling equipment for the first time and after every use, it must be thoroughly cleaned. For ease of cleaning, it is best to clean equipment as soon as possible after use, or at least to perform a preliminary rinse to remove bulk contamination. The potable sampling pump should be cleaned in accordance with manufacturer's recommendations.

It is always preferred to use new and clean tubing for each sample collection. However, in such case as newe tubing is not used, the used tubing must be adequately cleaned prior to re-use. Below is a generalized cleaning procedure that can be used to prepare sample tubing between sampling events:

1. Rinse tubing by pumping 2 gallons of warm tap water from a clean container to remove the majority of solids.

2. Pump 2 additional gallons of cleaning solution through the tubing to remove all residues. (The cleaning solution is made of standard low-phosphate lab detergent and warm tap water).
3. Triple rinse the equipment with tap water.
4. For the final rinse, triple rinse with 1 gallon of deionized water.

PROCEDURE

I. TESI's approved, local Compliance Department personnel must take all samples. Sampling must be carried out taking due care to avoid personal risk or injury arising from the nature of the sample itself or the location of the sample point.

II. Sample bottles/containers must be clearly labelled and identified. The sample identification, date and time of collection, sample type, sample location, name of person collecting sample, preservative and required test must be recorded together.

III. Sample bottles must be securely sealed following sampling and stored securely for safe transport to the laboratory in cooler boxes where necessary.

IV. Samples will be analyzed within 24 hours of sample collection, as a general rule; however, there may be specific requirements for particular tests.

V. Initiate Sampling Preparation:
   - Notify the lab performing the analyses and schedule the sampling event.
   - Assemble and/or clean sampling equipment.
   - Assemble and prepare any sample handling equipment (coolers, labels, notebooks, custody forms, markers).

TESI – INFLUENT GRAB SAMPLING SOP

WORK INSTRUCTION JOB TASKS

CATEGORY Legend	PERSONAL SAFETY	PRODUCT QUALITY	PROCESS SAFETY	CRITICAL POINT

Step No.	Operation Step	Key Points	Illustrations
1.	Notify the District's Local Lab and let them know you will be bringing Influent BOD and TSS samples. Secure all proper sample bottles, labels and chain of custody forms from the appropriate local lab in your district.	District: Duson – Petroleum Labs (337) 234-7414 District: BR – A&E Testing (225) 769-1930 District: Houma/Thib – Petroleum Labs (985) 868-4820	
2.	Before leaving for first sampling location, ensure all materials and equipment are accounted for and in working order, i.e. portable sampling pump, safety glasses, latex gloves,		
3.	Depart from your location accounting for delays to ensure that you arrive at your locations in a safe and timely manner in order to obtain all required grab samples between 7 am and 9 am.		

TESI – INFLUENT GRAB SAMPLING SOP

Step No.	Operation Step	Key Points	Illustrations
4.	Determine required influent sampling location and parameters from Facility Influent Sample List.	• Sample in lift station(s) immediately upstream of treatment plant. • For Facilities with Individual Permits - collect grab samples for BOD, TSS and NH3 • For Facilities with General Permits - collect grab samples for BOD & TSS only	
5.	Collect sample using portable sampling pump with tubing and inlet strainer.	• Label sample using labels provided by the lab or use a permanent, water-proof marker and write the required information directly on the sample bottles. • The sample tubing is to be lowered into the lift station(s) immediately upstream of the STP in such a manner as to place the inlet strainer as close to the intake of the pumps as possible. The inlet strainer must not be allowed to contact the bottom of the wet well, and must also be fully submerged below the water surface. • Discharge sample contents from portable sampling pump directly into appropriate sample bottle • Dry container and seal in storage bag and place into ice chest with ice.	
6.	After sealing and applying the appropriate labeling on each grab sample, immediately place them in the ice check and immerse in ice.		

TESI – INFLUENT GRAB SAMPLING SOP

Step No.	Operation Step	Key Points	Illustrations
7.	Deliver chains-of-custody and ice chest filled with sample containers to appropriate lab.	Samples must arrive at the lab in a timely manner following collection to ensure samples will be analyzed within 24 hours of sample collection.	

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APPENDIX B

LONG TERM COMPLIANCE PLAN

Attachment 13

Total Environmental Solutions, Inc. Compliance Department Procedures & Protocols

Total Environmental Solutions, Inc.

Compliance Department

Procedures & Protocols

Revised 6/2016

Total Environmental Solutions, Inc.
Compliance Department Sampling Procedures Information

GENERAL INFORMATION

1. Total Environmental Solutions, Inc. (TESI)

   Physical Address: 1824 Ryder Drive, Baton Rouge, LA 70808
   Mailing Address: P.O. Box 14056, Baton Rouge, LA 70898-4056
   Telephone No.: 800-372-9712
   Fax No.: 225-766-6701

2. Gayle Davidson - Compliance Manager
   Email - gdavidson@tesi-usa.com
   Office No. 800-372-9712 ext. 3008

   Other important associated names;

   a. Bill Schoening, CEO
   b. Wayne Owens, CFO
   c. Cedric Brown, Manager of Engineering
   d. Melanie McCarrtt, Manager of Customer Service
   e. Lawrence Messmer, Manager of Operations
      a. Katty Sparks, Assistant (Houma/Thibodaux/Baton Rouge)
   f. Earl Hayes, Wastewater Supervisor (Duson)
   g. Cheryl Cannon, Sampler (Houma/Thibodaux/Baton Rouge)
   h. Mary Laviolette, Sampler (Duson)
   i. Betty Henny, Process Control Tech (Duson)

   There is a master phone list for all TESI offices for numbers and/or additional information.

3. Filing/Storage
   All facility DMRs and paperwork associated with the creation of DMRs, spill reports, Sewage Treatment Plant O&M Reports, schedules, laboratory data sheets and permit information are filed and stored in the Compliance Department Office upstairs in the TESI Baton Rouge office. All compliance documentation are housed and maintained in the Baton Rouge Office for a minimum of 5 years. All district offices (Duson, Houma/Thibodaux) shall contained copies of flow data sheets, DMRs and O&M Forms.

OVERVIEW

The number one goal and purpose of the Compliance Department is to ensure that the requirements outlined in each LPDES Permit issued by the LA Department of Environmental Quality with regard to sample collection and reporting are met as required. It is the responsibility of this department to:

- Ensure that the required number of samples are collected from each facility in the required time frame
- Receive and evaluate sampling results
- To maintain accurate and complete records of each facility's field and sample data
- Incorporate data onto approved forms for submittal to LA DEQ on a quarterly basis

The Mission of TESI's Compliance Department is to collect & prepare this data, and to provide current and accurate information to Management or other personnel as needed in order to meet the compliance requirements set forth by the LA DEQ and other regulating agencies.

The Compliance Department also works with closely each area's District Supervisor to prepare and distribute timely responses to any Compliance Inspections and/or Violation Notices; and to notify the appropriate persons/agencies of any facility spills or major compliance related issues.

It is the intent of TESI to strive for 100% compliance at all our facilities, and the Compliance Department's role in achieving this goal is two-fold. One is the Compliance Department's ability to maintain and keep up with the ever changing requirements pertaining to sample collection & reporting; and two is the ability to provide accurate and complete data that can be used in determining compliance, and/or determining the necessary corrective action required to achieve compliance.

A brief list of the responsibilities of the Compliance Department follows:

- Maintain & process data from Chain of Custody through receipt of sampling results
- Maintain & process Flow Measurement Reporting Sheets through receipt of Flow Measurements via field personnel
- Prepare & distribute Bypass/Spill Reports
- Prepare & submit Discharge Monitoring Reports & Non-Compliance Reports
- Prepare & maintain Sampling Schedules
- Prepare & distribute STP Excursion Reports
- Maintain, process, file, distribute & respond to LDEQ Inspection Reports
- Maintain & process all Lab Sampling Data from Accredited Labs
- Maintain & process Process Control Sludge Management Data for Distribution to appropriate personnel
- Prepare & process for payment all LDEQ/LDHH Annual Invoicing
- Maintenance of document & data files

The purpose of the procedures and forms provided as attachments to this manual is to insure that wastewater facilities owned by Total Environmental Solutions, Inc. (TESI) are operated, maintained, and sampled in accordance with the requirements of the National Pollutant Discharge Elimination System (NPDES) permits by authority of Sections 301, 302, 308, 402, and 503 of the Federal Water Pollution Control Act of 1972, as amended by the Clean Water Act (CWA) of 1977.

These procedures shall be implemented by TESI's Compliance Department staff with approval and support from TESI's Operations, Engineering, and Management personnel. The following information is provided to further define the responsibilities of Compliance Department staff and the forms and/or procedures required.

A. PERMIT TYPES

A certain number of samples are required on a routine basis for each of our Sewage Treatment Plants (STPs). The frequency and number of samples required for each facility is determined by the type of permit that is issued for that specific facility. TESI currently has facility with one of five different permit types as shown below.

1.	Individual	Sampled 2x per month
2.	54s	Sampled1x per quarter
3.	56s	Sampled 1x per month
4.	57s	Sampled 1x per month
5.	53s	Sampled 1x per year, 2x(s) per year based on permit

The type of permit issued to any given facility is based upon the number of connections and the rate of flow. Essentially, the higher the flow rate, the more samples required.

B. FIELD SAMPLING RESPONSIBILITIES

TESI's Field Sampling personnel are part of the Compliance Department and are managed by the Compliance Manager.

The responsibilities of the Field Samplers include, but are not limited to:

- Maintaining sampling equipment which includes Dissolved Oxygen meter, pH meter, and Chlorine Residual meter.
- Calibration of sampling equipment according to manufacture specifications and recommendations on a daily basis. (Calibration procedures are attached to this manual as Appendix A)
- Properly preparing all required paperwork:
    - Chain of Custody forms (attached to this manual as Appendix B),
    - Flow Measurement Reporting Sheets (attached to this manual as Appendix C),
    - Sewage Treatment Plant O&M Report forms (attached to this manual as Appendix D).
- Collection of process control and compliance samples in accordance with the Standard Operating Procedures attached to this manual as Appendix E
    - All samples are to be taken from one of two acceptable locations. The first is at the end of the effluent discharge pipe. This is the discharge pipe that leaves the chlorine contact chamber transporting the discharge from the facility to the receiving stream. The second acceptable location is at a v-notched weir box. Samples should only be collected from the weir box if the end of the effluent discharge pipe in inaccessible. Samplers should note the exact location of the sample collection on the appropriate STP O&M Report form and the Chain of Custody. Not all TESI facilities have a weir box. If a facility does not have a weir box, and there is difficulty obtaining a representative sample from the end of the discharge pipe safely, the Field Sampler is to immediately contact the Compliance Manager and/or Engineering Staff so that the situation may be addressed in a timely fashion to insure that there are no delays in collecting the required samples. All samples are to be collected on the day on which the facility was scheduled.
        - All samples are to be collected in accordance with attached SOPs (Appendix E) and lab-provided instructions. In this case of a contradiction between the SOPs and the lab-provided instructions, the lab-provided instructions shall dictate proper procedures. The Field Sampler shall communicate the contradiction to the Compliance Manager and Manager of Operations for review and revision of the appropriate SOP(s).
        - The Field Sampler is to begin completing the Chain of Custody forms at the beginning of each sampling event. As the sampler calibrates the pH meter and

Dissolved Oxygen meter, the calibration results are to be written in the additional comments section of the STP O&M Report form.

- Upon arriving at the first facility scheduled for a particular day, the Field Sampler is to enter the data, time, and type of sample (grab or composite) and the facility name. NOTE: All of TESI's facilities in Louisiana are to be sampled using grab sample techniques.
- Field Samplers are to coordinate with the Compliance Manager to assure the proper samples are being collected for the required parameters on a schedule required by the facility's LPDES permit requirements.

- At each facility sampled during the course of the day, the sampler is required to fill out an appropriate (i.e., lagoon or mechanical) STP O&M Report form. The STP O&M Report form is a report of visual observations made by the Field Sampler at the time the samples were collected. These may include whether the sludge return lines and the skimmers are functioning properly, appearance of biosolids in the receiving stream, etc. The intent is to provide descriptions of how the aeration, clarified, chlorine contract chamber, and the chlorinator appeared to be functioning at the time the facility was sampled.
- Once the appropriate samples are collected and placed in the proper containers, the Field Sampler will label the samples with the correct date, time, temperature, facility name, and the sampler's name.
- All samples are to be placed on ice in an ice chest to properly preserve the integrity of the sample.
- After the scheduled samples are collected, the samples are to be delivered to the prescribed LELAP-certified laboratory listed below (in Section D of this manual) for analysis. The Field Sampler is to sign the Chain of Custody relinquishing the samples to the custody of the lab and shall have appropriate lab personnel sign the Chain of Custody indicating the date and time that the samples were received. The Chain of Custody forms generated in the Duson Region are to be submitted to the District Supervisor, who will then forward the forms to the Compliance Manager located in the Baton Rouge office. The Chain of Custody forms generated in the Baton Rouge and Houma-Thibodaux regions are to be submitted directly to the Compliance Manager in the Baton Rouge office.
- Flow measurements are required whenever a sample is collected. The flow rate is to be entered on the Flow Measurement Reporting Sheet.
- Equipment maintenance
    - At the end of each sampling day, all probes and meters shall be cleaned and inspected to insure the equipment is in proper working order for the next sampling event. It is at this time that any issues concerning the functionality of any equipment should be communicated by the Field Sampler to the Compliance Manager. All maintenance is to be performed in accordance with manufacturer's specified procedures and/or recommendations.

C. FIELD SAMPLER TRAINING OVERVIEW

All field samplers are trained by the Compliance Manager. TESI's Compliance Manager assures that all Field Samplers are trained and performs sampling at the highest level of accuracy while following all EPA guided protocols. All equipment used for field sampling is EPA compliant and immediately brought to the listed contracted certified laboratories for further testing.

Below is an over view of the training each sampler is required to attend yearly and are audited by the Compliance Assurance Inspector to insure that proper protocols, methods and techniques are being followed. The audits are unscheduled and without warning to the Field Sampling personnel, District Supervisors, Operations Manager, or any other department heads.

A copy of the training manual is available in the Baton Rouge Office.

a. Training Objectives
b. Regulatory Requirements Overview
c. Wastewater Treatment Overview
d. Wastewater Overview
e. Implementing a Monitoring Program
f. Field Sampling
g. Field Analytical/Measurement Methods & Holding Times
    i. pH Field Measurement Techniques
    ii. DO Field Measurement Techniques
    iii. Chlorine Field Measurement
    iv. 30 Minuet Settleability Solids Test
    v. Turbidity Test
    vi. Estimating Flow
    vii. Mixed Liquor Suspended Solids
h. Hands on Training
    i. Calibrating procedures
    ii. Safety, Care & Handling of Testing Equipment
    iii. Proper Protective Equipment
    iv. Documentation Procedures

D. SAMPLING SCHEDULE & ACCREDITED LAB OVERVIEW

Prior to the beginning of each new month a Sampling Schedule is prepared by the Compliance Manager for each area: Houma-Thibodaux, Baton Rouge, and Duson. Sampling schedules must be prepared to ensure that the required number of samples can be collected from each facility, while allowing at least 7-days between samples collected from the same facility. The sampling schedule must be tracked and maintained daily to ensure that all required samples have been collected by the end of each quarter.

As the required samples are taken in the field, Chain of Custody Forms (see attached) and Sewage Treatment Plant O & M Reports (see attached) are prepared by the respective samplers. The samples are to be delivered to the following accredited labs for analysis:

BATON ROUGE – A&E LABS (225-769-1950)
HOUMA/THIBODAUX – PETROLEUM LABS (985-868-4820)
DUSON – PETROLEUM LABS (337-234-7414)

All samples are to be submitted for analysis within the allowable holding time and shall be analyzed by means of the approved methods listed below.

Parameter	**Method**	**Allowable Holding Time**
5-day Biochemical Oxygen Demand (BOD_5)	SM 5210-B	24 Hours
Total Suspended Solids (TSS)	SM 2540-D	7 days
Fecal Coliform Bacteria	SM 9222-D	6 Hours
Oil & Grease	EPA 1664	28 days
Ammonia Nitrogen (with Sulfuric Acid preservation)	SM 4500-NH3C-	28 days

E. REQUIRED FIED SAMPLING PARAMETERS OVERVIEW

Most all of the facilities require the following instantaneous and or grab sampling/measurements pH, TRC, Flow, Ammonia (NH3), Fecal Coliform (FC), Total Suspended Solids (TSS) and 5-day Biochemical Oxygen Demand (BOD_5). In some cases, additional parameters such as Dissolved Oxygen in effluent, Turbidity, and Oil & Grease (O&G) are required. The Compliance Department is responsible for regular review of all permits to ensure that all parameters are met.

Additional Required Sampling Parameters (Process Control/Sludge Management Sampling)
The following parameters should be taken by Samplers in addition to the required parameters listed above:

- 30 minute Settleability in Aeration
- Dissolved Oxygen in Aeration
- Mixed Liquor Suspended Solids
- Sludge Depth in Clarifier
- Sludge Depth in Chlorine Contact Chamber

F. FLOW OF ALL FIELD GATHERED SAMPLE FORMS & PROCESS CONTROL DATA

Duson Field Office Only:
As samples are dropped off at the perspective labs, copies of all Chain of Custodies are returned to samplers. At the end of each work day, samples will then fax all copies of Chain of Custody forms to the Compliance Manager at the Baton Rouge Office along with the appropriate Sewage Treatment Plant O&M report form. The Sewage Treatment O&M form contains all Process Control Data that is then inputted into each perspective facility spreadsheet by the Compliance Manager.

Baton Rouge/Houma-Thibodaux Only:
As samples are dropped off at the perspective labs, copies of all Chain of Custodies are returned to samplers. At the end of each work day, the sampler will hand deliver all copies of Chain of Custody forms to the Compliance at the Baton Rouge Office along with the appropriate Sewage Treatment Plant O&M report form. The Sewage Treatment O&M form contains all Process Control Data that is then inputted into each perspective facility spreadsheet by the Kam Ansell.

All Flow Measurement Reporting Sheets along with any gathered Process Control Data are faxed to the Compliance Manager in the Baton Rouge on a weekly basis.

G. DISCHARGE MONITORING REPORTS (DMRs)/NON COMPLIANCE REPORTS (NCRs)

Upon completion of the laboratory analysis by the LELAP-certified lab, the lab is to submit all results to TESI's Compliance Manager. The Compliance Manager is to review the results as well as the accompanying QA/QC data provided by the laboratory to insure that all samples results are valid. Once the results are deemed valid, the Compliance Manger will enter the analytical data into TESI's Facility Compliance Tracking spreadsheet for all systems within the Baton Rouge and Houma-Thibodaux Regions. For the Duson Region, the validated analytical results are forwarded by the Compliance Manger to the District Manager for review and entry into the Facility Compliance Tracking spreadsheet. Once the data is entered into the Facility Compliance Tracking spreadsheet, TESI's Compliance Manger is to use this data to submit the results of the sampling effort, as well as any non-compliance reports, to LDEQ by means of the NetDMR system. All NetDMRs are due to LA DEQ no later than the 28th of the month following the end of each quarter as shown:

1st Quarter – January thru March – DMRs due April 28th
2nd Quarter – April thru June – DMRs due July 28th
3rd Quarter – July thru September – DMRS due October 28th
4th Quarter – October thru December - DMRs due January 28th of following year

The STP Excursion Report is a tool used by the Compliance Manager and the Operations Departments to quickly and accurately respond and correct STP excursions. Also, the STP Excursion Report is used by the compliance Department to prepare Non Compliance Reports for DMRs at the end of each quarter. A template of TESI's approved STP Excursion Report form is presented in Appendix F of this manual. Lab data, Chains of Custody, and STP O&M forms filled out by the samplers are also attached to the STP Excursion Report.

H. SPILL/UPSET REPORTS OVERVIEW

Spill/Upset Reports are required when an overflow/spill has occurred at any given facility. A template of TESI's approved Spill/Upset Report form is presented in Appendix G of this manual. These reports are required to be filed with the LA DEQ within 24 hours of occurrence. The Compliance Department upon notification by field personnel, gathers this information and files on-line with the LA DEQ website, completes the necessary paperwork and distributes this information as required.

Many times a follow-up letter or status report will be required depending upon the nature of the spill. If this is required, the Compliance Department will prepare and submit this information to the necessary agency(s) or personnel based upon information gathered from the District Supervisor(s) and or other field personnel.

APPENDIX A

CALIBRATION PROCEDURES

OPERATING INSTRUCTIONS

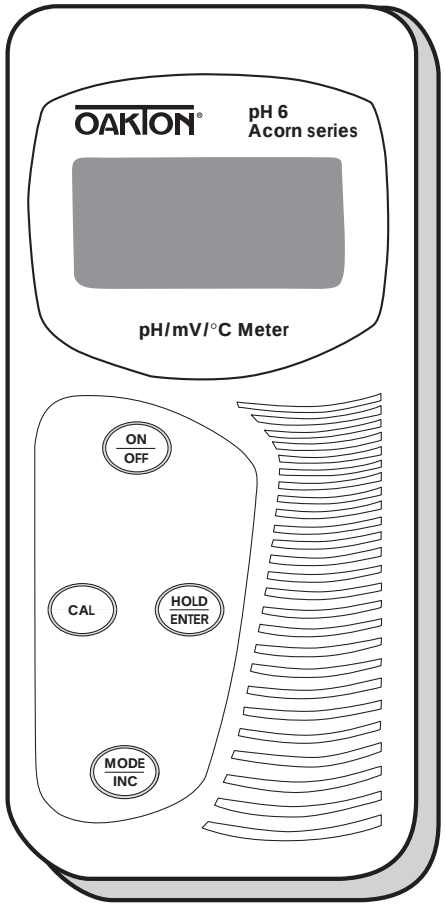
DISTRIBUTED BY:

00702-41

OAKTON®

OAKTON WD-35613-00; -01; -10; -11

pH 5 and pH 6 Acorn Series Meters



Printed in the U.S.A. 8/98

OAKTON®

1. Introduction

Thank you for purchasing an OAKTON® Acorn Meter. These meters are economical, microprocessor-based meters that deliver ±0.01 pH accuracy.

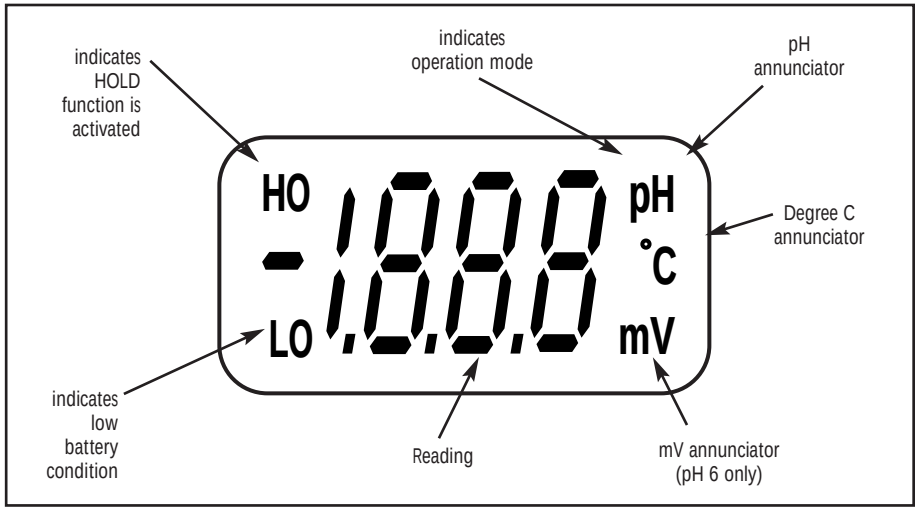
Some of the features of these meters are:

- Large LCD for clear and easy reading
- pH 5 and pH 6 series meters allow measurement in pH and Temperature (°C)
- pH 6 series meters also allow measurement in Millivolt (mV), for taking ORP (Redox) readings or checking pH electrode performance.

This instruction manual is organized for easy reference. For basic functions of this meter, read sections 2 through 5. These sections include basic instructions that will get you up and running quickly. The remaining sections of this manual (6 through 11) deal with electrode maintenance, error messages and troubleshooting. This part of the manual also includes the Specifications, Accessories, Warranty and Return of Items section.

2. Display and Keypad Functions

The Acorn has a large custom LCD with the following indicators:



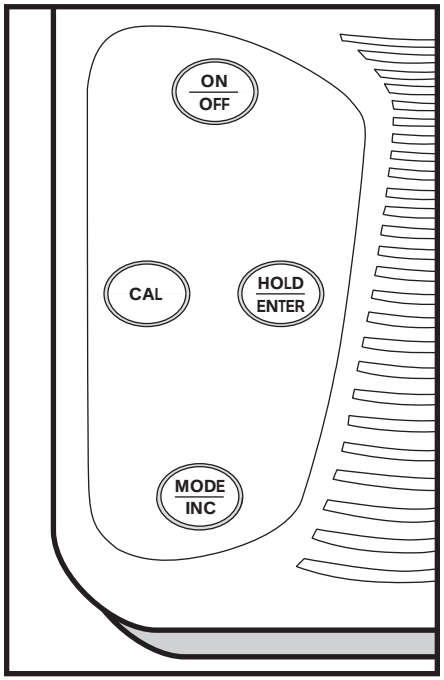
The OAKTON Acorn meter has four keys on its splashproof keypad. These keys are ON / OFF, HOLD / ENTER, CAL and MODE.

ON/OFF: Powers meter on and shuts unit off. Meter directly enters measurement mode when you turn it on.

HOLD/ENTER: Freezes the measured reading; confirms calibration value.

CAL: Allows calibration of the meter for pH, mV and Temperature

MODE/INC: Selects the parameter of measurement: pH, mV (pH 6 series only) and temperature.



3. Preparation

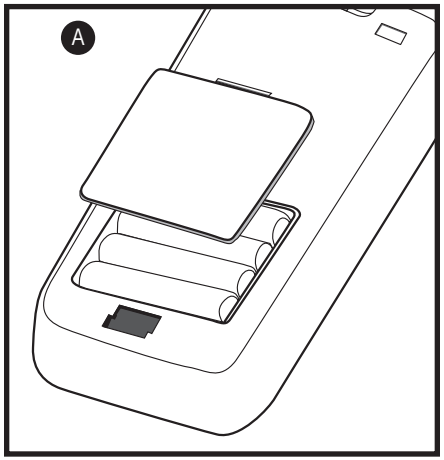
3.1 Inserting the batteries

The battery compartment is found at the back of the instrument. To open the battery compartment, push the lid up.

See figure A

Note the polarity of battery before inserting the batteries into position. After replacement, place the cover back into its position and press down until it locks tight.

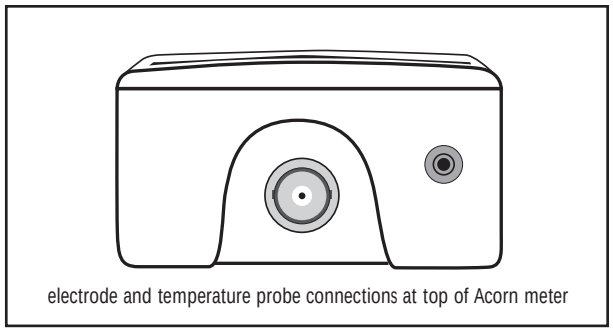
A "LO" annunciator in the LCD alerts you when battery power is running low. Replace batteries with a fresh set as soon as possible.



3.2 Connecting the Electrode and Temperature Probe

To connect the Acorn meter to your electrode, align the post of the meter's connector with the slots on the electrode's connector, push together and twist the electrode connector 1/2 turn until it clicks into place. To remove, simply rotate the connector counter-clockwise until it unlocks, and slide the connector off the socket.

Insert the phono jack of the temperature sensor into the socket on the meter. Unplug the phono jack when not in use.



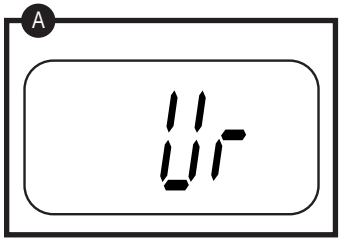
electrode and temperature probe connections at top of Acorn meter

3.3 Switching the meter on

Press the ON/OFF key to power up your meter. All the LCD segments display for a few seconds as the meter goes through a self-diagnostic test. The LCD then switches into pH measurement mode.

If the LCD then displays "Ur"., the electrode is faulty, the temperature sensor is faulty, or there is an open circuit.

See figure A



See page 13 for more troubleshooting information.

4. Calibration

4.1 pH calibration

This instrument is capable of up to three-point calibration to ensure accuracy across the entire range of the meter. You can perform 1-, 2- or 3-point calibration with standard pH buffers 4.01; 7.00; and 10.00.

We recommend you perform at least a 2-point calibration at room temperature using standard buffers that bracket (one above and one below) the expected sample range. You can also perform a 1-point calibration, but make sure that the buffer value is close to the sample value you are measuring.

All new calibrations will over-ride existing data.

NOTE: **Do not reuse buffer solutions after calibration.** Contaminants in the solution can affect the calibration, and the accuracy of the measurements.

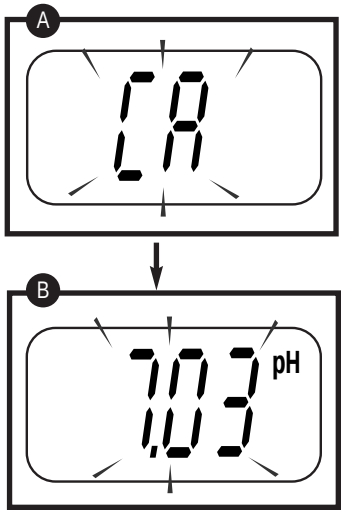
Before use: remove the electrode soaker bottle. If the electrode has been stored dry, condition the glass bulb by soaking it in tap water for 30 minutes. This hydrates the glass bulb if the electrode is too dry, or has not been used for a long period of time.

1. Turn meter on. Meter will automatically enter pH measurement mode.
2. Rinse electrode thoroughly with deionized water or a rinse solution. **DO NOT wipe the electrode;** this causes a build-up of electrostatic charge on the glass surface.
3. Dip both the electrode and temperature sensor into pH 7.00 buffer solution. The glass bulb must be completely immersed into the sample. Stir gently, and wait for reading to stabilize (approximately 40 seconds).
4. Press CAL key to enter the calibration mode. The display will momentarily flash “CA” to indicate CAlibration.

   See figure A

   The display will then show the current noncalibrated reading, blinking while in calibration mode.

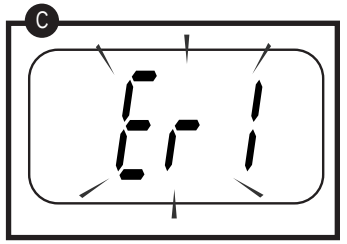
   See figure B
5. Allow the reading to stabilize. The meter automatically recognizes 7.00, 4.01 or 10.00 buffers.
6. Press ENTER key once to confirm calibration. The LCD displays “CO” to indicate the calibration point has been confirmed. The meter exits calibration mode and returns to measurement mode.



7. Repeat with pH buffers 4.01 and/or 10.00 for best accuracy.

NOTE: This meter has automatic buffer recognition which identifies the correct pH buffer values during calibration. If buffers other than 4.01, 7.00 or 10.00 are used, or the electrode has worn out, the LCD will flash "Er1".

See figure C

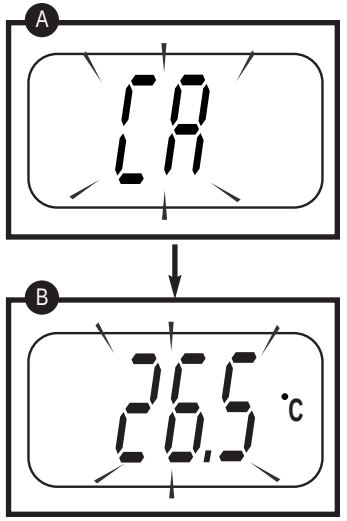


4.2 Temperature calibration

The temperature sensor included with your meter is factory calibrated. Over time, the temperature calibration may drift and require recalibration. If you replace the probe you should calibrate temperature prior to pH or mV calibration.

1. Connect your temperature probe to the meter.
2. Press the MODE/INC key until "°C" appears in the LCD.
3. Compare displayed value to a NIST certified thermometer or other thermometer known to be accurate. For best accuracy, place probe and thermometer in a constant temperature bath.
4. Press the CAL key. the LCD shows "CA" and the reading flashes.

   See figures A B
5. Press MODE/INC key until the display shows the correct temperature. The MODE /INC key will scroll to the maximum allowable value, and then loop back to the minimum allowable value adjustment (maximum adjustment is ±5°C from factory default).
6. Press ENTER key to confirm calibration. The LCD displays "CO", and the meter then reverts to measurement mode.

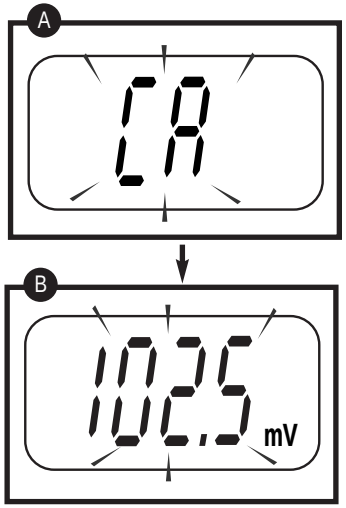


4.3 Millivolt (mV) Calibration

mV calibration is performed for ORP (Redox) measurements, where you can adjust its mV values as a base value for measurements. Contact your OAKTON distributor for ORP electrodes.

1. Press MODE/INC key to enter mV mode. LCD displays "mV".
2. Press the CAL key. LCD shows "CA", and the reading flashes

   See figure A B
3. Use the MODE/INC key to adjust the reading to your desired value. The maximum adjustment you can make is ±25 mV. If the MODE/INC key is pressed continuously, the reading scrolls to the maximum allowable value, and then loops back to the minimum allowable value.
4. Press ENTER key to confirm calibration. The LCD displays "CO" and the meter then reverts to measurement mode.



5. Measurement

5.1 Taking Measurements

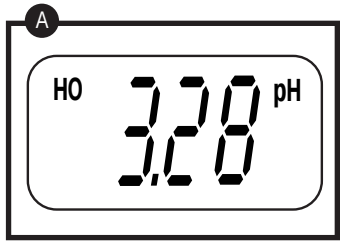
1. Rinse both electrode and temperature sensor with distilled water.
2. Turn meter on. Press MODE key to select desired parameter (pH, mV, Temperature).
3. Dip electrode and temperature sensor approximately 1" to 2" into sample. Stir gently and wait for display to stabilize. Note reading.

5.2 Hold function

To freeze your reading, press the HOLD key once. The LCD show "HO" to indicate the HOLD function is activated

See figure A

Press HOLD key again to deactivate the HOLD function and return to measurement mode.



6. Electrode care and maintenance

6.1 Storage

For best results, keep the pH bulb wet. Store the pH bulb in the electrode soaker bottle filled with electrode storage solution. Or you can store the electrode in a pH 4 buffer with 1/100 part saturated KCl. Other pH buffers are also suitable for storage. **NEVER use deionized water for storage.**

6.2 After measuring

1. Rinse the electrode and reference junction in deionized water.
2. Store the electrode as recommended in "Storage" or as recommended by the manufacturer.

6.3 Electrode cleaning

Because your pH electrode is susceptible to dirt and contamination, clean it every one to three months depending on extent and condition of use.

Clean the electrode in a mild detergent solution. Wipe the probe with a soft tissue paper. Avoid touching the glass membrane with your fingers. Wash thoroughly in tap water and then in distilled water. Recalibrate your meter after cleaning the electrode.

Special Cleaning Tips

Salt deposit: dissolve the deposit by immersing the electrode in tap water for ten to fifteen minutes. Then thoroughly rinse with distilled water.

Oil/grease film: wash electrode pH bulb gently in detergent solution. Rinse electrode tip with distilled water.

Clogged reference junction: heat a diluted KCl solution for 60-80°C. Place the sensing part of the electrode into the heated solution for about 10 minutes. Allow the electrode to cool in some unheated KCl solution.

Protein deposits: prepare a 1% pepsin solution in 0.1M of HCl. Set the electrode in the solution for five to ten minutes. Rinse the electrode with distilled water.

7. Troubleshooting

Problem	Cause	Solution
Err flashes on LCD	Wrong or contaminated buffer used during calibration	Use fresh buffer solution: pH 4.01, 7.00, or 10.00
	Bad electrode	Change electrode
"Ur" or "Or" on LCD with pH or °C annuciator	pH out of range	—
	Temperature out of range	Cool/Heat sample as needed
	Bad electrode	Change electrode
	Bad temperature sensor	Change temperature sensor
LO annuciator on LCD	Low battery	Replace batteries with fresh set
Power on but no display	Batteries not in place	Insert batteries
	Batteries not in correct polarity (+ and -)	Re-insert batteries with correct polarity
	Weak batteries	Replace batteries
Unstable reading	Electrode not deep enough in sample	Place electrode deeper in sample
	Insufficient reference electrolyte in electrode	Fill electrode with reference electrolyte (if electrode is refillable); replace electrode.
	Broken electrode	Replace electrode
	External "noises" or induction caused by by nearby electric motor	Remove or switch off interfering motor
	Dirty electrode	Clean electrode
Slow response	Dirty electrode	Clean electrode

8. Specifications

Mode	pH	Temperature	mV (pH 6 only)
Range	0.00 to 14.00 pH	0.0 to 100°C	-1000 to +1000 mV
Resolution	0.01 pH	0.1°C	1 mV
Accuracy	±0.01 pH	±0.5°C	±2 mV
Calibration	up to 3 points (push button)	Offset 0.1°C	Offset up to ±25 mV

pH slope range: 80% to 120%

Auto buffer recognition: pH 4.01; 7.00; 10.00

Display: Single line LCD

Inputs: BNC, phono jack

Auto shutoff: after 17 minutes

Hold Function indicator: HO

Error Message display: Err

Low battery indication: LO

Temperature Compensation: Automatic (ATC), 0.0 to 50.0°C

Operating temperature: 0 to 50°C

Power: 4 x AAA Alkaline batteries (>70 hours)

Dimensions: Meter only: 5.5" x 2.7" x 1.3" (14 x 7 x 3.5 cm);
Boxed: 9.25" x 6.5" x 3" (23.5 x 16.5 x 7.6 cm)

Weight: Meter only: 0.5 lb (210 g); Boxed: 1 lb (420 g)

9. Accessories

WD-35613-00 Additional pH 5 Series Acorn Meter (pH/°C) with pH electrode and temperature probe

WD-35613-01 Additional pH 5 Series Acorn Meter (pH/°C) with temperature probe (electrode not included)

WD-35613-10 Additional pH 6 Series Acorn Meter (pH/mV/°C) with pH electrode and temperature probe

WD-35613-11 Additional pH 6 Series Acorn Meter (pH/mV/°C) with temperature probe (electrode not included)

Accessories

WD-35606-80 Protective Rubber Boot, encases meter in sturdy rubber to protect it from drops and dings. Also features meter stand for convenient tabletop use.

WD-35801-00 Replacement electrode, 5.75"L x 0.47 OD (12 mm). Shpg wt. 0.5 lb (230 g).

WD-35805-05 Double junction electrode, use with solutions that are dirty, have heavy metal or organic ions. 5.75"L x 0.47 OD (12 mm). Shpg wt. 0.5 lb (230 g).

WD-35613-05 Replacement temperature probe, 316 SS, polypropylene cap, 3" cable. Shpg wt 0.15 lb (70g).

WD-35805-13 ORP electrode, epoxy body, single junction, 5.75"L x 0.49"OD (12.5 mm). Shpg wt 0.5 lb (230 g).

WD-00653-04 Electrode storage solution, 1 pint bottle. Keeps electrode bulb moist for faster, more accurate readings. Shpg wt 1.1 lbs (510 g).

WD-00653-06 Electrode cleaning solution, 1 pint bottle. Removes buildup from electrodes and maintains electrode sensitivity. Shpg wt 1.1 lbs/510 g.

OAKTON calibration solutions

±0.01 pH accuracy at 25°C. Shpg wt 1.1 lb (510 g).

WD-00654-00 pH 4.01 calibration buffer, 1 pint.

WD-00654-04 pH 7.01 calibration buffer, 1 pint.

WD-00654-08 pH 10.01 calibration buffer, 1 pint.

OAKTON "Singles" calibration solution pouches 20/box.

±0.01 pH accuracy at 25°C. Shpg wt 1.1 lb (454 g) per box.

WD-35653-00 Deionized rinse water solution pouches,

WD-35653-01 pH 4.01 "Singles" buffer solution pouches

WD-35653-02 pH 7.00 "Singles" buffer solution pouches

WD-35653-03 pH 10.00 "Singles" buffer solution pouches

WD-35653-04 Assortment pack, 5 ea. deionized water, pH 4.01, pH 7.00, and pH 10.00 solution pouches.

Consult your OAKTON® Distributor for a complete selection of pH and ORP electrodes, solutions and accessories. Ask for bulletin Accessories A1.

NOTE: Remember to check the temperature calibration when replacing the ATC probe. See section 4.2, "Temperature calibration" (page 9).

10. Warranty

OAKTON warrants this meter to be free from significant deviations in material and workmanship for a period of one year from date of purchase. OAKTON warrants this probe to be free from significant deviations in material and workmanship for a period of six months from date of purchase. If repair or adjustment is necessary and has not been the result of abuse or misuse within the warrantied time period, please return—freight prepaid—and correction will be made without charge. OAKTON alone will determine if the product problem is due to deviations or customer misuse.

Out-of-warranty products will be repaired on a charge basis.

11. Return of items

Authorization must be obtained from your OAKTON distributor before returning items for any reason. When applying for authorization, please include data regarding the reason the items are to be returned. For your protection, items must be carefully packed to prevent damage in shipment and insured against possible damage or loss. We will not be responsible for damage resulting from careless or insufficient packing. A restocking charge will be made on all unauthorized returns.

NOTE: We reserve the right to make improvements in design, construction, and appearance of products without notice.

Do. Meter Cabibration and Maintance

Cap Membrane Instructions

1 Remove sensor guard (Black plastic)
2 Unscrew and remove the shipping membrane cap (Yellow)
3 Rinse Sensor with distilled or deionized water
4 Fill new cap with the O2 probe solutions- Little plastic bottel
5 Lightly tap the membrane to remove bubbles
6 Thread back on probe - note: it will spill out some
7 Replace sensor guard

Calibration of meter

1 Follow steps above
2 Turn on meter let it sit for 10-15 mins until the screen stablizes
3 Use www.weather.com or the weather app to get the pressure in inches
4 convert to milibars (pressure in inches X 33.864)
5 Once meter is stablized and you have the milibars
6 use the arrow keys to set milibars and hit enter
7 Use the arrow keys to set to PPT and hit enter
8 Cabilration is neeed once a day when using.

Cleaning and maintaing

1 Disconnect from meter :To clean probe remove membrane carefully and rinse with distalled or tap water
2 Use 3% hosehold cleaning ammonia and soak overnight
3 rinse
4 use sandpaper supplies with kit (400 grit wet/dry) to buff excess deposits from probe. Perform curcular sand on gold tip and also wrap around silver probe body and twist.
5 Rinse with clean water
6 install new probe

APPENDIX B

CHAIN OF CUSTODY TEMPLATES

Page 1 of 1

ANALYTICAL AND ENVIRONMENTAL TESTING, INC.

AET Project No.: _____

Log In Person: _____

Log In Date/Time: _____

Company: _____

Site Contact: _____

Report To: _____

Address: _____

City: _____

State & Zip Code: _____

Phone#: ( ) _____ - Ext. _____

FAX#: ( ) _____ - Ext. _____

SAMPLER _____

Authorized By: _____

Sampler: [ ] Client [ ] AET
Transporter: [ ] Client [ ] AET
Bottles: [ ] Client [ ] AET

Matrix Codes	Turnaround __Hrs.	Surcharge 200%
A=Water	[ ] 24 hrs.	150%
B=Sludge	[ ] 48 hrs.	100%
C=Soil	[ ] 1 week	50%
D=Oil	[ ] 2 weeks	
E=Acid	[ ] 3 weeks	
F=Caustic		
G=100% Organic		
H=Solids&Misc.		

NOTE: Multiphase MUST BE split into separate subsamples

CHAIN OF CUSTODY

Relinquished by: _____
Date: Time:

Received by: _____
Date: Time:

Relinquished by: _____
Date: Time:

Received by: _____
Date: Time:

Relinquished by: _____
Date: Time:

Received by: _____
Date: Time:

Relinquished by: _____
Date: Time:

Received by: _____
Date: Time:

Analytical Request Form / Chain of Custody

23rd Edition 03/2004

Division: BTR

Client Type:
[ ] DPW
[ ] NPDES
[ ] RCRA
[ ] Drinking Water
[ ] Other

Approved By: _____

All samples are preserved per EPA protocol

Sample Site: or Client ID:					
Sample Date:					
SampleTime:					
Matrix Code:					
Storage Upon Arrival At Lab	Temp ___ C ICE Y N	Temp ___ C ICE Y N	Temp ___ C ICE Y N	Temp ___ C ICE Y N	
AET Sample No.	1	2	3		

							Comments
Alkalinity	(Alk)	[ ]	[ ]	[ ]	[ ]		
Ammonia Nitrogen	(NH_3)	[ ]	[ ]	[ ]	[ ]		
Ash	(Ash)	[ ]	[ ]	[ ]	[ ]		
BOD-5 day	(BOD)	[ ]	[ ]	[ ]	[ ]		
Bromide	(Br)	[ ]	[ ]	[ ]	[ ]		
BTU	(BTU)	[ ]	[ ]	[ ]	[ ]		
Chloride	(Cl)	[ ]	[ ]	[ ]	[ ]		
Chlorine, Res.	(TRC)	[ ]	[ ]	[ ]	[ ]	Date Time Analyst	
COD	(COD)	[ ]	[ ]	[ ]	[ ]		
Color	(Color)	[ ]	[ ]	[ ]	[ ]		
Conductivity	(Cond)	[ ]	[ ]	[ ]	[ ]		
Cyanide	(CN)	[ ]	[ ]	[ ]	[ ]		
Cyanide-ATC	(CNATC)	[ ]	[ ]	[ ]	[ ]		
Density	(DEN)	[ ]	[ ]	[ ]	[ ]		
Dissolved Oxygen	(DO)	[ ]	[ ]	[ ]	[ ]	Date Time	
Flow (GPM)(field)	(Flow)	[ ]	[ ]	[ ]	[ ]	Analyst	
Fluoride	(F)	[ ]	[ ]	[ ]	[ ]		
Halogens, Total	(TX)	[ ]	[ ]	[ ]	[ ]		
Hardness	(Hard)	[ ]	[ ]	[ ]	[ ]		
Moisture%	(%M)	[ ]	[ ]	[ ]	[ ]		
Nitrite	(NO_2)	[ ]	[ ]	[ ]	[ ]		
Nitrate	(NO_3)	[ ]	[ ]	[ ]	[ ]		
Oil & Grease	(O&G)	[ ]	[ ]	[ ]	[ ]	Date	
pH (field)	(pH)	[ ] SU	[ ] SU	[ ] SU	[ ] SU	Time	
Phenol	(Phenol)	[ ]	[ ]	[ ]	[ ]	Analyst	
Phosphate, Ortho	(O Phos)	[ ]	[ ]	[ ]	[ ]		
Phosphorus, Total	(T Phos)	[ ]	[ ]	[ ]	[ ]		
Solids, Total	(TS)	[ ]	[ ]	[ ]	[ ]		
Sulfate	(SO_4)	[ ]	[ ]	[ ]	[ ]		
Sulfide	(S_2)	[ ]	[ ]	[ ]	[ ]		
Sulfur, Total	(T Sulfur)	[ ]	[ ]	[ ]	[ ]		
Surfactants	(Surf)	[ ]	[ ]	[ ]	[ ]		
TDS	(TDS)	[ ]	[ ]	[ ]	[ ]		
Temperature (field)	(Temp)	[ ] C	[ ] C	[ ] C	[ ] C	Date Time Analyst	
Thiocyanate	(SCN)	[ ]	[ ]	[ ]	[ ]		
TKN	(TKN)	[ ]	[ ]	[ ]	[ ]		
TOC	(TOC)	[ ]	[ ]	[ ]	[ ]		
TON	(TON)	[ ]	[ ]	[ ]	[ ]		
TOX	(TOX)	[ ]	[ ]	[ ]	[ ]		
TPHC	(TPHC)	[ ]	[ ]	[ ]	[ ]		
TSS	(TSS)	[ ]	[ ]	[ ]	[ ]		
Turbidity	(Turb)	[ ]	[ ]	[ ]	[ ]		
VSS	(VSS)	[ ]	[ ]	[ ]	[ ]		

NOTE: A Positive Response Below Mandates Additional Information on Back Page!!

METALS, Total	[ ]	[ ]	[ ]	[ ]
RCRA Hazardous Waste	[ ]	[ ]	[ ]	[ ]
RADIOLOGICAL	[ ]	[ ]	[ ]	[ ]
SPECIFIC ORGANICS	[ ]	[ ]	[ ]	[ ]
MICROBIOLOGY	[ ]	[ ]	[ ]	[ ]
BIOASSAY/BIOTOXICITY	[ ]	[ ]	[ ]	[ ]
OTHER (Define)	[ ]	[ ]	[ ]	[ ]

(OVER)

OTHER ANALYSES REQUESTED
#1
#2
#3
#4

		AET Sample No. 29019	1	2	3		Comments
METALS	Aluminum	(Al)	[ ]	[ ]	[ ]	[ ]	
	Antimony	(Sb)	[ ]	[ ]	[ ]	[ ]	
	Arsenic	(As)	[ ]	[ ]	[ ]	[ ]	
	Barium	(Ba)	[ ]	[ ]	[ ]	[ ]	
	Beryllium	(Be)	[ ]	[ ]	[ ]	[ ]	
	Bismuth	(Bi)	[ ]	[ ]	[ ]	[ ]	
	Boron	(B)	[ ]	[ ]	[ ]	[ ]	
	Cadmium	(Cd)	[ ]	[ ]	[ ]	[ ]	
	Calcium	(Ca)	[ ]	[ ]	[ ]	[ ]	
	Chromium	(Cr)	[ ]	[ ]	[ ]	[ ]	
	Chromium, Hexavalent	(CrVI)	[ ]	[ ]	[ ]	[ ]	
	Cobalt	(Co)	[ ]	[ ]	[ ]	[ ]	
	Copper	(Cu)	[ ]	[ ]	[ ]	[ ]	
	Iron	(Fe)	[ ]	[ ]	[ ]	[ ]	
	Lead	(Pb)	[ ]	[ ]	[ ]	[ ]	
	Magnesium	(Mg)	[ ]	[ ]	[ ]	[ ]	
	Manganese	(Mn)	[ ]	[ ]	[ ]	[ ]	
	Mercury	(Hg)	[ ]	[ ]	[ ]	[ ]	
	Molybdenum	(Mo)	[ ]	[ ]	[ ]	[ ]	
	Nickel	(Ni)	[ ]	[ ]	[ ]	[ ]	
	Potassium	(K)	[ ]	[ ]	[ ]	[ ]	
	Selenium	(Se)	[ ]	[ ]	[ ]	[ ]	
	Silicon	(Si)	[ ]	[ ]	[ ]	[ ]	
	Silver	(Ag)	[ ]	[ ]	[ ]	[ ]	
	Sodium	(Na)	[ ]	[ ]	[ ]	[ ]	
	Strontium	(Sr)	[ ]	[ ]	[ ]	[ ]	
	Thallium	(Tl)	[ ]	[ ]	[ ]	[ ]	
	Tin	(Sn)	[ ]	[ ]	[ ]	[ ]	
	Titanium	(Ti)	[ ]	[ ]	[ ]	[ ]	
	Vanadium	(V)	[ ]	[ ]	[ ]	[ ]	
	Zinc	(Zn)	[ ]	[ ]	[ ]	[ ]	
RCRA Hazardous Waste	Ignitability (Flash Pt.)	(FP)	[ ]	[ ]	[ ]	[ ]	
	Corrosivity	(Corr)	[ ]	[ ]	[ ]	[ ]	
	Reactivity (CN & S)	(RXCNS)	[ ]	[ ]	[ ]	[ ]	
	TCLP-Metals	(TM)	[ ]	[ ]	[ ]	[ ]	
	TCLP-Pest/Herb	(TP/H)	[ ]	[ ]	[ ]	[ ]	
	TCLP-BNA	(TBNA)	[ ]	[ ]	[ ]	[ ]	
	TCLP-VOA	(TVOA)	[ ]	[ ]	[ ]	[ ]	
RADIOLOGICAL	Gross Alpha		[ ]	[ ]	[ ]	[ ]	
	Gross, Beta		[ ]	[ ]	[ ]	[ ]	
	Radium, T.		[ ]	[ ]	[ ]	[ ]	
	Radium, 226/228		[ ]	[ ]	[ ]	[ ]	
SPECIFIC ORGANICS	Volatiles	(VOA)	[ ]	[ ]	[ ]	[ ]	
	Semi-Volatiles	(BNA)	[ ]	[ ]	[ ]	[ ]	
	Pesticides/PCB)	(PEST/PCB)	[ ]	[ ]	[ ]	[ ]	
	PCB Only	(PCB)	[ ]	[ ]	[ ]	[ ]	
	TPH/Diesel	(TPH/D)	[ ]	[ ]	[ ]	[ ]	
	TPH/Gasoline	(TPH/G)	[ ]	[ ]	[ ]	[ ]	
	BTEX	(BTEX)	[ ]	[ ]	[ ]	[ ]	
	THM's	(THM)	[ ]	[ ]	[ ]	[ ]	
	Other (Define)		[ ]	[ ]	[ ]	[ ]	
MICROBIOLOGY	Fecal Coliform	(FC)	[ ]	[ ]	[ ]	[ ]	
	Total Coliform	(TC)	[ ]	[ ]	[ ]	[ ]	
	Other (Define)		[ ]	[ ]	[ ]	[ ]	
BIOASSAY / BIOTOXICITY	Acute		[ ]	[ ]	[ ]	[ ]	
	Chronic		[ ]	[ ]	[ ]	[ ]	
	Daphnia magna/pulex		[ ]	[ ]	[ ]	[ ]	
	Mysid shrimp		[ ]	[ ]	[ ]	[ ]	
	Pimephales promelas		[ ]	[ ]	[ ]	[ ]	
	Ceriodaphnia		[ ]	[ ]	[ ]	[ ]	
	Cyprinodon		[ ]	[ ]	[ ]	[ ]	

109 Cleveland Street
Houma, LA 70363
(985) 868-4820

PETROLEUM LABORATORIES, INC.

CHAIN OF CUSTODY

333 E. Kaliste Saloom Rd.
Lafayette, LA 70508
(337) 234-7414

Company	Matrix	Number of Containers	Bottle	Size	Preservation	Analysis Requested						FOR OFFICE USE ONLY		
Phone Number	W = Water S = Soil SL = Sludge O = Other		P = Plastic S = Sterilized G = Glass V = 40 mL. Vial	1 = 1 Liter 4 = 4 oz. 6 = 6 oz. 8 = 8 oz. 16 = 16 oz.	0 = None 1 = Hydrochloric 2 = Nitric 3 = Sulfuric 4 = Phosphoric 5= Sodium Thiosulfate							CONDITION OF SAMPLES UPON RECEIPT AT LAB		
Field / Sample Point														
❑ Regulatory ❑ Non-Regulatory												PLI LAB NUMBER	pH – s.u.	Temp - °C
Sample Date / Time														
Comp / Grab / Sample Location / Identification														

Sampler (s) *(Print)*	1. Relinquished By:	Date:	Time:	2. Received By:	Date:	Time:
_____	3. Relinquished By:	Date:	Time:	4. Received By:	Date:	Time:
_____	5. Relinquished By:	Date:	Time:	6. Received for Laboratory:	Date:	Time:
_____						

Turn-Around Time

Normal Service
❑3 – 5 Days

Rush Service
❑24 Hrs. ❑ 48 Hrs.

Data Results To:

_____
_____
_____

Invoice To:

_____
_____
_____

Sample Remarks:

_____
_____
_____

APPENDIX C

FLOW MEASUREMENT REPORTING SHEET

B.

FLOW MEASUREMENT REPORTING SHEET **OPERATOR:** ______________________

Revised 11/5/2004

By my signature, I certify that these results are true, accurate and complete.

STP MUST RUN FOR 15 MINUTES OR LONGER BEFORE TAKING 30 MINUTE SETTLEABILITY

Facility	Date	Time	Measure 1/2/5 Gallons	Seconds to Fill	30 Minute Settle
Bucket/V-Notch/Template					

Facility	Date	Time	Measure 1/2/5 Gallons	Seconds to Fill	30 Minute Settle
Bucket/V-Notch/Template					

Facility	Date	Time	Measure 1/2/5 Gallons	Seconds to Fill	30 Minute Settle
Bucket/V-Notch/Template					

Facility	Date	Time	Measure 1/2/5 Gallons	Seconds to Fill	30 Minute Settle
Bucket/V-Notch/Template					

Facility	Date	Time	Measure 1/2/5 Gallons	Seconds to Fill	30 Minute Settle
Bucket/V-Notch/Template					

Facility	Date	Time	Measure 1/2/5 Gallons	Seconds to Fill	30 Minute Settle
Bucket/V-Notch/Template					

Facility	Date	Time	Measure 1/2/5 Gallons	Seconds to Fill	30 Minute Settle
Bucket/V-Notch/Template					

FAX COMPLETED FORM TO COMPLIANCE DEPARTMENT @ 225-766-9171

APPENDIX D

STP O&M REPORT FORMS

TOTAL ENVIRONMENTAL SOLUTIONS, INC.

MECHANICAL SEWAGE TREATMENT PLANT O & M REPORT

☐ ROUTINE O&M ☐ NPDES SAMPLING ☐ PROCESS CONTROL SAMPLING ☐ RE- EVALUATION PROCESS CONTROL

Date: _____ **Facility Name:** _____ **Time in:** _____am/pm, **Time Out:** _____am/pm

Rain Gauge _____ **Inches** | **Spill Insp.: Y / N** **Spill Detected: Y / N** **Leak Insp.: Y / N** **Leak Detected: Y / N**

SITE VISIT ASSESSMENT OF STP FOR OPERATORS & TECHNICIANS	F	I	N/A	Comments
Is fencing around facility able to prevent public access:				
Are signs displayed which indicate TESI's ownership, the potential hazards of accessing the STP & a phone # to contact in case of an emergency or overflow:				
Is the effluent being discharged at the proper outfalls:				

Legend: F=Functional I=Inoperative N/A = Non-Applicable

Item	F	I	N/A	Comments	Items	F	I	N/A	Comments
#1 Pump and/or Motor					#1 Pump and/or Motor				
#2 Pump and/or Motor					#2 Pump and/or Motor				
V-Belts					V-Belts				
Electrical Components					Electrical Components				
Level Floats					Level Floats				
L/S RUN TIME HOUR				Hours	***L/S RUN TIME HOUR METERS***				Hours
#1 Pump Meter					#1 Pump Meter				
#2 Pump Meter					#2 Pump Meter				

*USE ADDITIONAL O&M REPORT FOR ADDITIONAL LIFT STATIONS

Legend: F=Functional I=Inoperative N/A = Non-Applicable

Additional Comments:

BAR SCREEN	F	I	N/A	*Remove debris from bars and place in covered container*. Debris removed? ☐ YES ☐ NO
AERATION CHAMBER** ***30 min SST _____% ***Dilution 30 min SST*** _____%				Color of aeration: ☐ Dark ☐ Medium ☐ Light Color of sludge return: ☐ Dark ☐ Medium ☐ Light Aeration: ☐ Light ☐ Medium ☐ Aggressive **Front MLSS** _____**mg/L DO** _____**mg/L** **Middle MLSS** _____**mg/L DO** _____**mg/L** **Rear MLSS** _____**mg/L DO** _____**mg/L**
CLARIFIER** ***Sludge Depth #1 _____***ft.*** ***Sludge Depth #2*** _____***ft.*** ***Total Sidewall Depth (TSD)*** _____***ft.***				*Clean sidewalls as needed, adjust return sludge rate as needed, adjust skimmer as needed* Baffle conditions: ☐ Clean ☐ Caked *(needs cleaning)* Sludge/Debris removed? ☐ YES ☐ NO *Clean overflow weir as needed.(remove algae & sludge/debris)* Return Line #1 ☐ F ☐ Clogged Sludge Rate: ☐ Slow ☐ Medium ☐ High ☐ Adjusted RAS Rate Return Line #2 ☐ F ☐ Clogged Sludge Rate: ☐ Slow ☐ Medium ☐ High ☐ Adjusted RAS Rate
***CHLORINE CONTACT CHAMBER (CCC)** **Effluent DO** _____**mg/L** **Water Temp** _____ **°C** **DO Drop:** ☐ **On** ☐ **Off** ☐ **N/A** **TRC** _____**mg/L pH** _____				*Chlorine tablets added: (Y / N), # of tablets added:* _____ *(inspect chlorine chamber for solids)* Chlorinator: ☐ Clean ☐ Debris Present Debris removed? *(Y / N)* CCC - Floatable Solids Present? *(Y / N)*, Floatable Solids removed? *(Y / N)* Settled Solids Present? *(Y / N)*, Settled Solids Measured w/Sludge Judge? *(Y / N)* Settled Solids Depth: _____feet/inches (circle one), Settled Solids Removed: *(Y / N)* **If Settled Solids Removed, circle location & estimated amount of solids removed below:** (Circle one): digester/head of aeration/pump truck, Estimated amount removed: _____gallons ****If solids are hauled away by sludge hauler, attach manifest!***
MECHANICAL EQUIPMENT				*Check time clock for correct time of day. Check air release valves and inspect air piping for leaks*
#1 BLOWER/MOTOR				Check air filter & clean or replace as needed___Oil & Lube ___Air Filters___ Belts
#2 BLOWER/MOTOR				Check air filter & clean or replace as needed___Oil & Lube ___Air Filters___ Belts

FLOW MEASUREMENT REPORTING ***TURN OFF POST AERATION BEFORE MEASURING, IF EQUIPPED..***

V-Notch Sample Box (Record Inches)	Continuous Flow Monitor (Record Reading)	1-Gallon Bucket & Stop Watch (Record Seconds to Fill)
		1. 2. 3.

Additional Comments:

TESI Personnel Signature:	**Date Report Reviewed:**
Print Name:	**Reviewed by:**

TOTAL ENVIRONMENTAL SOLUTIONS, INC.

LAGOON SEWAGE TREATMENT O & M REPORT

☐ ROUTINE O&M ☐ NPDES SAMPLING ☐ PROCESS CONTROL SAMPLING ☐ RE-EVALUATION PROCESS CONTROL

Date: _____ **Facility Name:** _____ **Time in:** _____am/pm, **Time Out:** _____am/pm

Rain Gauge _____ Inches

Spill Insp.: Y / N **Spill Detected: Y / N** **Leak Insp.: Y / N** **Leak Detected: Y / N**

SITE VISIT ASSESSMENT OF STP FOR OPERATORS &TECHNICIANS	F	I	N/A	Comments
Is fencing around facility able to prevent public access:				
Are signs displayed which indicate TESI's ownership, the potential hazards of accessing the STP & a phone # to contact in case of an emergency or overflow:				
Is the effluent being discharged at the proper outfalls:				

LIFT STATION # ***LIFT STATION #*** **Legend: F=Functional I=Inoperative N/A = Non-Applicable**

Items	F	I	N/A	Comments	Items	F	I	N/A	Comments
#1 Pump and/or Motor _____amps					#1 Pump and/or Motor _____amps				
#2 Pump and/or Motor _____amps					#2 Pump and/or Motor _____amps				
V-Belts					V-Belts				
Electrical Components					Electrical Components				
Level Floats					Level Floats				
L/S RUN TIME HOUR METERS				Hours	***L/S RUN TIME HOUR METERS***				Hours
#1 Pump Meter					#1 Pump Meter				
#2 Pump Meter					#2 Pump Meter				

*USE ADDITIONAL O&M REPORT FOR ADDITIONAL LIFT STATIONS

Legend: F=Functional I=Inoperative N/A = Non-Applicable

Additional Comments:

	F	I	N/A	
INFLUENT PIPE				Above / Below water level (circle one)
CELLS				Cell 1 *(Y / N)*, Cell 2 *(Y / N)*, Cell 3 *(Y / N)* Trees/shrubs: Y / N Removed trees/shrubs: Y / N Pond Cell Color – (Green (G), Light Brown (LB), Dark Brown (DB), Other (O)) Cell 1 *(___)*, Cell 2 *(___)*, Cell 3 *(___)*
AERATION *(Y / N)*				Aerators operational? *(Y / N)*, Are the aerator(s) mixing the lagoon(s) properly? *(Y / N)*
TRANSFER PIPING				Cell 1 - Tee and riser on the transfer pipe? *(Y / N)*, Flowing? *(Y / N)*, Turtle Strainer in Place? *(Y / N)* Cell 2 - Tee and riser on the transfer pipe? *(Y / N)*, Flowing? *(Y / N)*, Turtle Strainer in Place? *(Y / N)* Cell 3 - Tee and riser on the transfer pipe? *(Y / N)*, Flowing? *(Y / N)*, Turtle Strainer in Place? *(Y / N)* Last Cell to CCC - Tee and riser on the transfer pipe? *(Y / N)*, Open? *(Y / N)*, Turtle Strainer in Place? *(Y / N)*
***CHLORINE CONTACT CHAMBER (CCC)** **Effluent DO _____mg/L** **Water Temp _____°C** **DO Drop: ☐ On ☐ Off ☐ N/A** **TRC _____mg/L pH _____**				*Chlorine tablets added: (Y / N), # of tablets added: _____ (inspect chlorine chamber for solids)* Chlorinator: ☐ Clean ☐ Debris Present Debris removed? *(Y / N)* CCC - Floatable Solids Present? *(Y / N)*, Floatable Solids removed? *(Y / N)* Solids Present? *(Y / N)*, Solids Measured w/Sludge Judge? *(Y / N)* Solids Depth: _____feet/inches (circle one), Solids Removed: *(Y / N)* **If Solids Removed, identify location & estimated amount of solids removed below:** Estimated amount removed: _____gallons: Solids relocation: Cell 1, Cell 2, Cell 3, Offsite
LEVEE SYSTEM				Grass Cut? *(Y / N)*, Inspect for Leakage? *(Y / N)*, Seepage? *(Y / N)*, Animal burrow present? *(Y / N)* Levee Erosion? *(Y / N)*, Levee breaches? *(Y / N)*, Trees or excessive vegetation? *(Y / N)*
CELL BAFFLES				Visible Damage? (Y / N), Intact as Installed? (Y / N) Seepage? (Y / N),
AERATOR(S)				#1 ____amps, #2 ____amps, #3 ____amps, #4 ____amps

FLOW MEASUREMENT REPORTING ***TURN OFF POST AERATION BEFORE MEASURING, IF EQUIPPED..***

V-Notch Sample Box (Record Inches)	Continuous Flow Monitor (Record Reading)	1-Gallon Bucket & Stop Watch (Record Seconds to Fill)
		1. 2. 3.

Additional Comments:

TESI Personnel Signature:	**Date Report Reviewed:**
Print Name:	**Reviewed by:**

APPENDIX E

STANDARD OPERATING PROCEDURES

FOR

FIELD SAMPLING PERSONNEL

Total Environmental Solutions, Inc. (TESI)
Standard Operating Procedure
Oxidation Pond

WHAT THE SEWER TREATMENT UNIT DOES AND WHY IT'S IMPORTANT -The oxidation pond serves the subdivision. This unit is used to treat wastewater (sewage) generated by residents and occupants (TESI's customers).

1) TESI is required by law to treat the wastewater in accordance with the requirements of its water permit (LPDES Permit).

2) Compliance with the permit and permit limits is critical.

3) Improper operation of the unit will result in violations of the permit. Violations of the permit are subject to fines and other enforcement actions by the Louisiana Department of Environmental Quality (LDEQ).

4) Improper operation of the unit may also directly affect TESI's customers.

5) Safety of TESI's operators and nearby residents can also be jeopardized by improper operation of the unit.

YOUR DUTIES AS AN OPERATOR: You must carefully operate and maintain this system to avoid creating a public health hazard and costly repairs. Careful operation means following the standard operating procedures. The standard operating procedures (SOPs) described here are prepared to help you assure that your plant works properly and does not cause harm to the environment, public health, or impact TESI's business.

Keep in mind that no standard operating procedure can replace common sense and adequate training. Always ask questions when you do not understand an operating procedure. **If in doubt, ask your supervisor**. (See, procedures for contacting supervisor below.)

Your sewage treatment plant requires frequent attention (daily or several times per week) in addition to routine weekly, monthly, and/or annual maintenance and operation program. Review the SOP checklist during each facility visit. **All required checklists must be completed in full.**

Your sewage treatment plant requires frequent attention (daily or several times per week) in addition to routine weekly, monthly, and/or annual maintenance and operation program. Review the SOP checklist during each facility visit. **All required checklists must be completed in full.**

- **HOUSEKEEPING**
  - Lagoon levees must be cut regularly then sprayed. Bermuda grass seed can be applied to lagoon levees to control erosion and minimize mowing during the summer months. Excessive growth of vegetation on lagoon levees can cause the levees to leak or erode. High grass or weeds is not only unsightly, but can hide dangers. Sink holes can be stepped into, snakes can hide and even alligators can

enjoy a badly maintained system. ***To avoid these problems, keep the vegetation down.***

- Trash throne by vandals, or removed from the system must be removed from the site. Always carry a bucket with you to haul away trash. Large pieces of debris can be placed in the back of your service truck and removed. Never leave trash on the ground at your facility.
- Materials and supplies used at a plant site should be stored in a neat and orderly manner at the site to prevent them from falling off of shelves onto moving equipment.
- Junk parts removed from a piece of equipment should be disposed of in a proper manner.

SAFETY CONSIDERATIONS: Chemical, mechanical, slipping, lifting, fall, drowning, biological (disease), and electrical hazards are associated with this process. Consult with your safety supervisor concerning safety hazards and proper personal protective equipment and training required when working with or around this unit. **Report unsafe conditions to your supervisor immediately.**

- Taking Chances

  Before commencing any work that may be hazardous, care should be taken to establish a safe procedure. Where more than one employee is engaged in the same job, all employees shall be concerned and understand the procedures to be followed to prevent endangerment to self or other personnel on the job. Under no circumstances shall safety be sacrificed for speed. Employees shall always place themselves in a safe and secure position. The care exercised by others shall not be relied upon for one's own protection.

- Protecting the Public

  When an employee needs additional light while working on the premises of a customer, he shall use a battery powered flashlight, or an approved properly guarded electrical extension light. An open flame light such as a match, torch, or cigarette lighter shall not be used. When operating temporary pumping equipment in a public location, barricades shall be used to keep all traffic and personnel a safe distance away from the site.

- Reporting Hazardous Conditions

  A. When an employee observes a hazardous condition that may cause injury or property damage, the employee shall report it promptly to a proper authority and when necessary, guard it.

  B. An employee who receives a report of a hazardous condition, either from the general public or another employee, shall immediately refer this information to the person or utility responsible for such matters.

PURPOSE OF UNIT: The purpose of the unit is to treat sewage generated by TESI's customers. The unit is designed to treat a specific amount of sewage per day (flow) and to produce treated water (effluent) that should comply with TESI's specific permit for that facility. Further details about permit requirements and updates can be obtained from TESI's Compliance Manager.

CONTACTING THE SUPERVISOR: All operators have are given access to two-way radios, and/or cell phones. These communication devices are to be used to contact the operations supervisor, safety supervisor, and compliance manager when questions arise in the field.

DESCRIPTION OF UNIT

Components	• This unit is called an oxidation pond. It has the following components : A. 1 Pumping (lift) Station (Duplex) B. Two pond cells C. Chlorine Contact Chamber D. Compliance Sampling Port/Location
Principle of Operation	• Sewage conveyed to pumping station contains debris, solids, biodegradable organics (BOD5), ammonia, and fecal coliform bacteria (indicators of disease causing organisms). The treatment pond is designed to remove BOD5, ammonia, solids, and fecal coliform bacteria. Here is how: 1) Sewage is pumped into the pond. 2) In the pond, wastewater is treated through a combination of physical, biological, and chemical processes. Much of the treatment occurs naturally, but some systems use aeration devices to add oxygen to the wastewater. Aeration makes treatment more efficient, so that less land area is necessary. Aerators can be used to allow existing systems to treat more wastewater. 3) Like most natural environments, conditions inside facultative lagoons are always changing. Lagoons experience cycles due to variations in the weather, the composition of the wastewater, and other factors. In general, the wastewater in facultative lagoons naturally settles into three fairly distinct layers or zones. Different conditions exist in each zone, and wastewater treatment takes place in all three. 4) The top layer in a facultative lagoon is called the aerobic zone, because the majority of oxygen is present there. The wastewater in this part of the lagoon receives oxygen from air, from algae, and from the agitation of the water surface (from wind

	and rain, for example). This zone also serves as a barrier for the odors from gases produced by the treatment processes occurring in the lower layers. 5) Names for the middle layer include the facultative, intermediate, or aerobic-anaerobic zone. Both aerobic and anaerobic conditions exist in this layer in varying degrees. Depending on the specific conditions in any given part of this zone, different types of bacteria and other organisms is present that contribute to wastewater treatment. 6) The anaerobic zone is the layer at the very bottom of the lagoon where no oxygen is present. This area includes a layer of sludge, which forms from the solids that settle out of the wastewater. Here, wastewater is treated by anaerobic bacteria, microscopic organisms, such as certain protozoa, and sludge worms, all of which thrive in anaerobic conditions. 7) The amount of wind the lagoon receives is not only important for the oxygen it contributes, but also because it affects the overall hydraulic flow pattern of the wastewater inside the lagoon, which is another physical factor that contributes to treatment. Time is another important factor in treatment. Facultative lagoons are designed to hold the wastewater long enough for much of the solids in the wastewater to settle and for many disease-causing bacteria, parasites, and viruses to either die off or settle out. Time also allows treatment to reduce the overall organic strength of the wastewater, or its biochemical oxygen demand (BOD). In addition, some of the wastewater eventually evaporates. Sunlight is also extremely important to facultative lagoons because it contributes to the growth of green algae on the water surface. Because algae are plants, they require sunlight for photosynthesis. Oxygen is a byproduct of photosynthesis, and the presence of green algae contributes significantly to the amount of oxygen in the aerobic zone. The more warmth and light the sun provides, the more green algae and oxygen there is likely to be in the lagoon. 8) The oxygen in the aerobic zone makes conditions favorable for aerobic bacteria. Both aerobic and anaerobic bacteria are very important to the wastewater treatment process and to each other. Bacteria treat wastewater by converting it into

	other substances. Aerobic bacteria convert wastes into carbon dioxide, ammonia, and phosphates, which, in turn, are used by the algae as food. Anaerobic bacteria convert substances in wastewater to gases, such as hydrogen sulfide, ammonia, and methane. Many of these by-products are then used as food by both the aerobic bacteria and algae in the layers above. 9) After the waste water makes its way through all three cells of the oxidation pond it then passes through a tablet chlorinator where it comes into contact with chlorine tablets 10) After the tablet chlorinator, the wastewater effluent goes into a chlorine contact chamber (CCC) designed for at least a 15 minute hold time (retention time) at peak hour flow to ensure adequate activation and to kill fecal coliform bacteria. The CCC should be free of solids and turbidity. 11) After the CCC, the effluent is periodically sampled and analyzed to check for compliance with the facility's permit requirements.

NORMAL OPERATION OF UNITS

Fill out an O&M Checklist Report for every plant visit.		**Frequency**				
		As Needed	Times per Day	Times per Week	Times per Month	Times per Year
General	1) Inspect pond to see that all mechanical equipment is operating			2		
	2) Listen for unusual equipment sounds and investigate problem			2		
	3) Look for any spills, overflows, and breaches in levee. Check effluent color, turbidity, and/or oily sheen.			2		
	4) Note any unusual smells (e.g. rotten egg odors, strong bleach smell).			2		
	5) Inspect the security of the unit. Look for evidence of vandalism and/or tempering.			2		
Pump Station	1) Observe wet well level			2		
	2) Look for evidence of overflow conditions			2		

Fill out an O&M Checklist Report for every plant visit.		**Frequency**				
		As Needed	Times per Day	Times per Week	Times per Month	Times per Year
	3) Clean floats and remove any grease build-up (if necessary)	X				
	4) Check switches (on/off/auto)			2		
	5) Check and record amp draw			2		
	6) Check lift station housing, ensuring area is clean and free of debris			2		
	7) Grease and add oil to surface pumps (if applicable)	X				
	8) Check belts: surface pumps (tighten or replace if applicable)	X		2		
POND	1) Inspect for excessive erosion, or levee damage from wildlife			2		
	2) Verify equal water level on both sides of transfer lines and levees.			2		
	3) Check transfer lines for debris or blockages			2		
	4) Visual check of transfer & discharge line to insure sanitary is in place & above or at water level.			2		
	5) Check aeration system for unusual noises or vibrations (if applicable)			2		
	6) Check Aerator control panel switches (timer, on/off/auto, if applicable)			2		
	7) Visually check vegetation around pond system and levees.			2		
Chlorine Contact Chamber (CCC)	1) Inspect Chlorinator for proper operation			2		
	2) Remove cap and inspect tablets in tubes (refill as needed)			2		
	3) Clean chlorinator and sleeves (keep free of debris)	X				
	4) Ensure chlorine tablets stay in contact with effluent from overflow weir (check for jammed tablets)			2		
	5) Monitor any sludge build-up in chambers and remove any debris or solids immediately				3	

Fill out an O&M Checklist Report for every plant visit.		**Frequency**				
		As Needed	Times per Day	Times per Week	Times per Month	Times per Year

See attachments: ***1-STP General Information, 2-STP Diagram, 3-Oxidation Pond Evaluation, 4-Schedule A – Final Effluent Limitations***

Total Environmental Solutions, Inc. (TESI)
Standard Operating Procedure
Extended Aeration Mechanical STP

WHAT THE SEWER TREATMENT UNIT DOES AND WHY IT'S IMPORTANT -The Extended Air Mechanical Sewage Treatment Plant (STP) serves the [redacted] Subdivision. This unit is used to treat wastewater (sewage) generated by residents and occupants (TESI's customers).

1) TESI is required by law to treat the wastewater in accordance with the requirements of its water permit (LPDES Permit).

2) Compliance with the permit and permit limits is critical.

3) Improper operation of the unit will result in violations of the permit. Violations of the permit are subject to fines and other enforcement actions by the Louisiana Department of Environmental Quality (LDEQ).

4) Improper operation of the unit may also directly affect TESI's customers.

5) Safety of TESI's operators and nearby residents can also be jeopardized by improper operation of the unit.

YOUR DUTIES AS AN OPERATOR: You must carefully operate and maintain this system to avoid creating a public health hazard and costly repairs. Careful operation means following the standard operating procedures. The standard operating procedures (SOPs) described here are prepared to help you assure that your plant works properly and does not cause harm to the environment, public health, or impact TESI's business.

Keep in mind that no standard operating procedure can replace common sense and adequate training. Always ask questions when you do not understand an operating procedure. **If in doubt, ask your supervisor**. (See, procedures for contacting supervisor below.)

Your sewage treatment plant requires frequent attention (daily or several times per week) in addition to routine weekly, monthly, and/or annual maintenance and operation program. Review the SOP checklist during each facility visit. **All required checklists must be completed in full.**

- Housekeeping
  - A. Lawn, grass and other vegetation control: the facility and lift station must be kept mowed, and weeds and other brush must be removed. Trees that overhang over STP must kept cut back to keep branches and leaves out of the system. Grass must be kept short at all times and fence lines must be cleared of debris and then sprayed to keep vegetation under control.
  - B. Trash throne by vandals, or removed from the system must be removed from the site. Always carry a bucket with you to haul away trash. Large pieces of

debris can be placed in the back of your service truck and removed. Never leave trash on the ground at your facility.

C. Materials and supplies used at a plant site should be stored in a neat and orderly manner at the site to prevent them from falling off of shelves onto moving equipment.
D. Junk parts removed from a piece of equipment should be disposed of in a proper manner.
E. Spare parts used in the operation of a wastewater treatment plant should be kept in a neat and orderly manner with the item labeled to indicate on what piece of equipment the spare part is used.

SAFETY CONSIDERATIONS: Chemical, mechanical, slipping, lifting, fall, drowning, biological (disease), and electrical hazards are associated with this process. Consult with your safety supervisor concerning safety hazards and proper personal protective equipment and training required when working with or around this unit. **Report unsafe conditions to your supervisor immediately.**

- Taking Chances

  Before commencing any work that may be hazardous, care should be taken to establish a safe procedure. Where more than one employee is engaged in the same job, all employees shall be concerned and understand the procedures to be followed to prevent endangerment to self or other personnel on the job. Under no circumstances shall safety be sacrificed for speed. Employees shall always place themselves in a safe and secure position. The care exercised by others shall not be relied upon for one's own protection.

- Guards

  No guard shall be removed from any machine or piece of equipment except to perform required maintenance.

- Protecting the Public

  When an employee needs additional light while working on the premises of a customer, he shall use a battery powered flashlight, or an approved properly guarded electrical extension light. An open flame light such as a match, torch, or cigarette lighter shall not be used. When operating temporary pumping equipment in a public location, barricades shall be used to keep all traffic and personnel a safe distance away from the site.

- Reporting Hazardous Conditions

  A. When an employee observes a hazardous condition that may cause injury or property damage, the employee shall report it promptly to a proper authority and when necessary, guard it.
  B. An employee who receives a report of a hazardous condition, either from the general public or another employee, shall immediately refer this information to the person or utility responsible for such matters.

PURPOSE OF UNIT: The purpose of the unit is to treat sewage generated by TESI's customers. The unit is designed to treat a specific amount of sewage per day (flow) and to produce treated water (effluent) that should comply with TESI's specific permit for that facility. The permit requirements, as well as other general information about this unit, are summarized in **Attachments 1 & 4** for this facility. Further details about permit requirements and updates can be obtained from TESI's Compliance Manager.

CONTACTING THE SUPERVISOR: All operators have two-way radios in their trucks. These radios are to be used to contact the operations supervisor, safety supervisor , and compliance manager when questions arise in the field.

DESCRIPTION OF UNIT (see schematic in Attachment 1)

Components	• This unit is called an extended aeration mechanical sewage treatment plant (STP). It has the following components (refer to Schematic in Attachment 1): A. Pumping (lift) Station (Duplex) B. Bar Screen C. Blower and motor assembly (Duplex) D. Air Header and Diffuser Assembly E. Aeration Compartment F. Clarifier Compartment G. Air Lift Pumps H. Sludge Return/Sludge Wasting Lines I. Scum Removal Pipe/Skimmer J. Chlorine Contact Chamber K. Compliance Sampling Port/Location
Principle of Operation	• Sewage conveyed to pumping station contains debris, solids, biodegradable organics (BOD5), ammonia, and fecal coliform bacteria (indicators of disease causing organisms). The STP is designed to remove BOD5, ammonia, solids, and fecal coliform bacteria. Here is how: 1) Sewage is pumped into aeration compartment. 2) Large debris (plastics, paper, rags, etc..) is captured by the Bar Rack so that it does not interfere with the treatment process (can clog diffusers, sludge lines, scum lines, etc.). 3) Beneficial Bacteria in the aeration chamber, referred to as activated sludge, use the biodegradable organic materials (BOD5) in the sewage as food. The activated sludge bacteria convert the BOD5 to more bacteria (more sludge) and carbon dioxide. The activated sludge bacteria need oxygen to degrade the organics and to survive. Oxygen is supplied by the blowers (air

contains 29% oxygen) and delivered to the aeration compartment via the air headers and diffuser assemblies submerged in the aeration compartment. The air also allows the entire aeration compartment to be mixed with the incoming sewage which is important for proper operation.

4) The activated sludge bacteria are a mixture of bacteria and other organisms that have the ability to clump together and form flocs. A good floc formation is essential for proper operation of the STP. We try to keep a certain amount of activated sludge bacteria (microorganisms) in the aeration compartment in proportion to the amount of biodegradable organics present in the incoming sewage (food). This is referred to as maintaining a certain level of Food to Microorganisms Ratio (F:M Ratio). After the sewage and activated sludge bacteria (Mixed Liquor) spend at least 24 hours in the aeration compartment, the mixed liquor is transferred to the clarifier compartment. At this stage, the activated sludge bacteria should have removed all the BOD5 needed to meet permit limits.
5) The sludge moved from the aeration compartment is allowed to settle in the clarifier. Notice that the clarifier has no air and the surface should be very calm. In the clarifier, the activated sludge flocs drop down to the bottom of the clarifier. The clear effluent flows over the clarifier weirs into the effluent trough and to the chlorine contact chamber. The clarifier effluent should be clear and with no visible solids or turbidity present. You can observe how the sludge settles in the clarifier by taking a liter of activated sludge from the aeration compartment and placing it in a transparent glass, plastic beaker or graduated cylinder. A very clear interface will form between the sludge and the water. The sludge will settle as a blanket which gradually compacts on the bottom of the beaker/cylinder. The water on top should be clear with no solids or turbidity. If the sludge settles well in the cylinder/beaker, there is no reason why it should not settle the same way in the clarifier unless there are some mechanical problems or excessive flow going through the unit. Solids/sludge in the effluent contributes to TSS

	permit violations and will impact the disinfection/chlorination process in the chlorine contact chamber (CCC). 6) Because the sludge at the bottom of the clarifier contains useful and hungry organisms, we try to return a good portion of it back to the aeration compartment through the sludge return lines and by means of an air lift pump. This portion of the sludge is called Return Activated Sludge (RAS). Any excessive buildup of sludge that exceeds our needs is wasted out of the system. This is called waste activated sludge (WAS). A well operated STP requires periodic wasting of activated sludge to prevent buildup of dead bacteria and inert solids. 7) The sludge that builds up on the bottom of the clarifier is called the sludge blanket. The sludge blanket is to be maintained at a certain set-point so that the clarifier can operate properly. The blanket depth is determined based on your experience with the plant; however, it is typically held at 1/3 (one third) of the side water depth in the clarifier. The RAS and WAS are pumped out from this blanket. If the blanket is thin, the air lift pump will pump mostly water which is not desirable. This is called this rat-holing. So, it is important to maintain a sludge blanket in the clarifier. 8) Scum that forms on top of the clarifier is removed by the scum lines or skimmer. The scum is returned to the aeration chamber for more treatment. 9) Effluent from the clarifier goes to the Chlorine Contact Chamber for disinfection (to kill disease causing organisms and reduce fecal coliform bacteria). At this stage, the effluent should be low in BOD5 and TSS. The effluent is contacted with a chlorine chemical (calcium hypochlorite) in a Tablet Chlorinator Unit. Calcium hypochlorite tables are stacked in the Chlorinator Feed Tubes to provide several days supply of chlorine. Never use pool chlorine chemicals in this process. 10) After the tablet chlorinator, the wastewater effluent goes into a chlorine contact chamber (CCC) designed for at least a 15 minute hold time (retention time) to ensure adequate inactivation and to kill fecal coliform bacteria. The CCC should be free of solids and turbidity.

	11) After the CCC, the effluent is periodically sampled and analyzed to check for compliance with the facility's permit requirements.

NORMAL OPERATION OF UNITS

Fill out an O&M Checklist Report for every plant visit.		**Frequency**				
		As Needed	Times per Day	Times per Week	Times per Month	Times per Year
General	1) Inspect plant to see that all mechanical equipment is operating		1			
	2) Listen for unusual equipment sounds and investigate problem		1			
	3) Look for any spills, overflows, and excessive foaming in aeration compartment and in the effluent. Check effluent color, turbidity, and/or oily sheen.		1			
	4) Note any unusual smells (e.g. rotten egg odors, strong bleach smell).		1			
	5) Inspect the security of the unit. Look for evidence of vandalism and/or tempering.		1			
Pump Station	1) Observe wet well level		1			
	2) Look for evidence of overflow conditions		1			
	3) Clean floats and remove any grease build-up (if necessary)	X				
	4) Check switches (on/off/auto)		1			
	5) Check and record amp draw		1			
	6) Check lift station housing, ensuring area is clean and free of debris		1			
	7) Grease and add oil to surface pumps (if applicable)	X				
	8) Check belts: surface pumps (tighten or replace if applicable)	X		1		
Bar Rack (Inlet Basket)	1) Empty debris/screenings and place in bucket or dumpster	X				
	2) Cover bucket or dumpster after use	X				
	3) Inspect bar rack for any damage		1			
Aeration Compartment	1) Observe all diffuser drops and aeration valves (looking for leaks and signs of deterioration)		1			
	2) Observe odor, color, and foam in aeration compartment		1			

Fill out an O&M Checklist Report for every plant visit.		**Frequency**				
		As Needed	Times per Day	Times per Week	Times per Month	Times per Year
	3) Check mixing and presence of dead spots or scum accumulation		1			
	4) Visually check system for an even air distribution, even roll across aeration chamber, no dead spots or septic areas		1			
	5) Check for air leaks around blower base and fittings		1			
	6) Check valves for leaks		1			
	7) Check motor and blower casing for overheating		1			
	8) Check aeration system for unusual noises or vibrations		1			
	9) Run 30-minute settleability test: a) Ensure that aeration system has been running for 10 or more minutes before testing b) Take sample in aeration chamber closest to transfer baffle and let stand for 30 minutes c) Compare reading with established acceptable operating range (to be determined) d) greater than ____%, check sludge depth in clarifier (increase/decrease RAS rate) note changes and monitor **TBD** e) Remove or add sludge after continual monitoring of adjustments (includes monitoring of sample results)			1		
	10) Check Blower filter (clean or replace if applicable)		1			
	11) Check oil level in blower (add as needed)	X	1			
	12) Replace oil in blower					4
	13) Grease blower (where applicable)				2	
	14) Check blower/motor sheaves and belts (change or tighten belt if applicable)			1		
	15) Check Blower control panel switches (timer, on/off/auto)		1			
	16) Check belt tension			1		
	17) Check and adjust Blower run time (Daytime ____min/hrs on___min/hrs off; Nighttime ____min/hrs on _____min/hrs off) **TBD**			1		

Fill out an O&M Checklist Report for every plant visit.		**Frequency**				
		As Needed	Times per Day	Times per Week	Times per Month	Times per Year
	18) Check air lift pump operation		1			
Clarifier	1) Scrape the side walls and sloping bottom of the clarifier	X		1		
	2) Measure sludge blanket depth and check color a. optimum depth = _____feet; **TBD**		1			
	3) Check sludge return for color and return amount		1			
	4) Remove any floating solids	X				
	5) Check scum accumulation		1			
	6) Check effluent weir level				3	
	7) Clean and scrub effluent weir	X				
	8) Check skimmer inlet setting and skimmer operation		1			
	9) Baffle (keep free of debris and solids) clean as needed	X				
	10) Overflow weir and trough (clean as needed)	X				
	11) Waste sludge per results of 30 minute settleability tests (see sludge wasting procedure; Attachment 2)	X				
Chlorine Contact Chamber (CCC)	1) Inspect Chlorinator for proper operation		1			
	2) Remove cap and inspect tablets in tubes (refill as needed)		1			
	3) Clean chlorinator and sleeves (keep free of debris)	X				
	4) Ensure chlorine tablets stay in contact with effluent from overflow weir (check for jammed tablets)		1			
	5) Monitor any sludge build-up in chambers and remove any debris or solids immediately		1			
Sludge Holding Tank (digester)	Not Applicable					

See attachments: 1-STP General Information, 2-STP Diagram, 3-Sludge Wasting Procedure, 4- Schedule A - Final Effluent Limits & Monitoring Requirements

TBD = To Be Determined

Influent Color	Aeration Tank Color	Settling Tank Color	Color of Return Sludge	Odor	Condition	Adjustment
Gray	Chocolate Brown	Clear	Chocolate Brown	Earthy	Good Operation	None
Gray	Chocolate Brown	Clear	Chocolate Brown	Earthy	Excessive foaming	Install or operate spray system
Gray	Chocolate Brown	Clear	Chocolate Brown	Earthy	Floating lumps of grease in settling tank	Skim settling tank frequently. Clean or install grease trap
Gray	Chocolate Brown	Clear	Chocolate Brown	Musty	Layer of sludge visible near surface of settling tank	Increase sludge return rate. Scrape hopper
Gray	Chocolate Brown	Murky	Light Brown	Musty	Solids in effluent	Reduce sludge return rate
Gray	Light Brown	Light Brown	Light Brown	Slightly Musty	Floating solids in settling compartment	Scrape hopper. Skim settling tank
Gray	Light Brown	Light Brown	----------	Slightly septic	No sludge return	Backwash sludge return. Scrape hopper
Gray	Light Brown	Brown slime floating on surface	Light Brown	None	Plant under-loaded	Reduce running time
Gray	Light Brown	Black	Black	Slightly septic	Inadequate return of sludge	Increase sludge return rate.
Gray	Light Brown	Clear	Light Brown	Musty	Uneven tank oil	Adjust valves until roll (mixing) is uniform
Gray	Gray	Murky	Gray	None	Insufficient solids in plant	Increase aeration. Increase sludge return rate.
Gray	Red	Reddish	Light Brown	None	Over aeration	Reduce aeration
Gray	Black	Black	Black	Septic	Insufficient aeration	Increase aeration.
Gray	Black	Black	----------	Septic	No air rising in tank. Blower not running.	Press reset on starter. Check V-belt. Check circuit breaker. Check power.
Black	Black	Black	Black	Septic	Septic wastewater	Maximum aeration. Check incoming flow for toxic material such as bleach, gasoline, etc.

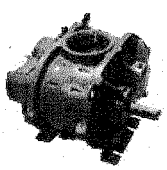
ROUTINE EQUIPMENT MAINTENANCE

Equipment in a wastewater treatment plant requires a certain degree of maintenance just as all other mechanical equipment does. Jet Plants have been designed to perform well with as little maintenance as possible. The service steps outlined here are not difficult but are absolutely necessary to insure proper plant operation and long equipment life.

Always shut off the electrical power before you inspect any of the mechanical or electrical equipment. Keep your hands and all objects away from the equipment until you have shut off the main circuit breaker on the control panel. Check the manufacturer's equipment manuals provided for additional information.

BLOWER

Positive displacement blowers are used to supply air to the treatment plant. These blowers contain two impellers, mounted on parallel shafts that rotate in opposite directions. As the impeller passes the blower housing inlet, it traps a small quantity of air between itself and the blower housing. It carries this air around to the outlet and discharges it.



Gears are installed on the end of each shaft to control the position of the impellers, with relation to each other, and thus maintain the clearances needed to assure maximum air flow efficiency, minimum wear, and long life. Since there is no contact between the impellers and the inside of the blower, internal lubrication is not needed and water sealing is not required. In fact, the blower is not able to handle liquids.

The blower gear housing should be checked weekly to be sure it is filled with SAE 40 lubricating oil. To do this, shut the blower off, remove the pipe plugs in the oil fill and oil level holes. Fill the housing through the oil fill hole until oil starts to run out the oil level hole. Then replace the plugs.

Bearings at the gear housing end of the blower are lubricated with oil splashed from the gears, but the bearings at the drive end need to be manually lubricated with grease every month. Use the grease gun and recommended grease listed in the Blower Operation Manual. Always remember to replace the yellow lubrication caps and square drain plugs when you are finished.

Whenever you plan to have the unit out of service longer than 72 hours, it should be flushed with a 50-50 mixture of 20 weight oil and kerosene. This can be done by removing the air filter and pouring the mixture into this hole. Replace the air filter immediately after pouring the mixture in and rotate the pulleys by hand for several turns before turning the unit on again.

COMPLIANCE SAMPLING PROCEDURES

- When: During all sampling events
- Duration: Approximately 10-15 minutes
  - Prior to a sampling event, calibrate the DO meter and pH meter as per manufacture's specifications. Enter the calibrations on the STP O&M Report form under the Additional Comments section.
  - Upon arriving at the facility to be sampled, enter the date, time and facility name which is being sampled on the Chain of Custody. Place a check mark next to the parameters to be tested.
  - Then using a clear, clean glass container, check the quality of the discharge at end of pipe or V-notched weir box.
  - Document any unique operating conditions on the STP O&M Report forms, such as verification that blowers, lift station, sludge return lines, and skimmers are functioning properly.
  - Conduct sampling and analysis to determine Total Residual Chlorine (TRC) from the chlorine contact chamber at the discharge opening. If result is below 0.5 ppm, inform Wastewater Supervisor or District Supervisor immediately of low chlorine level and clarity of discharge
  - Perform effluent sampling (i.e., BOD, TSS, NH3, Fecal Coliform, effluent DO, pH, TRC) using lab-provided sample containers. Immediately after sample collection, the samples should be placed in a cooler with ice. All samples are to be collected in accordance with attached SOPs (Appendix E) and lab-provided instructions. In this case of a contradiction between the SOPs and the lab-provided instructions, the lab-provided instructions shall dictate proper procedures. The Field Sampler shall communicate the contradiction to the Compliance Manager and Manager of Operations for review and revision of the appropriate SOP(s).
    - The importance of using good sampling methods cannot be overstated as it can highly impact permit compliance. Good data depends on good field practice and procedures.
    - All sampling devices and containers must be thoroughly cleaned to prevent carryover from previous samples. Preserve the samples properly. (Each sample collection instruction has information about sample preservation).
    - Safety comes first. Pay special attention to bacterial contamination, chemical burns from preservatives and other chemicals, toxic fumes in confined spaces (never enter a confined space without the proper safety gear, training, and permit), mechanical/electrical hazards from pumps, blowers, etc., slipping, lifting, falls, drowning, insect bites, etc. Always wear appropriate PPE and follow good hygiene practices.

- Test results for pH, TRC, and effluent DO are to be entered in the appropriate locations on the Chain of Custody and the STP O&M Report.

PROCESS CONTROL & EFFLUENT FIELD DATA COLLECTION PROCEDURES

- When: During compliance sampling events
- Duration: Approximately 30-45 minutes per STP
- Process Control Parameters are gathered: Settleable Solids Test, Mixed Liquor Suspended Solids (MLSS), Dissolved Oxygen in Aeration, Clarifier Sludge Depth, Chlorine Contact Chamber Sludge Depth, TRC from CCC
- Order & location of Process Control & Effluent Field Sampling
    - Upon arriving at a facility, using a clear, clean glass container, check the quality of the discharge at end of the pipe or V-notch weir box,
    - Verify that blowers, lift station, sludge return lines, and skimmers are functioning. If all are operational, then proceed. If not, notify Wastewater Supervisor or District Supervisor.
    - Conduct sampling and analysis to determine Total Residual Chlorine (TRC) from the chlorine contact chamber at the discharge opening. If result is below 0.5 ppm, inform Wastewater Supervisor or District Supervisor immediately of low chlorine level and clarity of discharge.
    - Conduct Settleable Solids Test near transfer pipe in aeration next to clarifier. Record on STP O&M Report.
    - Conduct Dissolved Oxygen test at the front, middle, and rear of the aeration chamber. Record on STP O&M Report.
    - Conduct MLSS analysis using MLSS probe at the front, middle, and rear of the aeration chamber. Record on STP O&M Report.
    - Determine clarifier sludge depth in clarifier hoppers (#1 is closest to inlet baffle, #2 nearest the overflow weir). The clarifier sludge depth should be determined during each site visit and should be determined using a sludge judge. Record on STP O&M Report.
    - Determine sludge depth in all compartments of the CCC and record on STP O&M Report.
    - Observe and document condition of chlorinator and CCC. Record on STP O&M Report.
    - Record flow on STP O&M Report and Flow Measurement Reporting Sheet.
    - Insure that ALL required information has been recorded on the O&M Report in the proper locations.

TOTAL ENVIRONMENTAL SERVICES

FIELD SAMPLING PROCEDURE

Collection & Reporting of Flow

PURPOSE

The purpose of this policy is to provide Field Samplers and Plant Operators a guideline for the collection of and reporting of flow data.

AUTHORITY

This procedure is implemented by the Compliance Department with the approval and support of TESI Management, Operations and Engineering.

GENERAL

The flow rate is collected and reported by Samplers at the time a sample is pulled and by Operators when plants are visited for maintenance purposes.

Operators report & record flows using Flow Sheets & O&Ms; while Samplers report & record flows on Flow Sheets, Sampler Observation Reports & Chain of Custody Forms.

Flows are gathered using one of the following three methods:

- Continuous Flow Monitor
- V-Notch Box
- Stop Watch & 1-Gallon Bucket

CONTINUOUS FLOW MONITOR

At facilities where a Continuous Flow Monitor is installed, both Operators & Samplers can simply record the reading from the Flow Monitor as is and submit to the Compliance Department on the appropriate forms.

V-NOTCH BOX

Where a V-Notch Box is installed, both Operators & Samplers simply read the measurement (in inches) where the top level of the water is coming through the V-Notch and record this number on the appropriate form(s) and submit to the Compliance Department.

STOP WATCH & 1-GALLON BUCKET

Where no V-Notch Box or Continuous Flow Monitor is available, Samplers & Operators must take the flow using a 1-gallon bucket and stop watch.

Holding the 1-Gallon bucket under the discharge pipe and using the stop watch, sampler or operator should count the seconds it takes to fill the bucket and record this number on the flow sheet. This procedure must be repeated a total of three (3) times filling the bucket to the same point each time. The seconds to fill should be recorded with a final total of three (3) separate readings shown representing the seconds taken to fill the bucket each time.

Operators or Samplers are NOT required to calculate or figure the flow rate. Flow sheets with the three recordings from each facility should be forwarded to the Compliance Department. It is the responsibility of Compliance Department Personnel to calculate the flow.

The following scenarios could prevent the use of the 1-gallon bucket and stop watch for the collection of flow:

- The discharge pipe is level with the water in the ditch
- 1-gallon bucket does not fit under discharge pipe
- Excessive flow greater than the strength of the sampler or operator to hold the bucket and collect three accurate readings

Should any of these conditions be present when attempting to gather flow data; samplers and operators should record the reason on the appropriate form as to why the flow information could not be gathered, and forward to the Compliance Department.

If at any time an operator or sampler is uncertain about the conditions and whether or not an accurate flow rate can be obtained, it is recommended that he/she contact their supervisor or the Compliance Department for further instruction.

CONCLUSION

In an effort to maintain quality control, this policy is meant to encourage uniformity and describe in detail the expected procedure to be used in the collection and reporting of flow rates.

ATTACHMENTS

1. Flow Measurement Reporting Form – *Revised February 18, 2009*

Total Environmental Solutions, Inc.

Standard Operating Procedures

Field Sampling and Analysis

STANDARD OPERATING PROCEDURE #5

30- MINUTE SETTLEABILITY TEST

How Critical is this?

This test is performed on the aeration chamber solids in activated sludge plants. It does not apply to ponds or flow through lagoons.

The purpose of the test is to determine how well the sludge settles and to help the plant operator gauge the operation of the plant on a daily basis. It is also used to determine if sludge is accumulating in excess of required amounts in the aeration system. Excess sludge is typically removed from the system and wasted.

Sampling and Analysis Precautions and Safety Considerations

See safety considerations under sample collection SOP.

It is important that a well mixed sample of the aeration basin solids is used for this test. If the blowers are off, they should be turned on for at least 15 minutes before a sample is taken.

Collect samples at mid-depth of the water column and from different locations in the aeration basin, if possible. Use a sampling dipper to collect a small volume at a time and pour in a 1000 mL graduated cylinder. Collect exactly 1000 mL.

EQUIPMENT NEEDED	• 1000 mL graduated cylinder • Sampling device such as a sample dipper • Gloves • Stopwatch
PROCEDURE	• Mix the 1000 mL graduated cylinder by capping the top with your gloved hand and inverting 4 to 5 time. Be careful not to spill any sample. • Allow the solids to settle for exactly 30 minutes • At 30 minutes, measure the solid-liquid interface by recording the volume of solids deposited on the bottom • Report results as mL settleable solids/ 1000 mL

Total Environmental Solutions, Inc.

Standard Operating Procedures

Field Sampling and Analysis

STANDARD OPERATING PROCEDURE #4

Total Residual Chlorine Analysis

How Critical is this?

When a fecal Coliform limit is imposed by the regulatory agencies, chlorination is used to kill fecal Coliform bacteria and other pathogenic (disease causing) organisms (a process known as disinfection). Chlorine is dosed into the effluent of the treatment plant using either tablet chlorinators or liquid sodium hypochlorite. It is important that the chlorine be allowed to contact the wastewater effluent for 15 to 30 minutes for effective disinfection. Typically, just enough chlorine is added to kill pathogenic bacteria. However, chlorine residual can be detected in the effluent. This residual, if too high, means that more than the required dosage of chlorine is added. If no chlorine residual is detected, it may be an indication that not enough chlorine is added.

Sampling and Analysis Precautions and Safety Considerations

See safety considerations under sample collection SOP.

Total chlorine residual measurements are field measurements and should be performed immediately after sample collection. A Hach Pocket Colorometer is used to measure residual chlorine in the field. The method involves adding reagents to the sample and measuring absorbance due to color formation. The color formation is proportional to the amount of residual chlorine present in the sample. By comparing the absorbance of the colored sample to an original effluent sample (with no reagents added), the chlorine residual can be estimated.

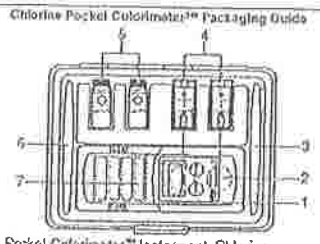
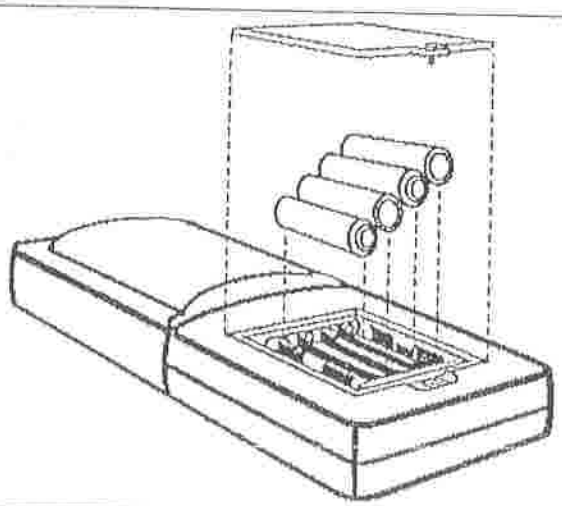
Because chlorine is volatile, it is important not to agitate the sample after collection. Chlorine also degrades in the presence of sunlight and reacts with organic matter present in the effluent, so it is important to analyze the sample immediately upon collection.

Using glass containers for sample collection and analysis is preferred over using plastic since chlorine may react with some plastic material.

Sampling equipment should be thoroughly cleaned.

SOP4-Total Residual Chlorine Analysis

Revised: 12/19/02

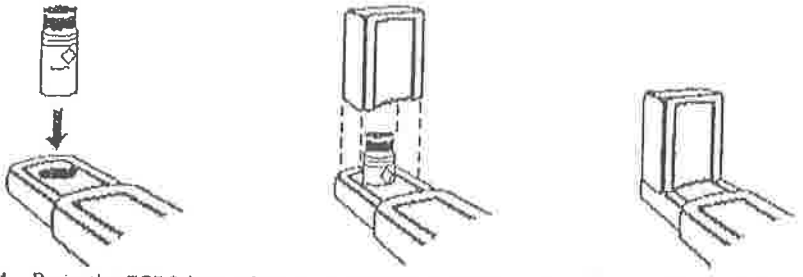
EQUIPMENT NEEDED	• Hach Pocket Colorimeter and Instruction Manual • DPD Total Chlorine Reagent Powder Pillows (Hach Catalog Number 21056-69) • Matched 10 mL sample cells with caps • Scissors • 100 mL glass graduated Cylinder (for diluting sample) • DI water • Gloves • Extra Batteries • Stop Watch
Chlorine Pocket Colorimeter™ Packaging Guide  1. Pocket Colorimeter™ Instrument, Chlorine 2. Caps, Sample Cell, 1-cm/10-mL (under instrument) 3. DPD Free Chlorine Powder Pillows 4. Sample Cells, 1-cm/10-mL 5. Sample Cells, 10-mL, with caps 6. DPD Total Chlorine Powder Pillows 7. Batteries, Alkaline AAA, 1.5 V, 4/pkg	• The Pocket colorimeter is factory calibrated and does not require user calibration. • Two button operation: READ and ZERO • Uses 1.5 V AAA Alkaline batteries. Do not use rechargeable batteries • Includes matched sample cells (make sure you check that the numbers on the sample cells are identical) • Measures at low and high range
Battery Installation	

GENERAL PROCEDURE

1. Fill a clean sample cell to the 10-mL mark with the blank solution (usually untreated sample). Fill another clean sample cell to the 10-mL mark with sample.
2. Add the contents of one pillow of the appropriate DPD chlorine reagent to the cell containing the sample. Cap and shake the cell for 20 seconds. This is the prepared sample.
3. Place the blank in the cell compartment. Cover the sample cell with the instrument cap as shown Below.

Note: When using the instrument cap as a light shield during measurements, place the cap with the curved surface toward the keypad. This position will allow the cap to match the grooves in the instrument case to provide a good seal against stray light.

Sample Cell Insertion



4. Press the ZERO key. After approximately 2 seconds, the display will read: 0.00.
5. Place the sample cell containing the prepared sample into the cell holder and cover with the instrument cap. Press the READ key. After approximately 2 seconds, the display will indicate the chlorine concentration in milligrams per liter (mg/L). For example: 1.15 on the display means 1.15 mg/L as Cl_2.

Note: For accurate readings, make sure sample cells are wiped free of liquid or fingerprints. Any liquid entering the sample cell compartment can damage the instrument.

SETTING THE MEASUREMENT RANGE

Before testing, make sure the instrument is in the correct range mode. For the 0 to 2.00 mg/L free and low range total chlorine tests, the instrument should be in the low (LO) range mode. The display will read to hundredths (0.00).

For the high range total chlorine test, the instrument should be in the high (HI) range mode. The display will show tenths (0.0).

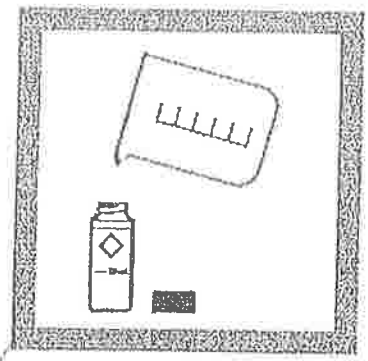
To access the alternative range mode, press both the ZERO and READ keys simultaneously. After one second, release the ZERO key and continue to hold the READ key until the letters HI or LO appears in the display. These letters designate the calibration range the instrument will use to determine chlorine in samples.

TOTAL RESIDUAL CHLORINE- LOW RANGE USING POWDER PILLOWS

- Set range to LO- Display should read to hundredth (0.00)
- Follow procedure below if no dilution is required
- If dilution is required, follow dilution procedure described later

Measuring Hints

If the sample temporarily turns yellow after reagent addition or the display shows overrange (flashing 2.20 in display), dilute a fresh sample and repeat the test. A slight loss of chlorine may occur because of the dilution. Multiply the result by the appropriate dilution factor.



1. Fill a 10-mL cell to the 10-mL line with sample. Cap.

Note: Samples must be analyzed immediately and cannot be preserved for later analysis.

Note: Be sure the instrument is in the low range mode.

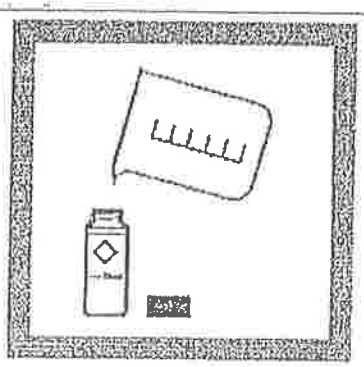
2. Add the contents of one DPD Total Chlorine Powder Pillow to the sample cell (the prepared sample). Cap and gently shake for 20 seconds.

Note: Gently shaking dissipates bubbles which may form in samples containing dissolved gases.

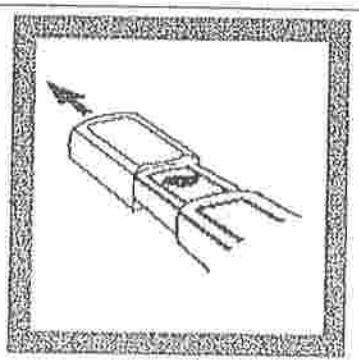
3. Wait 3 minutes. During this period, proceed with *steps 4–8.*

Note: A pink color will form if chlorine is present.

Note: Accuracy is not affected by undissolved powder.

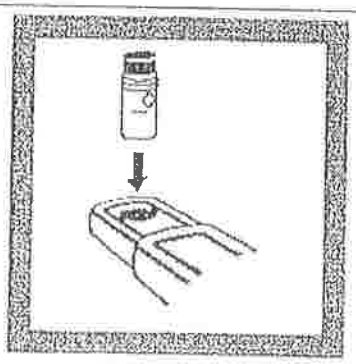


4. Fill a 10-mL sample cell to the 10-mL line with sample (the blank). Cap.



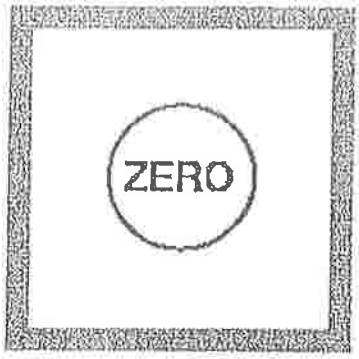
5. Remove the instrument cap.

Note: For best results, zero the instrument and read the sample under the same lighting conditions.



6. Place the blank in the cell holder, with the diamond mark facing you. Tightly cover the cell with the instrument cap (flat side should face the back of the instrument).

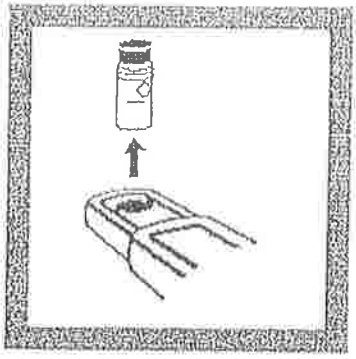
Note: Wipe liquid off sample cells.



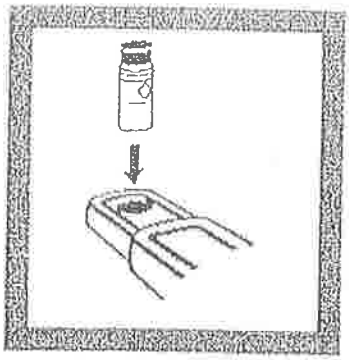
7. Press: ZERO

The instrument will turn on and the display will show - - - followed by 0.00.

Note: The instrument automatically shuts off after 1 minute and stores the last zero in memory. Press READ to complete the analysis.

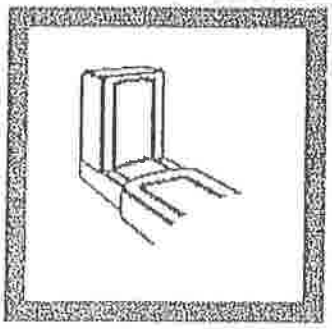


8. Remove the cell from the cell holder.

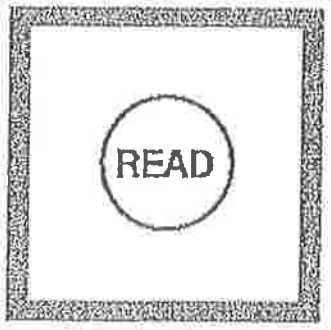


9. Within 3 minutes after the 3-minute reaction period, place the prepared sample in the cell holder.

Note: Wipe liquid off sample cells.



10. Cover the cell with instrument cap.



11. Press: READ
The instrument will show - - - followed by the result in mg/L total chlorine.

Note: If the sample temporarily turns yellow after reagent addition or shows overrange (flashing 2.20), dilute a fresh sample and repeat the test. Some loss of chlorine may occur. Multiply the result by the dilution factor.

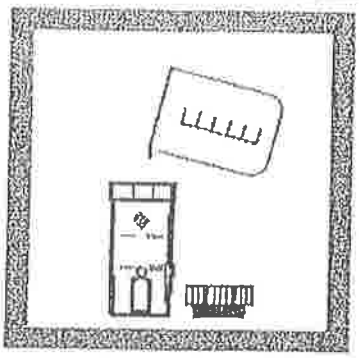
Diluting Over range samples

- Diluting 2 times:
  - Using the 100 mL graduated Cylinder, measure 50 mL of effluent sample volume
  - Gently add DI water to the 100 mL mark using the squirt bottle. Be accurate with your measurements
  - Swirl the content to mix the sample without causing excessive agitation or carefully transfer the entire content of the cylinder to a large enough sample bottle or glass beaker
  - Use the diluted sample to measure total residual chlorine in accordance with the same procedure described above
  - Multiply the reading by 2 to obtain the correct concentration
  - If sample is still out of range, increase the dilution range (see diluting 4 times)
- Diluting 4 times:
  - Using the 100 mL graduated Cylinder, measure 25 mL of effluent sample volume
  - Gently add DI water to the 100 mL mark using the squirt bottle. Be accurate with your measurements
  - Swirl the content to mix the sample without causing excessive agitation or carefully transfer the entire content of the cylinder to a large enough sample bottle or glass beaker
  - Use the diluted sample to measure total residual chlorine in accordance with the same procedure described above
  - Multiply the reading by 4 to obtain the correct concentration
- Other possible dilution combinations and multiplication factors:

Sample Volume (mL)	Multiplication Factor
1	100
2	50
5	20
10	10
25	4
50	2

* For sample sizes of 10 mL or less, use a pipet to measure the sample into the graduated cylinder or volumetric flask.

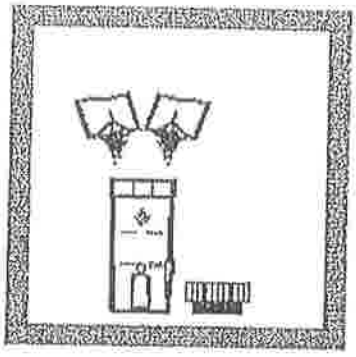
High Range Total Residual Chlorine Method	• The high range method can be used to measure chlorine residual in the 0-4.5 mg/L Cl_2 range. • Set the meter range to "HI" as described earlier • Use the 1 cm- 10 ml sample cell • Use 2 total residual chlorine powder pillows (same as in low range)



1. Fill a 1-cm/10-mL cell to the 10-mL line with sample.

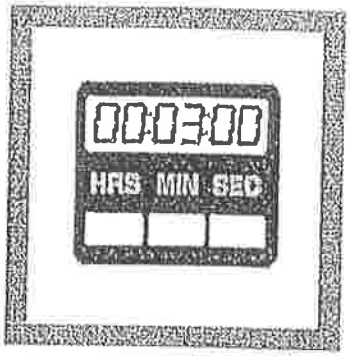
Note: Samples must be analyzed immediately and cannot be preserved for later analysis.

Note: Be sure the instrument is in the high range mode.



2. Add the contents of two DPD Total Chlorine Powder Pillows to the sample cell (the prepared sample). Cap the cell and shake gently for 20 seconds.

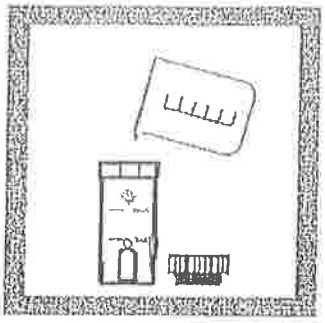
Note: Shaking gently dissipates bubbles which may form in samples containing dissolved gases.



3. Wait 3 minutes. During this period, proceed with steps 4–8.

Note: A pink color will develop if chlorine is present.

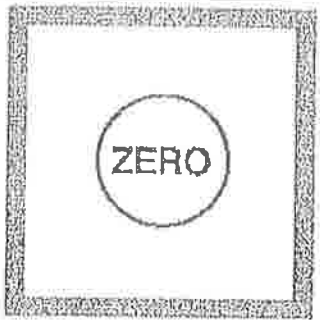
Note: Accuracy is not affected by undissolved powder.



4. Fill another 1-cm/10-mL sample cell to the 10-mL line with sample (the blank). Cap.

5. Place the blank into the cell holder, with the diamond mark facing you and the tab to the side. Tightly cover the cell with the instrument cap (flat side should face the back of the instrument).

Note: Wipe liquid off sample cells.



6. Press: ZERO

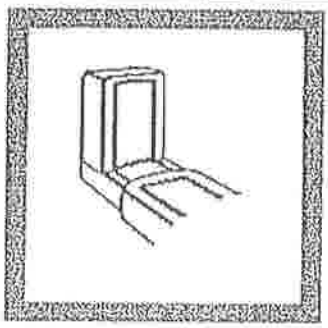
The instrument will turn on and the display will show - - - followed by 0.0.

Note: High range displays only to tenths mg/L.

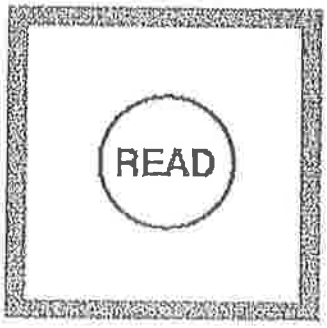
Note: The instrument automatically shuts off after 1 minute. If this occurs, the last zero is stored in memory. Press READ *to complete the analysis.*

7. Within three minutes after the 3-minute period, place the sample cell from *step 2* into the cell holder.

Note: Wipe liquid off sample cells.



8. Tightly cover the cell with the instrument cap (flat side should face the back of the instrument).



9. Press: READ

The instrument will show - - - followed by the results in mg/L chlorine (Cl_2).

Note: If the sample temporarily turns yellow after reagent addition or shows overrange (flashing 5.0), dilute a fresh sample and repeat the test. A slight loss of chlorine may occur. Multiply the result by the dilution factor.

TESI – INFLUENT GRAB SAMPLING SOP

PURPOSE: This document explains the procedures to be followed for the Grab Sampling of Influent Wastewater at all Sewage Treatment Plants (STPs).

OBJECTIVE: To properly collect and preserve samples of influent wastewater.

SCOPE: This procedure outlines the methods, tools/equipment, potential exposures, and dangers that personnel may encounter while performing Wastewater Influent Grab Samples at various lift stations.

REFERENCES:

CALIFORNIA STATE UNIVERSITY – SACRAMENTO. OPERATION OF WASTEWATER TREATMENT PLANTS - VOLUMES I, II, III. SACRAMENTO, CALIFORNIA.

METCALF AND EDDY, INC. 2003. WASTEWATER ENGINEERING: TREATMENT, DISPOSAL, AND REUSE.

4TH EDITION, MCGRAW-HILL BOOK CO., NEW YORK, NY

TITLE 40 CODE OF FEDERAL REGULATIONS (CFR), PART 136.3, TABLE II, MOST RECENT VERSION

CLASSIFICATION DATA:

Approved:	**Review Cycle:** Yearly
Reviewers: Local	**Approver: Operations Supervision**
Craft: Field Tech, Wastewater Operator, Wastewater Sampler	**Man-hours:** Les than 1 hour per lift station

SAFETY, ENVIRONMENTAL, AND FACILITY CONSEQUENCES

Proper safety precautions must be observed when collecting wastewater samples. Refer to the TESI Safety Manual for guidelines on safety precautions.

While onsite at the various facilities, be mindful and use appropriate judgment and precautions concerning the following hazards:

- **Slips trips or falls**
- **Caught in between**
- **Uneven and jagged surfaces**
- **Slashing of wastewater**
- **Piping and wiring while standing on top of lift stations**
- **Climbing, bending and reaching**
- **Burns, electrocution, or injury from machinery or chemicals**
- **Explosion or asphyxiation from gases in confined spaces**
- **Illness from exposure to pathogens in wastewater**

Special PPE Required (those checked are required)

x	Chemical Resistant Gloves			Additional Hearing Protection-Ear Muffs
	Face Shield			Respirator
	Chemical Resistant Goggles			Fresh Air Pack
	Chemical Resistant Apron		x	Safety Glasses

TESI – INFLUENT GRAB SAMPLING SOP

TOOLS/EQUIPMENT/METERIAL REQUIRED

Manning MSP250 Portable Sampling Pump	PVC Inlet Strainer
Ice Chest	Latex Gloves
Paper Towels	Bag(s) of Ice
1 Liter Plastic Sample Bottles (BOD, TSS)	Markers (Sharpie)
Labels from Local Lab	Chain of Custody
35-ft of ¼"-ID sample tubing	250 mL glass or plastic bottles (NH3)

SPECIAL EXECUTION CONSIDERATION

1. This document describes both general and specific methods to be used by field personnel when collecting and handling influent wastewater samples in the field. On the occasion that TESI field personnel determine that any of the procedures described in this section are inappropriate, inadequate or impractical and that another procedure must be used to obtain an influent wastewater sample, the variant procedure will be documented in the field log book, along with a description of the circumstances requiring its use.

NOTES

Procedural Precautions

The following precautions should be considered when collecting wastewater samples.

• Special care must be taken not to cross contaminate samples. This includes storing samples in a secure location to preclude conditions which could alter the properties of the sample. Samples shall be custody sealed during long-term storage.

• Collected samples are in the custody of the sampler or sample custodian until the samples are relinquished to another party.

• If samples are transported by the sampler, they will remain under his/her custody or be secured until they are relinquished.

• Chain-of-custody documents shall be filled out and remain with the samples until custody is relinquished.

• All samples must be collected during periods of peak flow. In the absence of additional data to the contrary, the period of peak flow may be assumed to be between the hours of 7 am to 9 am for all systems.

• Samples are to be collected from the wet well of the lift station(s) immediately upstream of the STP. In the case of multiple lift stations pumping directly to the STP, then the samples are to be composited by laboratory personnel in proportion to the flows from each lift station. TESI field personnel should not attempt to composite or in any way combine samples.

SPECIAL SAMPLING CONSIDERATIONS

Special Precautions for Wastewater Sampling

• A clean pair of new, non-powdered, disposable gloves will be worn each time a different location is sampled and the gloves should be donned immediately prior to sampling.

• If possible, one member of the field sampling team should take all the notes and photographs, fill out tags, etc., while the other members collect the samples.

• The field sampling team must operate and maintain the potable sampling pump in accordance with the Manufacturer's Operation Manual at all times.

Sample Handling and Preservation Requirements

1. All sample collection and preservation procedures will comply with the requirements outlined in *40 CFR, Part 136.3 (e),* Table II, and Figure 3-1 of the US EPA Region 4 Analytical Support Branch Laboratory Operations and Quality Assurance Manual (ASBLOQAM), Most Recent Version.

2. Wastewater samples will be collected by filling the sample container from the discharge end of the tubing on the portable sampling pump. The extended pole samplers to directly fill sample containers as well as the use of "sample thieves" or sludge judges is prohibited for the purposes of this SOP.

Documentation

Information generated or obtained by TESI personnel will be organized and accounted for. Field notes, recorded in a bound field logbook, will be generated, as well as chain-of-custody documentation to include the following information:

- Sample identification
- Sample location (sampling point)
- Type of sample (grab, number of grab samples)
- Sampling equipment and a brief description of sampling procedure
- Date and time of collection
- Weather conditions
- Analyses required
- Notes on unusual conditions or deviations from established protocols

Sample Labeling

After a sample is collected, it is placed into a container or containers that are provided by the contracted laboratory for the intended analyses. Sample collection sheets or chain-of-custody sheets are used to identify samples for analysis in the lab. However, sample containers themselves must be labeled to correspond to the information recorded on the custody sheet. Also, the sample containers are to be labeled in a manner that clearly identifies the sample without referring to the custody sheet. The following information should be included on container labels:

- Sample identification
- Date and time of collection
- Sample type (grab)
- Sample location
- Person collecting sample
- Preservative
- Required test(s)

COLLECTION OF INFLUENT WASTEWATER SAMPLES

It is important that raw influent wastewater be sampled in a location where it is well mixed and represents the actual wastewater going into the treatment plant. The sample tubing is to be lowered in the lift station(s) immediately upstream of the STP in such a manner as to place the inlet strainer as close to the intake of the pumps as possible. The inlet strainer must not be allowed to contact the bottom of the wet well, and must also be fully submerged below the water surface.

EQUIPMENT PREPARATION AND CLEANING

Before using sampling equipment for the first time and after every use, it must be thoroughly cleaned. For ease of cleaning, it is best to clean equipment as soon as possible after use, or at least to perform a preliminary rinse to remove bulk contamination. The potable sampling pump should be cleaned in accordance with manufacturer's recommendations.

It is always preferred to use new and clean tubing for each sample collection. However, in such case as newe tubing is not used, the used tubing must be adequately cleaned prior to re-use. Below is a generalized cleaning procedure that can be used to prepare sample tubing between sampling events:

1. Rinse tubing by pumping 2 gallons of warm tap water from a clean container to remove the majority of solids.

2. Pump 2 additional gallons of cleaning solution through the tubing to remove all residues. (The cleaning solution is made of standard low-phosphate lab detergent and warm tap water).
3. Triple rinse the equipment with tap water.
4. For the final rinse, triple rinse with 1 gallon of deionized water.

PROCEDURE

I. TESI's approved, local Compliance Department personnel must take all samples. Sampling must be carried out taking due care to avoid personal risk or injury arising from the nature of the sample itself or the location of the sample point.

II. Sample bottles/containers must be clearly labelled and identified. The sample identification, date and time of collection, sample type, sample location, name of person collecting sample, preservative and required test must be recorded together.

III. Sample bottles must be securely sealed following sampling and stored securely for safe transport to the laboratory in cooler boxes where necessary.

IV. Samples will be analyzed within 24 hours of sample collection, as a general rule; however, there may be specific requirements for particular tests.

V. Initiate Sampling Preparation:
   - Notify the lab performing the analyses and schedule the sampling event.
   - Assemble and/or clean sampling equipment.
   - Assemble and prepare any sample handling equipment (coolers, labels, notebooks, custody forms, markers).

TESI – INFLUENT GRAB SAMPLING SOP

WORK INSTRUCTION JOB TASKS

CATEGORY Legend	PERSONAL SAFETY	PRODUCT QUALITY	PROCESS SAFETY	CRITICAL POINT

Step No.	Operation Step	Key Points	Illustrations
1.	Notify the District's Local Lab and let them know you will be bringing Influent BOD and TSS samples. Secure all proper sample bottles, labels and chain of custody forms from the appropriate local lab in your district.	District: Duson – Petroleum Labs (337) 234-7414 District: BR – A&E Testing (225) 769-1930 District: Houma/Thib – Petroleum Labs (985) 868-4820	
2.	Before leaving for first sampling location, ensure all materials and equipment are accounted for and in working order, i.e. portable sampling pump, safety glasses, latex gloves,		
3.	Depart from your location accounting for delays to ensure that you arrive at your locations in a safe and timely manner in order to obtain all required grab samples between 7 am and 9 am.		

TESI – INFLUENT GRAB SAMPLING SOP

Step No.	Operation Step	Key Points	Illustrations
4.	Determine required influent sampling location and parameters from Facility Influent Sample List.	• Sample in lift station(s) immediately upstream of treatment plant. • For Facilities with Individual Permits - collect grab samples for BOD, TSS and NH3 • For Facilities with General Permits - collect grab samples for BOD & TSS only	
5.	Collect sample using portable sampling pump with tubing and inlet strainer.	• Label sample using labels provided by the lab or use a permanent, water-proof marker and write the required information directly on the sample bottles. • The sample tubing is to be lowered into the lift station(s) immediately upstream of the STP in such a manner as to place the inlet strainer as close to the intake of the pumps as possible. The inlet strainer must not be allowed to contact the bottom of the wet well, and must also be fully submerged below the water surface. • Discharge sample contents from portable sampling pump directly into appropriate sample bottle • Dry container and seal in storage bag and place into ice chest with ice.	
6.	After sealing and applying the appropriate labeling on each grab sample, immediately place them in the ice check and immerse in ice.		

TESI – INFLUENT GRAB SAMPLING SOP

Step No.	Operation Step	Key Points	Illustrations
7.	Deliver chains-of-custody and ice chest filled with sample containers to appropriate lab.	Samples must arrive at the lab in a timely manner following collection to ensure samples will be analyzed within 24 hours of sample collection.	

APPENDIX F

STP EXCURSION REPORT

STP Excursion Report

Facility: _____ **Operator:** _____

Permit #: _____ **Date of Excursion:** _____

Compliance Excursion

☐	TSS _____ mg/L	☐	Fecal _____ col/mL		
☐	CBOD _____ mg/L	☐	NH3 _____ mg/L		
☐	BOD_5 _____ mg/L	☐	pH _____		
☐	TDS _____ mg/L	☐	Flow _____ mgd		
☐	DO Eff. _____ mg/L				

For Process Control & Trouble Shooting to assist with excursion determination.

☐	TRC	_____	mg/L
☐	CCC Sludge Depth	_____	mg/L
☐	MLSS	_____	mg/L
☐	Settleability	_____	%
☐	Do air Avg.		mg/L

Cause of Excursion

☐	Mechanical	*comments:* _____
☐	Bulking Solids	*comments:* _____
☐	Settleable Solids	*comments:* _____
☐	Solids in Chlorination Chamber	*comments:* _____
☐	*I & I (Infiltration & Intrusion)*	*comments:* _____
☐	Aeration	*comments:* _____
☐	Incomplete Denitrification Process	*comments:* _____
☐	Improper Sludge Age	*comments:* _____
☐	Disinfection	*comments:* _____
☐	Groundskeeping	*comments:* _____
☐	Lift Station	*comments:* _____
☐	Other	*comments:* _____

Excursion Corrective Timeline

☐	1-3 days	*comments:* _____
☐	1 week	*comments:* _____
☐	2 weeks	*comments:* _____
☐	3 weeks	*comments:* _____
☐	1 month	*comments:* _____
☐	Other	*comments:* _____

Corrective Action

☐	Mechanical	*comments:* _____
☐	Aeration	*comments:* _____
☐	Disinfection	*comments:* _____
☐	Lift Station	*comments:* _____
☐	Other	*comments:* _____

☐ **Request resample (repairs or corrections complete)**

Operator Signature _____ **Date** _____

Supervisor Signature _____ **Date** _____

Compliance:

*** Attach Chain of Custody & Sewage Treatment Plant O&M from sampler and lab sheet for field personnel.**

Operations:

*** Fill out excursion report as accurately and as specifically as possible. This report should be sent back to Compliance in a timely manner.**

APPENDIX G

SPILL/UPSET REPORT FORM

TOTAL ENVIRONMENTAL SOLUTIONS, INC.
P.O. Box 14056
Baton Rouge, LA 70898-4056
(800) 372-9712, (225) 766-4477

SPILL/UPSET REPORT

Name of Facility: _____
Facility is located in _____ City and _____ Parish
Date Discharge Began: _____ Date Ended: _____
Time Discharge Began: _____ Time Ended: _____
Media affected: (Circle One) SOIL / WATER. If water was affected, name nearest body of water: _____
_____
Bypass Source (Circle One) MANHOLE / LIFT STATION / STP / OTHER:_____
_____
How many gallons were released (*ESTIMATED)*? _____
What caused the spill/upset? _____
If spill/upset caused due to inflow of rain, how many inches of rain fell in the area?_____
TEMPORARILY corrected by: (describe how) _____
_____
PERMANENTLY corrected by: (describe how)_____
_____
Was the affected area cleaned? Circle one – YES / NO._____
Was lime used to disinfect the area? Circle one – YES / NO.
If NO, explain why? _____
_____
Comments: _____
_____
_____

Name of Person completing this form: _____

Name of Supervisor reviewing this form:_____

FAX COMPLETED FORM TO:
TESi – Compliance Department
Attn: Gayle Davidson
Fax: (225) 766-6701

******ALL SPILLS MUST BE REPORTED WITHIN 24 HOURS OF OCCURRENCE******
ESTIMATED TIME OF SPILL AND AMOUNT OF SPILL MUST BE REPORTED

UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF LOUISIANA

UNITED STATES OF AMERICA and

STATE OF LOUISIANA, through THE DEPARTMENT OF ENVIRONMENTAL QUALITY,

Plaintiffs,

v.

ACADIA WOODS ADD. #2 SEWER CO.,

ACADIANA TREATMENT SYSTEMS, et al.,

Defendants,

and

TOTAL ENVIRONMENTAL SOLUTIONS, INC.,

Intervening Defendant.

Civil Action No. 6:98-0687

AGREEMENT AND ORDER REGARDING MODIFICATION OF THE CONSENT DECREE WITH RESPECT TO TESI

APPENDIX B

LONG TERM COMPLIANCE PLAN

Attachment 14

Uniform Solids Wasting Manifest

WWTP Sludge Manifest Form

Section I – Receiving Facility Information	
Receiving Facility Name:	
Facility Address:	
Facility Phone No.:	
Facility AI # or LPDES #:	
Section II – Transporter Information	
Transporting Company Name:	
Transporting Company Address:	
Driver's Name:	
Truck License No.:	
State Hauler License No.:	
Print Name:_____ Signature: _____ Title/Position:_____	Date: _____ Time:_____
Section III – Generator Information	
Generator: **Total Environmental Solutions, Inc.**	
WWTP Name & Location:	
WWTP AI # or LPDES#:	
Date pumped:	
Gallons pumped:	
Type of waste: **Domestic Sewage Sludge (Residential)** Notes:_____ _____ _____ _____	
Print Name:_____ Signature: _____ Title/Position:_____	Date: _____ Time:_____

UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF LOUISIANA

UNITED STATES OF AMERICA and STATE OF LOUISIANA, through THE DEPARTMENT OF ENVIRONMENTAL QUALITY, Plaintiffs, v. ACADIA WOODS ADD. #2 SEWER CO., ACADIANA TREATMENT SYSTEMS, et al., Defendants, and TOTAL ENVIRONMENTAL SOLUTIONS, INC., Intervening Defendant.	Civil Action No. 6:98-0687

AGREEMENT AND ORDER REGARDING MODIFICATION OF THE CONSENT DECREE WITH RESPECT TO TESI

APPENDIX B

LONG TERM COMPLIANCE PLAN

Attachment 15

Reporting Table

Long Term Compliance Plan – Attachment 15 – Reporting Table

Remedial Measure Item	¶	Sub-¶	Report/Submission Name	Due Date	Frequency of Submission	Requirements for Updating	Report Content	Report Format	Review and/or Approval?
Inventory of STPs[1]									
Inventory of STPs	1	-	No reporting requirements for this paragraph.						
Remedial Measures for Mechanical STPs									
Mechanical STP CDER[2] Implementation Audit	2	a. – e.	1. Mechanical STP CDER Implementation Audit Report 2. Formal Evaluation and Inventory Report for Mechanical STPs	1. Complete Audit not later than twelve (12) months following Effective Date of Consent Decree Modification. Complete all Mechanical STP CDE Work as soon as technically feasible but not later than twenty-seven (27) months following Effective Date of Consent Decree Modification. 2. Complete Formal Evaluation and Inventory not later than twelve (12) months following Effective Date of Consent Decree Modification. Complete operational and	1. Submit Once Provide quarterly implementation progress reports[3] until 27 month deadline. When all Mechanical STP CDE Work is completed, provide a written certification statement[4] that states all operational and capital improvements have been completed. 2. Submit Once Provide quarterly implementation progress reports until 48 month deadline. When all operational and	Not Applicable	1. Audit Report shall include all required elements in Subparagraphs a. – b. For each STP: • STP name • AI[5] number • LPDES[6] permit number For each improvement: • Written description of improvement • Written description of completed work • Date relapsed condition identified, if applicable • Date completed • Photographic evidence (provided in an associated photograph log) • Photograph number(s) • Additional comments, if applicable Quarterly implementation progress reports shall document each improvement completed during the respective quarter and shall contain the above content for each STP and each improvement.	1. Data presentation in Microsoft Excel. Associated photograph logs in Microsoft Word or PDF[7]. Written certification statement in Microsoft Word or PDF. 2. Data presentation in Microsoft Excel. Associated photograph logs in Microsoft Word or PDF. Written certification statement in	1. Submit for review and comment. 2. Submit for review and comment.

[1] Sewage Treatment Plants (STPs)
[2] Comprehensive Diagnostic Evaluation Report (CDER)
[3] Refer to "Summary of Recurrence Frequencies for Requested Implementation Progress Reports and Written Certification Statements" table on Pg. 18 for due dates for all implementation progress reports.
[4] Refer to "Summary of Recurrence Frequencies for Requested Implementation Progress Reports and Written Certification Statements" table on Pg. 18 for due dates for all written certification statements.
[5] Agency Interest (AI)
[6] Louisiana Pollutant Discharge Elimination System (LDPES)
[7] Portable Document Format (PDF)

Remedial Measure Item	¶	Sub-¶	Report/Submission Name	Due Date	Frequency of Submission	Requirements for Updating	Report Content	Report Format	Review and/or Approval?
				capital improvements identified in Formal Evaluation and Inventory as soon as technically feasible but not later than forty-eight (48) months following Effective Date of Consent Decree Modification.	capital improvements are completed, provide a written certification statement that states all operational and capital improvements have been completed.		Written certification statement shall state all Mechanical STP CDE Work has been completed. 2. Formal Evaluation and Inventory shall include all required elements in Subparagraphs d.i. – d.ii. For each STP: • STP name • AI number • LPDES permit number For each improvement: • Written description of improvement • Written description of completed work • Date completed • Photographic evidence (provided in an associated photograph log) • Photograph number(s) • Additional comments, if applicable Quarterly implementation progress reports shall document each improvement completed during the respective quarter and shall contain the above content for each STP and each improvement. Written certification statement shall state all operational and capital improvements have been completed.	Microsoft Word or PDF.	
Holistic Process Control Plan for Mechanical STPs	3	a. – g.	Holistic Process Control Plan for Mechanical STPs	Implement upon Effective Date of Consent Decree Modification.	In addition to the Holistic Process Control Plan that is submitted once, TESI shall continue to submit monthly implementation progress reports (i.e., Microsoft Excel spreadsheets and solids wasting	Maintain Current until all STP-Specific Process Control Plans for Mechanical STPs are fully developed and implemented.	Holistic Process Control Plan for Mechanical STPs shall include all required elements in Subparagraphs a. – g. Supporting documents shall include, but not be limited to: • O&M Report for Mechanical STPS • All field forms	Plan and supporting documentation in Microsoft Word or PDF. Monthly reports shall present data in Microsoft Excel and	Submit for review and comment.

Remedial Measure Item	¶	Sub-¶	Report/Submission Name	Due Date	Frequency of Submission	Requirements for Updating	Report Content	Report Format	Review and/or Approval?
					manifests) as it has been under the reporting requirements of the Order dated February 6, 2015. Provide monthly implementation progress reports until termination of Consent Decree.		Monthly implementation progress reports for each STP shall include: • Excel spreadsheets with solids data (e.g., settleability tests, sludge judge results, mixed liquor suspended solids analyses) • Solids wasting manifests • Results of weekly spill and leak inspections • Spill/leak reference number, if applicable (e.g., Online Incident Reporting Number)	provide copies of solids wasting manifests.	
STP-Specific Process Control Plans for Mechanical STPs	4	a. – e.	STP-Specific Process Control Plans for Mechanical STPs	Written schedule to develop and fully implement Plans for all Mechanical STPs not later than twelve (12) months following Effective Date of Consent Decree Modification. Develop and fully implement Plans in Group 1 not later than twenty-four (24) months following Effective Date of Consent Decree Modification. Develop and fully implement Plans in Group 2 not later than thirty (30) months following Effective Date of Consent Decree Modification. Develop and fully implement Plans in Group 3 not later than thirty-six (36)	Submit Once for each Group Provide quarterly implementation progress reports.	Maintain Current	STP-specific Process Control Plans shall include all required elements in Subparagraphs a. – e. Quarterly implementation progress reports shall be a written certification statement that shall state which Plans have been completed and implemented.	Individual Plans in Microsoft Word or PDF. Written certification statements in Microsoft Word or PDF.	Individual Plans to be retained on-site and provided upon request.

Remedial Measure Item	¶	Sub-¶	Report/Submission Name	Due Date	Frequency of Submission	Requirements for Updating	Report Content	Report Format	Review and/or Approval?
				months following Effective Date of Consent Decree Modification. Develop and fully implement Plans in Group 4 not later than forty-two (42) months following Effective Date of Consent Decree Modification.					
Remedial Measures for Pond STPs									
CDER Submission	5	a. – g.	1. Pond STP CDE Reports 2. Written schedule for implementing Pond STP CDE Work 3. Solids Summary Spreadsheet for Pond STPs 4. Formal Evaluation and Inventory Report for Pond STPs	1. Submit certified Pond STP CDE Reports not later than nine (9) months following Effective Date of Consent Decree Modification. 2. Written schedule for implementing Pond STP CDE Work not later than nine (9) months following Effective Date of Consent Decree Modification. 3. Solids summary spreadsheet not later than twelve (12) months following Effective Date of Consent Decree Modification. 4. Complete Formal Evaluation and Inventory not later than twelve (12) months	1. Submit Once 2. Submit Once 3. Submit Once 4. Submit Once When all operational and capital improvements have been completed, provide written certification statement that states all operational and capital improvements have been completed.	Maintain Current	1. For each Pond STP, certified Pond STP CDE Reports (includes both certified CDE Reports for Pond STPs previously submitted and certified H&S Environmental Pond STP Reports). 2. For all Pond STPs, schedule for implementing the Pond STP CDE Work. 3. For all Pond STPs, spreadsheet shall summarize estimated quantities of accumulated solids and quantities of solids to be removed or otherwise treated. 4. Formal Evaluation and Inventory Report shall include all required elements in Subparagraphs f.i. – f.ii. For each STP: • STP name • AI number • LPDES permit number For each improvement: • Written description of improvement • Written description of completed work • Date completed	1. Written certified Pond CDE Reports in Microsoft Word or PDF. 2. Written schedule in Microsoft Excel or Microsoft Project. 3. Microsoft Excel spreadsheet 4. Data presentation in Microsoft Excel. Associated photograph logs in Microsoft Word or PDF. Written certification statement in Microsoft Word or PDF.	1. Submit for review and comment. 2. Submit for review and comment. 3. Submit for review and comment. 4. Submit for review and comment.

Remedial Measure Item	¶	Sub-¶	Report/Submission Name	Due Date	Frequency of Submission	Requirements for Updating	Report Content	Report Format	Review and/or Approval?
				following Effective date of Consent Decree Modification. Complete operational and capital improvements identified in Formal Evaluation and Inventory as soon as technically feasible but not later than forty-eight (48) months following Effective Date of Consent Decree Modification.			• Photographic evidence (provided in an associated photograph log) • Photograph number(s) • Additional comments, if applicable Written certification statement shall state all operational and capital improvements have been completed.		
Solids Management Plan for Pond STPs	6	a. – b.	1. Preliminary Solids Management Plan for Pond STPs 2. Solids Management Plan for Pond STPs	1. Preliminary Solids Management Plan not later than twelve (12) months following Effective Date of Consent Decree Modification. 2. Solids Management Plan not later than twenty-four (24) months following Effective Date of Consent Decree Modification.	1. Submit Once 2. Submit Once	Maintain Current	1. Preliminary Solids Management Plan shall include all required elements in Subparagraphs a.i. – a.iv. 2. Solids Management Plan shall include all required elements in Subparagraphs b.i. – b.iii. Pursuant to Subparagraph b.iii, if a third party contractor(s) is used for solids removal, documentation shall include: • Copies of signed contracts that include vendor name, schedule for completion, type and number of equipment to be used, and proposed locations for solids disposal. If a third party contractor is not used, provide the type and number of equipment to be used and the proposed locations for solids disposal.	1. Written Plan in Microsoft Word or PDF. 2. Written Plan in Microsoft Word or PDF. Written contracts if third party contractor(s) used.	1. Submit for review and approval. 2. Submit for review and comment. Submit contracts for review and comment, if applicable.
Holistic Process Control Plan for Pond STPs	7	a. – f.	Holistic Process Control Plan for Pond STPs	Implement upon Effective Date of	Submit Once	Maintain Current	Holistic Process Control Plan for Pond STPs shall include all required elements in Subparagraphs a. – f.	Written Plan in Microsoft Word or PDF.	Submit for review and approval.

Remedial Measure Item	¶	Sub-¶	Report/Submission Name	Due Date	Frequency of Submission	Requirements for Updating	Report Content	Report Format	Review and/or Approval?
				Consent Decree Modification	Provide quarterly implementation progress reports until all STP-Specific Process Control Plans for Pond STPs are developed and fully implemented.		Quarterly implementation progress reports shall include any revisions to the Holistic Process Control Plan, including but not limited to: • Inventory of operational and backup equipment • Procedures for operator and technician diagnostic testing and water quality monitoring activities • Procedures for TESI personnel and vendors performing maintenance or solids removal and disposal activities • O&M Report for Pond STPs Quarterly implementation progress reports shall also provide the status of quarterly sampling for CBOD, BOD, TSS, and VSS; include the number and names of STPs at which the sampling was conducted.		
STP-Specific Process Control Plans for Pond STPs	8	a. – e.	STP-Specific Process Control Plans for Pond STPs	Written schedule not later than twelve (12) months following Effective Date of Consent Decree Modification Develop and fully implement Plans in Group 1 not later than twenty-four (24) months following Effective Date of Consent Decree Modification. Develop and fully implement Plans in Group 2 not later than thirty (30) months following Effective Date of	Submit Once for each Group. Provide quarterly implementation progress reports until 42 month deadline.	Maintain Current	STP-specific Process Control Plans for Pond STPs shall include all required elements in Subparagraphs a. – e. Quarterly implementation progress reports shall be a written certification statement that shall state which Plans have been completed and implemented.	Written schedule in Microsoft Excel or Microsoft Project. Written plan in Microsoft Word or PDF. Written certification statement in Microsoft Word or PDF.	Submit schedule for review and comment. Individual plans to be retained on-site and provided upon request.

Remedial Measure Item	¶	Sub-¶	Report/Submission Name	Due Date	Frequency of Submission	Requirements for Updating	Report Content	Report Format	Review and/or Approval?
				Consent Decree Modification. Develop and fully implement Plans in Group 3 not later than thirty-six (36) months following Effective Date of Consent Decree Modification. Develop and fully implement Plans in Group 4 not later than forty-two (42) months following Effective Date of Consent Decree Modification.					
Complete Operation and Maintenance Improvements for Pond STPs	9	a. – f.	Operation and Maintenance Improvements Report for Pond STPs	Complete all operation and maintenance improvements not later than eighteen (18) months following Effective Date of Consent Decree Modification.	Submit Once Provide quarterly implementation progress reports until 18 month deadline.	Not Applicable	List of completed improvements at each STP. For each STP: • STP name • AI number • LPDES permit number • If applicable, relevant recommendation number in Pond STP CDE Report For each improvement: • Written description of improvement • Written description of completed work • Date completed • Photographic evidence (provided in an associated photograph log) • Photograph number(s) • Additional comments, if applicable Quarterly implementation progress reports shall document each improvement completed during the respective quarter and contain	Data presentation in Microsoft Excel. Associated photograph logs in Microsoft Word or PDF.	Submit for review and comment.

Remedial Measure Item	¶	Sub-¶	Report/Submission Name	Due Date	Frequency of Submission	Requirements for Updating	Report Content	Report Format	Review and/or Approval?
							the above content for each STP and each improvement.		
Pond STP CDE Report Implementation	10	-	Pond STP CDER Implementation Report	Complete implementation of all Pond STP CDE Work, Revised Pond STP CDE Work, and all work or other actions required to address newly identified deficiencies specified in the supplemental formal evaluations not later than forty-eight (48) months following Effective Date of Consent Decree Modification.	Submit Once Provide quarterly implementation progress reports until 48 month deadline.	Not Applicable	List of completed improvements. For each STP: • STP name • AI number • LPDES permit number • If applicable, relevant recommendation number in Pond STP CDE Report For each improvement: • Description of improvement • Description of completed work • Date completed • Photographic evidence (provided in an associated photograph log) • Photograph number(s) • Additional comments, if applicable Quarterly implementation progress reports shall document each improvement completed during the respective quarter and contain the above content for each STP and each improvement.	Data presentation in Microsoft Excel. Associated photograph logs in Microsoft Word or PDF.	Submit for review and comment.
Complete Solids Management Plan Activities at Pond STPs	11	-	Solids Management Report for Pond STPs	Complete all solids removal, treatment and disposal activities in Group 1 not later than thirty (30) months following Effective Date of Consent Decree Modification. Complete all solids removal, treatment and disposal activities in Group 2 not later than thirty-nine (39) months	Submit Once for each Group. Provide monthly implementation progress reports similar to the monthly reports required by Paragraph 3 until 48 month deadline.	Not Applicable	List of completed solids removal, treatment and disposal activities for each STP. For each STP: • STP name • AI number • LPDES permit number • Estimated quantity of solids to be removed or treated as specified in Solids Management Plan • Actual quantity of solids removed or treated • Removal or treatment method(s) • Date completed • Final disposal location(s)	Data presentation in Microsoft Excel.	Submit for review and comment.

Long Term Compliance Plan – Attachment 15 – Reporting Table

Remedial Measure Item	¶	Sub-¶	Report/Submission Name	Due Date	Frequency of Submission	Requirements for Updating	Report Content	Report Format	Review and/or Approval?
				following Effective Date of Consent Decree Modification. Complete all solids removal, treatment and disposal activities in Group 3 not later than forty-eight (48) months following Effective Date of Consent Decree Modification.			• Manifests for trucking/disposal • Additional comments, if applicable Monthly implementation progress reports shall include the above content for each STP.		
Remedial Measures for the Collection Systems									
Applicability	12	-	No reporting requirements for this paragraph.						
Collection System CDER Implementation Audit	13	a. – b.	Collection System CDER Implementation Audit Report	Complete Audit not later than twelve (12) months following Effective Date of Consent Decree Modification.	Submit Once Provide quarterly implementation progress reports until 12 month deadline.	Maintain Current	For each STP: • STP name • AI number • LPDES permit number For each improvement: • Written description of completed work • Date relapsed condition identified, if applicable • Date completed • Photographic evidence (provided in an associated photograph log) • Photograph number(s) • Additional comments, if applicable Quarterly implementation progress reports shall provide a list of improvements identified at each STP and provide Audit completion status at each STP.	Data presentation in Microsoft Excel. Associated photograph logs in Microsoft Word or PDF.	Submit for review and comment.
Enhanced Collection System Maintenance Plan	14	a. – b.	1. Enhanced Collection System Maintenance Plan 2. Supplemental Enhanced Collection	1. Develop Plan not later than twelve (12) months following Effective Date of	1. Submit Once Following Plan submittal at 12 month deadline, provide quarterly	Maintain current an inventory and map of known or suspected high risk/critical	1. Enhanced Collection System Maintenance Plan shall include all required elements in Subparagraphs a.i – a.v.	1. Written Plan in Microsoft Word or PDF. Inventory and map of known	1. Submit for review and approval.

Long Term Compliance Plan – Attachment 15 – Reporting Table

Remedial Measure Item	¶	Sub-¶	Report/Submission Name	Due Date	Frequency of Submission	Requirements for Updating	Report Content	Report Format	Review and/or Approval?
			System Maintenance Plan	Consent Decree Modification. Fully implement Plan not later than thirty-six months (36) following Effective Date of Consent Decree Modification. 2. Develop and fully implement Supplemental Plan not later than thirty-six (36) months following Effective Date of Consent Decree Modification. Implement all necessary work order system improvements as soon as technically feasible but not later than thirty-six (36) months following Effective Date of Consent Decree Modification.	implementation progress reports until 36 month deadline. 2. Submit Once	areas within the collection system and work order tracking of collection system and lift station inspection and cleaning.	Quarterly implementation progress reports shall provide, for each collection system: • Summary of Inflow & Infiltration (I&I) investigation activities conducted • Summary of routine maintenance and cleaning program activities conducted, including a quantification of pipe segments, manholes, and lift stations inspected and cleaned • Summary of storm-based inspection and/or monitoring activities conducted • Status of implementing schedule to fully implement the Enhanced Collection System Maintenance Plan 2. Supplemental Enhanced Collection System Maintenance Plan shall include all required elements in Subparagraph b.i.	or suspected high risk/critical areas comprised of Microsoft Excel spreadsheet and electronic and/or hard copy printed map. Inventories of equipment and tracking of collection system and lift station inspection and cleaning to be provided in Microsoft Excel. 2. Written Plan in Microsoft Word or PDF.	2. Submit for review and approval.
Collection System Attribute Data	15	a. – d.	Collection System Attribute Database	Not later than one (1) month after implementing the Collection System CDE Work at an STP.	Database to be retained on-site and provided upon request. Provide quarterly implementation progress reports until all Collection System CDE Work is completed.	Maintain Current Ensure that the Collection System Attribute Data for each individual Collection System service area is updated during the Additional Collection	Attribute Data shall include all required elements in Subparagraphs a. – d. Quarterly implementation progress reports shall be written certification statements that shall state which Collection Systems service areas have available and accurate attribute data. After all Additional Collection System Assessments (as required by Paragraph 17) are completed, provide an additional written	Electronic database. Written certification statement in Microsoft Word or PDF.	Database to be retained on-site and provided upon request.

Remedial Measure Item	¶	Sub-¶	Report/Submission Name	Due Date	Frequency of Submission	Requirements for Updating	Report Content	Report Format	Review and/or Approval?
						System Assessment conducted under Paragraph 17.	certification statement stating that the collection system attribute data for each individual Collection System service area has been updated to include any relevant changes to the sewer main pipe.		
Collection System Maps	16	a. – e.	Collection System Map	Not later than one (1) month after implementing the Collection System CDE Work at an STP.	Maps to be retained on-site. Provide annual implementation progress reports.	Maintain Current At a minimum, ensure that Collection System maps are updated on an annual basis to include any changes in the respective Collection System.	Maps shall include all required elements in Subparagraphs a. – e. Annual implementation progress reports shall be written certification statements that shall state which maps are available and accurate.	Electronic and/or hardcopy printed maps. Written certification statement in Microsoft Word or PDF.	Maps to be retained on-site and provided upon request.
Additional Collection System Assessments	17	a. – c.	Additional Collection System Assessment Report	Complete Assessments in Group 1 not later than twenty-four (24) months following Effective Date of Consent Decree Modification. Complete Assessments in Group 2 not later than forty-two (42) months following Effective Date of Consent Decree Modification.	Submit Once for Each Group Provide quarterly implementation progress reports until 42 month deadline.	Maintain Current	Assessment Report shall include: • Maps and/or description of STP-specific service areas included within the assessment • Dates and vendors used for each service area • Results for each service area clearly denoting and rating identified defects and source(s) of I&I • Inventory of required improvements and associated criticality rating for schedule development purposes • Description of CCTV footage archival process and reference of storage location(s) Quarterly implementation progress reports shall provide a description of work activities conducted in each collection system, including: • Description of smoke testing, dye water testing, CCTV, and flow metering activities conducted • List of identified sources of I&I and structural defects	Written document in Microsoft Word or PDF. If necessary as supplement, Microsoft Excel spreadsheets of identified defects and proposed remedies. If necessary as supplement, maps of assessed areas in electronic format.	Submit for review and comment

Long Term Compliance Plan – Attachment 15 – Reporting Table

Remedial Measure Item	¶	Sub-¶	Report/Submission Name	Due Date	Frequency of Submission	Requirements for Updating	Report Content	Report Format	Review and/or Approval?
							• Anticipated improvements required to eliminate identified sources of I&I and structural defects		
Schedule Collection System Improvements	18	-	1. Initial Collection System Improvement Schedule 2. Updated Collection System Improvement Schedule	1. Initial prioritized Improvement Schedule not later than twenty-seven (27) months following Effective Date of Consent Decree Modification. The initial prioritized Improvement Schedule shall include all improvements identified in Audit conducted under Paragraph 13 and Group 1 of Paragraph 17. 2. Updated prioritized Improvement Schedule not later than forty-five (45) months following Effective Date of Consent Decree Modification. The updated prioritized Improvement Schedule shall include all improvements identified in Audit conducted under Paragraph 13 and Group 2 of Paragraph 17.	1. Submit Once 2. Submit Once	Maintain Current	The Initial and Updated Improvement Schedules shall include: • An inventory of required improvements categorized by service area • A reference to the source document (e.g., additional assessments required in Paragraph 17 or previously completed CDERs) • List of STPs to be included in Groups 1 and 2 and rationale for inclusion • Anticipated date of completion • Anticipated cost of completion • Anticipated factors that could affect completion dates or cost	1. Written schedule in Microsoft Excel or Microsoft Project 2. Written schedule in Microsoft Excel or Microsoft Project	Submit for review and approval.

Remedial Measure Item	¶	Sub-¶	Report/Submission Name	Due Date	Frequency of Submission	Requirements for Updating	Report Content	Report Format	Review and/or Approval?
Complete Collection System Improvements	19	-	Collection System Completion Report	Complete improvements in Group 1 as soon as technically feasible but not later than forty-eight (48) months following Effective Date of Consent Decree Modification. Complete improvements in Group 2 as soon as technically feasible but not later than seventy-two (72) months following Effective Date of Consent Decree Modification.	Submit Once for each Group Provide quarterly implementation progress reports. When improvements have been completed for each Group, provide written certification statement that states all improvements have been completed.	Not Applicable	For each Group, updated Collection System Improvement Schedule containing actual dates of completion and costs. Quarterly implementation progress reports shall document all improvements completed in each collection system, including: • Written description of completed work • Date completed • Work orders and/or invoices associated with completed work Written certification statements shall state that all improvements have been completed for the respective Group.	Schedule to be provided in Microsoft Excel or Microsoft Project. Written certification statement in Microsoft Word or PDF.	Submit for review and comment.
Utility-Wide Programmatic Remedial Measures									
Updating LPDES Permits	20	a. – h.	LPDES Permit Status Report	Group 1 not later than thirty (30) months following Effective Date of Consent Decree Modification. Group 2 not later than thirty-six (36) months following Effective Date of Consent Decree Modification. Group 3 not later than forty-two (42) months following Effective Date of Consent Decree Modification. Group 4 not later than forty-eight (48) months following Effective	Submit Once for Each Group For each Group, provide written certification statement that states all LPDES permits are up to date and accurate or that appropriate information as required in Subparagraphs a. – h. has been provided to LDEQ for revision.	Maintain Current	Written certification statement shall state all LPDES permits are up to date and accurate or that appropriate information as required in Subparagraphs a. – h. has been provided to LDEQ for revision.	Written certification statement in Microsoft Word or PDF.	Submit for review and comment.

Long Term Compliance Plan – Attachment 15 – Reporting Table

REMEDIAL MEASURE ITEM	¶	SUB-¶	REPORT/SUBMISSION NAME	DUE DATE	FREQUENCY OF SUBMISSION	REQUIREMENTS FOR UPDATING	REPORT CONTENT	REPORT FORMAT	REVIEW AND/OR APPROVAL?
				Date of Consent Decree Modification.					
Public and Employee Safety	21	a. – b.	Safety Assessment Report	Not later than six (6) months following Effective Date of Consent Decree Modification. All remedies that could not be implemented by 6 month deadline not later than forty-two (42) months following Effective Date of Consent Decree Modification.	Submit Once Provide annual implementation progress reports. When all necessary safety improvements are completed, provide written certification statement that states all necessary improvements have been completed.	Maintain Current	Photograph log documenting pre- and post-condition of identified safety hazards. If applicable, schedule for implementation of permanent remedies that could not be implemented by 6 month deadline. Annual implementation progress reports shall document, via photographic evidence, each safety improvement completed during the calendar year. Written certification statement shall state that all necessary safety improvements have been completed.	Photograph log in Microsoft Word or PDF. Schedule to be provided in Microsoft Excel or Microsoft Project. Written certification statement in Microsoft Word or PDF.	Submit for review and comment.
Hydraulic and Organic Loading Analysis Program	22	a. – d.	Hydraulic and Organic Loading Analysis Program	Develop and begin to implement Program not later than fifteen (15) months following Effective Date of Consent Decree Modification. Group 1 not later than twenty-one (21) months following Effective Date of Consent Decree Modification. Group 2 not later than twenty-seven (27) months following Effective Date of Consent Decree Modification.	Submit Once for Each Group Provide quarterly progress reports.	Maintain Current	Program shall include all required elements in Subparagraphs a. – d. Program shall include: • Written descriptions of the equipment, procedures, and schedules necessary to comply with all required elements in Subparagraphs a. – d. • List of STPs to be included in STP- Specific Process Control Plans at 24 months, 30 months, 36 months, and 42 months and rationale for inclusion • Written procedures for site selection, use and calibration of equipment, maintenance, field and calibration observations, and data acquisition and recording Quarterly implementation progress reports shall be a written certification statement that shall state which Analyses have been completed.	Written Report in Microsoft Word or PDF. If necessary as supplement, maps of sampler and flow meter locations and Microsoft Excel spreadsheets or database of collected data. Written certification statements in Microsoft Word or PDF.	Submit for review and comment.

Remedial Measure Item	¶	Sub-¶	Report/Submission Name	Due Date	Frequency of Submission	Requirements for Updating	Report Content	Report Format	Review and/or Approval?
				Group 3 not later than thirty-three (33) months following Effective Date of Consent Decree Modification. Group 4 not later than thirty-nine (39) months following Effective Date of Consent Decree Modification.					
Enhanced LPDES Self-Monitoring and O&M Procedures	23	a. – e.	Enhanced LDPES Self-Monitoring and O&M Procedures	Implement upon Effective Date of Consent Decree Modification Develop QAPP[8] not later than sixty (60) days following Effective Date of Consent Decree Modification. Upon approval, implement QAPP.	Submit Once Provide annual implementation progress reports.	Maintain Current	Procedures shall include all required elements in Subparagraphs a. – e. The Procedures shall contain written SOPs and any supporting documents necessary to ensure implementation of the required elements in Subparagraphs a. – c. and Subparagraph e. It should also include quality assurance procedures and documentation from the associated QAPP required in Subparagraph d. The QAPP should be a stand-alone document that is consistent with EPA's Requirements for Quality Assurance Project Plans (QA/R-5), Publication Number and Date: EPN240/B-0 11003, March 2001. The document and respective portions of the QAPP shall be prepared in a way to facilitate use in the field and use during staff training. Annual implementation progress reports shall include:	Procedures and QAPP in Microsoft Word or PDF.	Submit for review and approval.

[8] Quality Assurance Project Plan

Remedial Measure Item	¶	Sub-¶	Report/Submission Name	Due Date	Frequency of Submission	Requirements for Updating	Report Content	Report Format	Review and/or Approval?
							• Description of any changes made to the Procedures or QAPP • The name, LPDES number, and AI number of the STPs at which the Procedures are being implemented • The name, LPDES number, and AI number of the STPs for which a QAPP has been developed and implemented		
Staffing Assessment and Training	24	a. – b.	1. Staffing Assessment Report 2. Staff Training Materials	1. Not later than twelve (12) months following Effective Date of Consent Decree Modification. If required, fill all necessary vacancies as soon as technically feasible but not later than twenty-eight (28) months following Effective Date of Consent Decree Modification. 2. Train each staff member not later than eighteen (18) months following Effective Date of Consent Decree Modification.	1. Submit Once Provide quarterly implementation progress reports until termination of Consent Decree. Written certification of staff hiring, if necessary, at 28 month deadline. 2. Submit Once at 18 month deadline. Provide annual implementation progress reports until termination of Consent Decree.	Maintain Current	1. Assessment Report shall describe distinct job functions across all of TESI's operations and current staffing. Report shall identify the number, skill set, and certifications needed of its employees. At a minimum, Report shall address common tasks required in Subparagraphs a.i – a.v. Staffing Assessment Report shall then identify if, and how many, additional staff are necessary and with what qualifications. If additional staff are required, a written certification statement documenting the staff hired and qualifications. Quarterly implementation progress reports shall include: • Description of efforts to fill staffing vacancies • Number of vacancies filled • Anticipated date of filling any remaining vacancies. 2. 18 month submittal shall include: • Date of initial training and schedule for recurrence. • Written procedures to ensure new employees receive training • Training agenda and location(s) • Syllabi and associated training materials consistent with the	1. Report in Microsoft Word or PDF. Written certification statement in Microsoft Word or PDF. 2. Training materials in Microsoft Word, Microsoft PowerPoint, or PDF. Record of attendees in Microsoft Word, Microsoft Excel, or PDF.	1. Submit for review and approval. 2. Submit for review and comment.

Remedial Measure Item	¶	Sub-¶	Report/Submission Name	Due Date	Frequency of Submission	Requirements for Updating	Report Content	Report Format	Review and/or Approval?
							requirements in Subparagraphs b.i – b.vii. Annual implementation progress report shall include: • Date of training and documentation of training for new employees • Any changes to syllabi and associated training materials • Record of attendees coupled with a cross reference of all TESI employees		
Professional Engineer with wastewater experience and/or Class 4 Operator	25	-	Professional Engineer with wastewater experience and/or Class 4 Operator Certification	Not later than six (6) months following Effective Date of Consent Decree Modification.	Submit Once. Provide annual implementation progress reports.	Maintain Current	Annual implementation progress report shall include: • Written certification statement documenting the Professional Engineer's and/or Class 4 Operator's name, license number, and expiration date • Written resume outlining Professional Engineer's wastewater experience (if individual is not a Class 4 Operator)	Copy of Professional Engineer's and/or Class 4 Operator's License. Resume in Microsoft Word or PDF, if applicable.	Submit for review and comment.

Summary of Recurrence Frequencies for Requested Implementation Progress Reports and Written Certification Statements

RECURRENCE FREQUENCY	¶	NAME	DUE DATE
Monthly	3	Status of Solids Management Activities for Mechanical STPs	All monthly implementation progress reports shall be due within seven (7) days following the end of the calendar month. If applicable, written certification statements shall be submitted with the final monthly implementation progress report for the respective remedial measure.
	11	Status of Solids Management Activities for Pond STPs	
Quarterly	2	Status of Mechanical STP CDER Implementation	All quarterly implementation progress reports shall be due within fifteen (15) days following the end of the calendar quarter. If applicable, written certification statements shall be submitted with the final quarterly implementation progress report for the respective remedial measure.
	4	Status of STP-Specific Process Control Plans for Mechanical STPs	
	7	Status of Holistic Process Control Plan for Pond STPs	
	8	Status of STP-Specific Process Control Plans for Pond STPs	
	9	Status of Operations and Maintenance Improvements for Pond STPs	
	10	Status of Pond STP CDER Implementation	
	13	Status of Collection System CDER Implementation	
	14	Status of Enhanced Collection System Maintenance Plan	
	15	Status of Collection System Attribute Data	
	17	Status of Additional Collection System Assessments	
	19	Status of Collection System Improvements	
	22	Status of Hydraulic and Organic Loading Analysis	
	24	Status of Staffing Assessment	
Annually	16	Status of Collection System Maps	All annual implementation progress reports shall be due within fifteen (15) days following the end of the calendar year. If applicable, written certification statements shall be submitted with the final annual implementation progress report for the respective remedial measure.
	21	Status of Public and Employee Safety Improvements	
	23	Status of Enhanced NPDES Self-Monitoring and O&M Procedures	
	24	Status of Staff Training	
	25	Certification of Professional Engineer with wastewater experience and/or Class 4 Operator	

UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF LOUISIANA

UNITED STATES OF AMERICA and

STATE OF LOUISIANA, through THE DEPARTMENT OF ENVIRONMENTAL QUALITY,

Plaintiffs,

v.

ACADIA WOODS ADD. #2 SEWER CO.,

ACADIANA TREATMENT SYSTEMS, et al.,

Defendants,

and

TOTAL ENVIRONMENTAL SOLUTIONS, INC.,

Intervening Defendant.

Civil Action No. 6:98-0687

AGREEMENT AND ORDER REGARDING MODIFICATION OF THE CONSENT DECREE WITH RESPECT TO TESI

APPENDIX C

PROCESS FOR REMOVING STPS FROM THE CONSENT DECREE WITH RESPECT TO TESI

Process for Removing STPs from the Consent Decree with Respect to TESI

1. STPs covered by the Consent Decree with Respect to TESI ("the Consent Decree") may be removed from the Consent Decree pursuant to these provisions. TESI may seek removal of an STP from the Consent Decree only after the following conditions have been met:

   a. TESI has completed at the subject STP all of the following requirements of the Long Term Compliance Plan, Attachment B to the Consent Decree Modification ("LTC Plan"):

      i. For a Mechanical STP:

         1. All Mechanical STP CDE Work required to be implemented at the subject STP under LTC Plan Paragraphs 2(b) and/or (c).

         2. All operational and capital improvements required to be implemented at the subject STP under LTC Plan Paragraph 2(d).

         3. Develop and implement a Site-Specific Process Control plan at the subject STP as required by LTC Plan Paragraph 4.

      ii. For a Pond STP:

         1. All Pond STP CDE Work required to be implemented at the subject STP under LTC Plan Paragraphs 5(c) and 10.

         2. All operational and capital improvements required to be implemented at the subject STP under LTC Plan Paragraph 5(f).

         3. Removal of solids at the subject STP as required by LTC Plan Paragraphs 6 and 11.

         4. Develop and implement a Site-Specific Process Control plan at the subject STP as required by LTC Plan Paragraph 8.

         5. All operation and maintenance improvements required to be implemented at the subject STP under LTC Plan Paragraph 9.

      iii. For all STPs:

         1. All Collection System CDE Work required to be implemented at the subject STP under LTC Plan Paragraphs 13 and 18.

         2. All work or other actions scheduled to be implemented prior to the date of the Final STP Report at the subject STP under the Enhanced Collection System Maintenance Plan developed under LTC Plan Paragraph 15(a) and/or the Supplemental Enhanced Collection System Maintenance Plan developed under LTC Plan Paragraph 15 (b).

3. Maintain the Collection System Attribute Data for the subject STP updated as required by LTC Plan Paragraph 15.

4. Maintain a Collection System Map for the subject STP updated as required by LTC Plan Paragraph 16.

5. All improvements to eliminate I&I and/or structural defects to eliminate future sanitary sewer overflows, building backups, surcharging, blockage, or collapse required to be implemented at the subject STP under LTC Plan Paragraphs 17(c) and 18.

6. Elimination of all safety issues at the STP as required by LTC Plan Paragraph 21.

b. For a period of six consecutive, full-calendar months following completion of the activities specified in Paragraph a above, the STP has been in compliance with its LPDES Permit.

After these conditions have been satisfied, TESI may submit to EPA and LDEQ for review and approval a Final STP Report for an individual STP. EPA will review the Final STP Report to determine whether the STP is able to maintain long-term, sustained compliance with the Clean Water Act ("CWA"), 33 U.S.C. § 1251 et seq., including the requirements of the applicable LPDES Permit. If EPA approves the Final STP Report, the STP will no longer be subject to the Consent Decree with TESI, effective on the date the Final STP Report is approved. EPA will review the Final STP Report following the process specified in Consent Decree Modification Section VI (Review of Submittals).

2. The Final STP Report for an STP shall contain the following:

a. The STP Name, Type (Mechanical/Pond), LPDES Permit Number, LDEQ Agency Interest Number ("AI No."), Evaluation Period Start Date, Evaluation Period End Date. The term "Evaluation Period" refers to the six months prior to the date the Final STP Report is submitted.

b. Each Final STP Report will be submitted in electronic format including all supporting documents. Each Final STP Report will cover one STP only, unless an alternate approach is requested by TESI and agreed by EPA and LDEQ.

c. For each Mechanical STP, the report will contain:

i. CDER Implementation Summary. TESI shall submit a list of all improvements and associated completion dates implemented at the STP including all items applicable to the subject STP that are specified in Paragraph 1.a of this *Process for Removing STPs from the Consent Decree with TESI.*

ii. For the purpose of confirming development and implementation of the Site-Specific Process Control Plan pursuant to LTC Plan Paragraph 4, TESI shall submit a certification that, in compliance with LTC Plan Paragraph 4, a Site Specific Process

Control Plan has been fully implemented at the subject STP and the date that plan was last updated.

iii. For the purpose of confirming the implementation and application of the operation and maintenance procedures specified in LTC Plan Paragraph 23(e), TESI shall submit the following:

1. Preventative Maintenance ("PM") for the Prior Eight Months: Description of PM activity shall include nature of activity, summary of efficiency or maintenance improvements gained, volume of wastes or materials removed, frequency performed during the last 8 months, and date of the maintenance.

2. Corrective Maintenance ("CM") for the Evaluation Period: Description of CM activity shall include review of process unit or piece of equipment receiving corrective maintenance, reason for the CM, length of time process unit or piece of equipment was out of service, impact on operations, and date of the maintenance.

iv. Permit Compliance Summary. TESI shall submit the following:

1. For the year prior to submission of the Final STP Report, a summary of all noncompliance (DMR or spills), citizen complaints, and any corrective actions taken, including pertinent dates.

2. A summary table and copy of laboratory results (including chain of custody) for sampling analyses for three separate wet weather monitoring events during the Evaluation Period (or, if an insufficient number of wet weather events occur during the Evaluation Period, then the three most recent wet weather events), using grab samples to demonstrate continued compliance with effluent limits during wet weather events. TESI shall sample and analyze for all current LPDES Permit effluent limits, including all "parameters" specified in the LPDES Permit.

3. A summary table and copy of laboratory results (including chain of custody) for sampling analysis for one 24 hour composite sample during a wet weather event during the Evaluation Period to demonstrate continued compliance with effluent limits during wet weather events. TESI shall sample and analyze for all current LPDES Permit effluent limits, including all "parameters" specified in the LPDES Permit.

4. For the purposes of Paragraphs 2.c.iv.2 and 2.c.iv.3 above, a wet weather event is defined as a precipitation event greater than 0.5 inches over a 24 hour period.

5. For the purposes of Paragraphs 2.c.iv.2 and 2.c.iv.3 above, the sampling shall be in addition to sampling specifically required by the applicable LPDES permit.

6. For the purposes of Paragraphs 2.c.iv.3 above, a composite sample shall mean a combination of at least 12 sample aliquots of at least 100 milliliters, collected at equal time intervals or collected proportional to the flow rate over the compositing period.

7. If TESI conducts sampling as described in Paragraphs 2.c.iv.2 and 2.c.iv.3 on more than the minimum required number of events, specifically including sampling events where the results do not demonstrate compliance with effluent limits, TESI shall also submit a summary table and copy of laboratory results (including chain of custody) for the additional sampling events and an explanation of how any compliance problems were remedied prior to re-sampling. EPA and LDEQ will review this information to determine whether the compliance problem was remedied.

d. For each Pond STP, the report will contain:

i. CDER Implementation Summary. TESI shall submit a list of all improvements and associated completion dates implemented at the STP including all items applicable to the subject STP that are specified in Paragraph 1.a of this *Process for Removing STPs from the Consent Decree with TESI*.

ii. For the purpose of confirming the implementation and application of the solids removal requirements for Pond STPs in the LTC Plan, TESI will submit a certification that that solids were removed from the STP in compliance with Solids Removal Plan established under LTC Plan Paragraph 6, the start and completion dates for solids removal at the Pond STP, and copies of all manifests for removed solids.

iii. For the purpose of confirming development and implementation of the Site-Specific Process Control Plan pursuant to LTC Plan Paragraph 8, TESI shall submit a certification that, in compliance with LTC Plan Paragraph 8, a Site Specific Process Control Plan has been fully implemented at the subject STP and the date that plan was last updated.

iv. For the purpose of confirming the implementation and application of the operation and maintenance procedures specified in LTC Plan Paragraph 23(e), TESI shall submit the following

1. Preventative Maintenance ("PM") for the Prior Eight Months: Description of PM activity shall include nature of activity, summary of efficiency or maintenance improvements gained, type and volume of vegetation, solids, or materials removed, frequency performed during the last 8 months, and date of the maintenance.

2. Corrective Maintenance ("CM") for the Evaluation Period: Description of CM activity shall include review of cell, transfer pipe, chlorination, or effluent filter receiving corrective maintenance, reason for the CM, length of time process equipment was out of service, impact on operations, and date of the maintenance.

v. Permit Compliance Summary. TESI shall submit the following:

1. For the year prior to submission of the Final STP Report, a summary of all noncompliance (DMR or spills), citizen complaints, and any corrective actions taken, including pertinent dates.

2. A summary table and copy of laboratory results (including chain of custody) for sampling analyses for three separate wet weather monitoring events during the Evaluation Period (or, if an insufficient number of wet weather events occur during the Evaluation Period, then the three most recent wet weather events), using grab samples to demonstrate continued compliance with effluent limits during wet weather events. TESI shall sample and analyze for all current LPDES Permit effluent limits, including all "parameters" specified in the LPDES Permit.

3. A summary table and copy of laboratory results (including chain of custody) for sampling analysis for one 24 hour composite sample during a wet weather event during the Evaluation Period to demonstrate continued compliance with effluent limits during wet weather events. TESI shall sample and analyze for all current LPDES Permit effluent limits, including all "parameters" specified in the LPDES Permit.

4. If there is no discharge from a Pond STP during the Evaluation Period, TESI shall report no discharge and shall include the date of the last observed discharge.

5. For the purposes of paragraphs 2.d.v.2 and 2.d.v.3 above, a wet weather event is defined as a precipitation event greater than 0.5 inches over a 24 hour period.

6. For the purposes of Paragraphs 2.d.v.2 and 2.d.v.3 above, the sampling shall be in addition to sampling specifically required by the applicable LPDES permit.

7. For the purposes of Paragraph 2.d.v.3 above, a composite sample shall mean a combination of at least 12 sample aliquots of at least 100 milliliters, collected at equal time intervals or collected proportional to the flow rate over the compositing period.

8. If TESI conducts sampling as described in Paragraphs 2.d.v.2 and 2.d.v.3 on more than the minimum required number of events, specifically including sampling events where the results do not demonstrate compliance with effluent limits, TESI shall also submit a summary table and copy of laboratory results (including chain of custody) for the additional sampling events and an explanation of how any compliance problems were remedied prior to re-sampling. EPA and LDEQ will review this information to determine whether the compliance problem was remedied.

e. For each STP (Mechanical or Pond), the Final STP Report will contain information about the implementation of the Remedial Measures for the Collection Systems required by LTC Plan Section IV and shall include:

i. For the purpose of verifying compliance with the requirements in the LTC Plan related to the Collection System Map and Collection System Attribute Data Summary, TESI shall submit a certification that:

1. It has an updated a Collection System Map for the STP as required by LTC Plan Paragraphs 16.

2. It has updated the Collection System Attribute Data for the STP as required by LTC Plan Paragraphs 15.

ii. For the purpose of verifying compliance with the requirements in the LTC Plan related to improvements to the Collection Systems, TESI shall submit a list of all:

1. Collection System CDE Work required at the subject STP by LTC Plant Paragraph 14;

2. Improvements to the Collection System of the subject STP identified in the "prioritized schedule" required by LTC Plan Paragraph 18

3. Collection System deficiencies identified subsequent to the submission of the "prioritized schedule" required by LTC Plan Paragraph 18.

The list shall include a description of each improvement and the date each improvement was completed/is schedule (as applicable). TESI shall certify completion of all improvements scheduled to be implemented prior to the date of the Final STP Report at the subject STP.

iii. For the purpose of verifying compliance with the requirements in the LTC Plan related to implementation of the Enhanced Collection System Maintenance Plan required by LTC Plan Paragraph 15 at the subject STP, TESI shall provide a summary which includes the following:

1. Description of the maintenance activities applicable to the STP under the current Enhanced Collection System Maintenance Plan.

2. Six months of operations logs, field sheets, and O&M Reports documenting changes to the STP's Collection System (including all PM and CM activities).

3. A list of the known or suspected high risk/critical areas within the STPs Collection System identified pursuant to LTC Plan Paragraph 15(c), including any 'hot spots' requiring higher frequency cleaning rates.

4. Six months of overflow, spill, and backup (sewer and into building events) reports.

5. Current status of Inflow and Infiltration issues and a description of all corrective actions to address such Inflow and Infiltration issues that were taken or are

scheduled by TESI (include the date each corrective action was taken/is scheduled).

6. All citizen complaints related to the Collection System of the subject STP received by TESI after the Effective Date of the Consent Decree Modification.

f. For each STP (Mechanical or Pond), the report will be signed by an official of the submitting party and include the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

g. All reports will be submitted to the persons designated in Section XIX (Notices) of the Consent Decree. EPA, LDEQ, and TESI may modify this method for submitting reports by written agreement.

3. TESI will submit Final STP Reports for review and approval according to the schedule specified in this Paragraph. On the first anniversary of the Effective Date of the Consent Decree Modification TESI will comply with the requirements of Subparagraphs (a) and (b) below at no less than 12 STPs. On the second anniversary of the Effective Date of the Consent Decree Modification and continuing through the sixth anniversary of the Effective Date of the Consent Decree Modification, TESI will comply with the requirements of Subparagraphs (a) and (b) below at no less than 30 STPs per year (or the total number of STPs which remain subject to the Modified Consent Decree if that number is less than 30). For each STP included in an annual submittal, TESI shall:

a. Satisfy the conditions precedent to submitting a Final STP Report specified in Paragraph 1 above, and

b. Submit for review and approval a Final STP Reports that complies with the requirements of Paragraph 2 above and demonstrates that the STP is able to maintain long-term, sustained compliance with the Clean Water Act ("CWA"), 33 U.S.C. § 1251 et seq., including the requirements of the applicable LPDES Permit.

Each year, the Final STP Reports will be submitted together in a single batch no later than the applicable anniversary of the Effective Date of the Consent Decree Modification. TESI will complete this process no later than the sixth anniversary of the Effective Date of the Consent Decree Modification by satisfying the requirements specified in Subparagraphs (a) and (b) of this Paragraph and submitting a Final STP Report for all remaining STPs subject to the Modified Consent Decree.