

# **REQUIREMENTS FOR CLOSURE AND PERIODIC CLEAN-OUT OF MUNICIPAL WASTEWATER TREATMENT LAGOONS**



April 23, 2010



**MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY  
OFFICE OF POLLUTION CONTROL**

## 1. INTRODUCTION

Lagoons are surface impoundments used in the treatment and management of wastewater from various types of sources. These sources include, but are not limited to, cities, industries, industrial parks, campgrounds, residential developments and various other sources. Treatment lagoons can generally be classified into the following two categories depending on the types of wastewater being treated:

- Municipal Wastewater Treatment (MWW) Lagoons that treat wastewater from cities, residential homes, commercial buildings and other similar sources; and
- Industrial and other Non-municipal Wastewater Treatment Lagoons that treat wastewater from industries, industrial parks and other similar sources. Please note that guidance on closure of industrial wastewater treatment lagoons is provided in a separate document.

The purpose of this guidance document is to serve as a clearinghouse of information regarding federal and state requirements for the closure and periodic clean-out of the MWW treatment lagoons to help protect the environment and public health. The requirements for closure or periodic clean-out of these different types of lagoons may vary depending upon the applicability of both federal and state regulations, and the type of wastewater being treated in the lagoon. The content of these guidelines is based on the federal requirements in 40 CFR Part 503<sup>1</sup> (Standards for the Use or Disposal of Sewage Sludge), the requirements in 40 CFR Part 258, the State of Mississippi Nonhazardous Solid Waste Management Regulations<sup>2</sup>, and the State of Mississippi Wastewater Regulations (WPC-1)<sup>3</sup>.

For a variety of reasons MWW lagoons often are taken out of service and must be closed. For example, the regionalization of wastewater collection and/or the need for increased nutrient removal to meet the stringent discharge limits cause many small sewage treatment lagoons (or ponds) to be taken out of service and replaced with new improved treatment systems. In addition, these treatment lagoons occasionally may need to be dredged to have the accumulated sewage sludge removed so that a lagoon's treatment efficiency can be restored. In these cases, proper removal and disposal of wastewater and sewage sludge contained in the lagoon is necessary. In most situations, the wastewater and sludge remaining in the lagoon will have to be removed. The owner/operator, coordinating the lagoon closure or clean out with the Mississippi Department of Environmental Quality (MDEQ), should determine the most feasible sludge disposal option for their particular situation.

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<sup>1</sup> [http://www.access.gpo.gov/nara/cfr/waisidx\\_02/40cfr503\\_02.html](http://www.access.gpo.gov/nara/cfr/waisidx_02/40cfr503_02.html)

<sup>2</sup> [http://www.deq.state.ms.us/MDEQ.nsf/page/SW\\_General\\_Solid\\_Waste\\_Guidance?OpenDocument](http://www.deq.state.ms.us/MDEQ.nsf/page/SW_General_Solid_Waste_Guidance?OpenDocument)

<sup>3</sup> <http://www.deq.state.ms.us/newweb/MDEQRegulations.nsf?OpenDatabase>

## **2. CLOSURE PROCEDURES FOR MWW TREATMENT LAGOONS**

As stated previously, the closure of MWW lagoons must be conducted in compliance with the applicable federal and state requirements concerning the management of wastewater and sewage sludge. The following procedures should be followed in closing a MWW lagoon.

### **2.1 CLOSURE OPTIONS FOR MWW TREATMENT LAGOONS**

The following two (2) options are typically employed for closure of MWW lagoons:

- Off-site or Clean Closure - Requires removal of all the waste materials (both liquids and solids) from the lagoon and subsequent disposal of the solids at an off-site solid waste management facility.
- On-site Closure - Requires removal of wastewater from the lagoon but allows on-site burial of the remaining solids or sludge materials.

### **2.2 CLOSURE REQUIREMENTS FOR MWW TREATMENT LAGOONS**

The following sections of the document describe the issues and conditions involved in evaluating and implementing off-site and on-site closure options to help determine which option is appropriate for the closure of a particular MWW lagoon.

1. A MWW lagoon is required to be closed within 2 years from the date the lagoon is taken out of service<sup>4</sup>, unless otherwise approved by the MDEQ.
2. A written lagoon closure plan for off-site closure must be submitted for MDEQ's approval at least 90 days prior to conducting permanent closure<sup>5</sup>. A complete lagoon closure request form (in duplicate) should be submitted to the address included on the closure request form. Refer to section 2.3 of this guidance document for additional details of the off-site closure process.
3. Since MDEQ is not currently delegated by the U.S. Environmental Protection Agency (EPA) for implementing the Federal 503 regulations, the owner must obtain an approval from the EPA where the lagoon closure plan involves on-site closure. Refer to section 2.4 of this guidance document for additional details of the on-site closure process.
4. Upon receipt of a complete closure plan, the MDEQ (for off-site closure) or the EPA (for on-site closure) will provide a letter authorizing the owner of the lagoon to begin closure procedures. Closure activities at a wastewater treatment lagoon must comply with the terms and conditions contained in the MDEQ's or EPA's letter of authorization.

The MDEQ reserves the right to request additional information as determined necessary on a site specific basis. If you have questions concerning the content and submittal procedures for an MWW lagoon closure, please contact the MDEQ/EPD Municipal & Private Facilities Branch or the MDEQ/EPD Solid Waste Policy, Planning & Grants Branch by telephone at (601) 961-5171.

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<sup>4</sup> [http://www.access.gpo.gov/nara/cfr/waisidx\\_02/40cfr503\\_02.html](http://www.access.gpo.gov/nara/cfr/waisidx_02/40cfr503_02.html)

<sup>5</sup> <http://www.deq.state.ms.us/newweb/MDEQRegulations.nsf?OpenDatabase>

## **2.3 OVERVIEW OF OFF-SITE OR CLEAN CLOSURE**

MDEQ recommends that an off-site or clean closure be conducted, where the closed MWW treatment lagoon is proposed to be used for future development. In order to conduct clean closure at a MWW lagoon, the following actions must be taken:

1. Prior to conducting the clean closure activity, the owner of a lagoon must file the required closure request form and closure plan with the MDEQ for review and approval. The lagoon closure plan, at a minimum, should include a cover letter requesting approval for off-site closure and a completed MWW Lagoon Closure Request Form (attached at the end of this document) with all the necessary information and attachments requested therein.
2. If approved by MDEQ, all deposited waste materials (both liquid and solids) in the lagoon must be removed and taken to an appropriate facility for proper treatment and/or disposal in accordance with the conditions of approval. The wastewater from a lagoon may be pumped into a municipal sewage collection line or hauled directly to a wastewater treatment facility with the written permission of its owner, unless other options are approved by the MDEQ. Disposal options for the sludge remaining in the lagoon generally include landfill disposal, land application, or other options such as composting. These sludge disposal options are discussed in more details later in this document.
3. The emptied lagoon will then need to be backfilled with clean earthen fill material to restore its natural grade and then sloped, compacted and seeded to prevent the ponding of water and/or erosion of the earthen cover. Lagoon dikes, if any, may also be pushed in to fill the emptied lagoon.
4. Following closure, a written letter of certification<sup>6</sup> from an independent registered professional engineer (verifying that the lagoon has been closed in accordance with the approved plan) may need to be submitted to the MDEQ within 60 days of completing the closure of the lagoon, if determined necessary.

### **OFF-SITE SLUDGE DISPOSAL OPTIONS**

One of the following options may be used for off-site disposal of the sludge remaining in the lagoon that is proposed to be closed:

#### **Landfill Disposal**

The sludge, once removed from the MWW lagoon, can generally be disposed at a permitted municipal solid waste (MSW) landfill. However, the sludge in a MWW lagoon typically contains approximately 5 to 10% solids. If the option of landfill disposal is chosen, the sludge must be dewatered or dried until it contains at least 20% solids by weight. The lagoon owner/operator must provide the necessary analytical and other information (such as source, type and amount of sludge) to the operator/owner of an active MSW landfill prior to hauling the sludge for ultimate disposal. Note that information requirements may vary from landfill to landfill. A list of currently active MSW landfills in Mississippi may be obtained by contacting the MDEQ Solid Waste Policy, Planning & Grants Branch at 601-961-5171 or by accessing the Mississippi Solid Waste Facilities Listing at the link below.

[http://www.deq.state.ms.us/MDEQ.nsf/page/SW\\_General\\_Solid\\_Waste\\_Guidance?OpenDocument](http://www.deq.state.ms.us/MDEQ.nsf/page/SW_General_Solid_Waste_Guidance?OpenDocument)

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<sup>6</sup> Form certification letter is attached to this guidance.

## Land Application

If the option of land application is chosen, the sludge must, at a minimum, meet the requirements in Table 1 of 40 CFR Part 503.13 and one of the pathogen requirements in 40 CFR Part 503.32 prior to land application. In addition, one of the vector attraction reduction requirements in 40 CFR Part 503.33 must be met for land application of sludge from a MWW treatment lagoon. If these Federal requirements are met, dredged sludge may be land applied to a site only after obtaining the necessary solid waste management permit from the MDEQ. To apply for a permit for operating a land application site, a completed permit application form including all maps, engineering drawings and other required information must be submitted to the MDEQ. Permit application information may be obtained by contacting the MDEQ Solid Waste & Mining Branch at 601-961-5171 or by clicking at the link below.

[http://www.deq.state.ms.us/MDEQ.nsf/page/epd\\_SolidWasteandMining?OpenDocument](http://www.deq.state.ms.us/MDEQ.nsf/page/epd_SolidWasteandMining?OpenDocument)

Dredged sewage sludge from a MWW lagoon, if approved by the MDEQ, may also be applied at one of the active land application facilities in the State permitted to receive sewage sludge. A list of the permitted land application facilities in the state may be obtained by contacting the Solid Waste Policy, Planning & Grants Branch at 601-961-5171 or by accessing the Mississippi Solid Waste Facilities Listing at the link below.

[http://www.deq.state.ms.us/MDEQ.nsf/page/SW\\_General\\_Solid\\_Waste\\_Guidance?OpenDocument](http://www.deq.state.ms.us/MDEQ.nsf/page/SW_General_Solid_Waste_Guidance?OpenDocument)

## Other Disposal Options

Other sludge management options such as composting or heat drying for distribution of the finished products may also be proposed for MDEQ's consideration and approval. The Mississippi Nonhazardous Solid Waste Management Regulations typically require a solid waste management permit to operate a sludge composting or processing facility. In addition, the composted or heat dried sewage sludge must meet any other applicable federal and state requirements including the requirements of the Mississippi Department of Agriculture & Commerce for distribution.

## Other Closure Considerations

In dealing with lagoon closure, the owner may also need to address other potential environmental impacts of filling the lagoon. These types of impacts would most likely occur when the lagoon has been out of service for a number of years and has reverted back to natural conditions or when closure of the lagoon may impact adjacent areas or lands that are jurisdictional wetlands. If a lagoon area proposed to be closed has been determined to contain jurisdictional wetlands, the closure plan will also need to include documentation of approval from the U.S. Army Corps of Engineers for the proposed operation, as required by federal law.

In addition, any land disturbance, including clearing, grading, or excavating, that needs to be conducted to provide necessary earthen fill material for backfilling an emptied lagoon, may require coverage under storm water and/or storm water mining general permits. Information on the storm water general permit is available at the MDEQ General Permits Branch web page on MDEQ's website or may be obtained by contacting the General Permits Branch at 601-961-5171.

## 2.4 OVERVIEW OF ON-SITE CLOSURE

On-site closure of a MWW lagoon is typically conducted where the closed lagoon will not be used for any future development and when the removal of all of sludge materials from the lagoon is less practical than allowing them to remain in place. In order to conduct an on-site closure of a MWW lagoon, the following actions must be taken:

1. Prior to conducting an on-site closure at a MWW lagoon, a written proposal for on-site closure will need to be submitted directly to the U.S. EPA Region 4 Office in Atlanta, GA for their review and approval:

United States Environmental Protection Agency  
Region 4  
61 Forsyth Street, SW  
Atlanta, GA 30303-8960  
Phone: 404-562-9900

A copy of the on-site closure proposal should also be forwarded to the MDEQ. Please note that EPA will likely require monitoring of groundwater and/or methane around a closed lagoon if on-site closure of a MWW treatment lagoon is conducted. This monitoring is typically required to be conducted for a certain time period at a certain frequency, as determined by the EPA on a case by case basis. The closure proposal should contain the information that is required by EPA to help complete its review. Please contact the EPA Region IV Office for the information that they may need to conduct review of a submitted plan for on-site closure.

2. If the closure plan is approved by the U.S. EPA, a regulatory exemption for this onsite disposal of solid waste is generally allowed by MDEQ under the Section I.B.9 of the Mississippi Nonhazardous Solid Waste Management Regulations. EPA's approval to an onsite lagoon closure proposal will be considered supportive of that exemption. A copy of the approval from the EPA should also be provided to MDEQ.
3. The wastewater contents in the lagoon should be managed for treatment and/or disposal in coordination with the MDEQ. The wastewater from a lagoon may be pumped into a municipal sewage collection line or hauled directly to a wastewater treatment facility with the permission of its owner, unless otherwise approved by the MDEQ.
4. The remaining sewage sludge, if determined nonhazardous, would then need to be weather dried and subsequently covered with clean earthen fill material in a manner to restore the proposed lagoon to its natural grade. The closed area should then be compacted, properly sloped and seeded to prevent any ponding and/or erosion.
5. Following closure of the lagoon, the owner must record a notation on the property deed indicating that the property was used as a wastewater treatment lagoon and a final closure of the lagoon was conducted leaving the residual sludge onsite and subsequently, notify the MDEQ in writing.
6. Following closure, a written letter of certification<sup>7</sup> from an independent registered professional engineer (verifying that the on-site closure of the lagoon has been conducted in accordance with the approved plan) will need to be submitted to the MDEQ within 60 days of completing the closure of the lagoon. If required by the EPA, lagoon closure confirmation should also be provided to the U.S. EPA Region 4 Office in Atlanta, GA.

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<sup>7</sup> Form certification letter is attached to this guidance.



7. The owner must conduct post-closure monitoring of groundwater and/or methane as required by the EPA, at a frequency and for a duration specified in that agency's approval. A copy of all monitoring results should also be provided to the MDEQ as soon as possible.

Also, as previously indicated, the owner may need to address other potential environmental impacts related to filling the lagoon. If a lagoon area proposed to be closed has been determined to contain jurisdictional wetlands, the closure plan will also need to include documentation of approval from the U.S. Army Corps of Engineers for the proposed operation, as required by federal law.

In addition, any land disturbance, including clearing, grading, or excavating, to be conducted to provide necessary earthen fill material for backfilling an emptied lagoon, may require coverage under storm water and/or storm water mining general permits. Information on the storm water general permit is available at the MDEQ General Permits Branch web page on MDEQ's website or may be obtained by contacting the General Permits Branch at 601-961-5171.

### **3. GUIDANCE FOR PERIODIC CLEAN-OUT OF MUNICIPAL WASTEWATER TREATMENT (MWW) LAGOONS**

A wastewater treatment lagoon may need to be periodically dredged in order to restore its treatment efficiency. Hence, the proper removal and disposal of wastewater and sludge contained in the lagoon is necessary.

In order to conduct periodic clean-out, either the entire MWW lagoon or a portion of the lagoon may need to be temporarily taken off-line. This activity must be coordinated with the MDEQ/EPD Municipal & Private Facilities Branch. Subsequently, all or an appropriate amount of the remaining waste materials (both liquid and solids) should be removed and taken to an appropriate facility for proper treatment and/or disposal. The wastewater from a lagoon can be pumped into a municipal sewage collection line for transport to a POTW or hauled directly to a POTW for treatment, unless other options are approved by the MDEQ. Sludge removed from a MWW lagoon can generally be disposed at a permitted municipal solid waste (MSW) landfill or at a permitted land application site or other method described on the next page.

#### **SLUDGE DISPOSAL OPTIONS**

##### **Landfill Disposal**

If the option of landfill disposal is chosen, the sludge must be dewatered or solidified until it contains at least 20% solids by weight. The lagoon owner/operator must provide necessary analytical and other information (such as source, type and amount of sludge) to the owner/operator of an active MSW landfill prior to hauling sludge for ultimate disposal. A list of the permitted MSW landfills that are currently active in the State may be obtained by contacting the Solid Waste Policy, Planning & Grants Branch at 601-961-5171 or by accessing the Mississippi Solid Waste Facilities Listing at the link below:

[http://www.deq.state.ms.us/MDEQ.nsf/page/SW\\_General\\_Solid\\_Waste\\_Guidance?OpenDocument](http://www.deq.state.ms.us/MDEQ.nsf/page/SW_General_Solid_Waste_Guidance?OpenDocument)

##### **Land Application**

Dredged sewage sludge may be applied to the land only after obtaining a solid waste management permit from MDEQ. To apply for a land application permit, complete the required permit application form and include all maps, engineering drawings and other required information and then submit it to the MDEQ. Permit application information may be obtained by contacting the MDEQ Solid Waste & Mining Branch at 601-961-5171 or by clicking at the link below. Also, contact MDEQ for information on the permitting process.

[http://www.deq.state.ms.us/MDEQ.nsf/page/epd\\_SolidWasteandMining?OpenDocument](http://www.deq.state.ms.us/MDEQ.nsf/page/epd_SolidWasteandMining?OpenDocument)

Dredged sewage sludge from a MWW lagoon, if approved by the MDEQ, may also be applied at one of the active land application facilities in the State permitted to receive sewage sludge. A list of the permitted land application facilities in the state may be obtained by contacting the Solid Waste Policy, Planning & Grants Branch at 601-961-5171 or by accessing the Mississippi Solid Waste Facilities Listing at the link below.

[http://www.deq.state.ms.us/MDEQ.nsf/page/SW\\_General\\_Solid\\_Waste\\_Guidance?OpenDocument](http://www.deq.state.ms.us/MDEQ.nsf/page/SW_General_Solid_Waste_Guidance?OpenDocument)



### Other Disposal Options

Other sludge management options such as composting or heat drying for distribution of the finished products may also be proposed for MDEQ's consideration and approval. According to the Mississippi Nonhazardous Solid Waste Management Regulations, a permit is typically required to operate a sludge composting or processing facility. In addition, the composted or heat dried sewage sludge must meet any other applicable federal and state requirements including the requirements of the Mississippi Department of Agriculture & Commerce for distribution.

# MWW LAGOON CLEAN CLOSURE REQUEST FORM

## PART A. GENERAL INFORMATION

*A COMPLETE CLOSURE PLAN SHOULD CONSIST OF THIS CLOSURE REQUEST FORM AND THE INFORMATION REQUESTED HEREIN. THE APPLICATION SHOULD BE COMPLETED AND SUBMITTED IN A REPORT FORMAT, IN DUPLICATE.*

1. Name of applicant \_\_\_\_\_
2. Address of Applicant \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_
3. Telephone Number \_\_\_\_\_
4. Name of the MWW lagoon requiring closure: \_\_\_\_\_
5. NPDES/State Operating Permit No. for the MWW lagoon to be closed: \_\_\_\_\_
6. Physical address of the MWW lagoon: \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_
7. Location: Section \_\_\_\_\_ / Township \_\_\_\_\_ / Range \_\_\_\_\_ / County \_\_\_\_\_
8. Contact name and title: \_\_\_\_\_
9. Contact address (if different than applicant): \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_
10. Contact telephone number: \_\_\_\_\_
11. Certification:

To the best of my knowledge and belief, I certify that the information provided in this application including attachments are true, accurate, and correct. I further certify that I possess the authority to submit this lagoon closure request on behalf of the applicant.

\_\_\_\_\_  
Name of Authorized Representative (Please type/print)      Signature of Authorized Representative

\_\_\_\_\_  
Title of Authorized Representative (Please type/print)      Date

10-25-2009 Closure Form I

**Send to: Mississippi Department of Environmental Quality**

**By Mail:**

**P. O. Box 2261, Jackson, MS 39225**

**By Delivery:**

**515 Amite Street, Jackson, MS 39201**

# **MWW LAGOON CLEAN CLOSURE REQUEST FORM**

## **PART B. TECHNICAL INFORMATION**

Contingent upon the nature of the proposed closure, provide the following information:

1. A description of the historical background of the MWW lagoon(s) proposed to be closed, including the year of beginning operation at the lagoon(s), the NPDES permit number, the date when the lagoon(s) was taken offline, the lagoon(s) area in acres, and other pertinent information;
2. A description of the original design of the proposed MWW lagoon(s);
3. A U. S. Geological Survey (USGS) topographical quadrangle map showing the MWW lagoon(s) and surrounding areas. The lagoon property boundaries and the extent of lagoon area should be depicted on the map. At a minimum, a 2-mile radius from the lagoon boundary should be shown on the topo map. Adjacent topo maps may be attached, if necessary;
4. A clear description of the current conditions at the MWW lagoon(s) proposed for closure;
5. If the lagoon area contains jurisdictional wetlands, attach documentation of approval from the U.S. Army Corps of Engineers for the proposed closure operation, as required by federal law;
6. An estimated quantity of wastewater to be removed from the proposed MWW lagoon(s) including a description of how and where this wastewater would be taken for treatment and/or disposal. Also, attach a letter of concurrence from the wastewater receiving facility.
7. For clean closure, an estimated quantity of sludge that needs to be removed from the proposed MWW lagoon(s) for disposal. Please describe how and where these sludge materials would be taken for disposal. Also, include name, location and permit number of the solid waste management facility that would be utilized for ultimate disposal of this sludge.
8. A description of how the emptied MWW lagoon(s) would be backfilled (to bring it back to the existing grade), sloped and seeded;
9. Anticipated time for completion of the proposed closure;
10. A description of any potential future use of the MWW lagoon(s) after closure; and
11. Any additional information that might be pertinent to the proposed MWW lagoon closure.

10-25-2009 Closure Form I

**Send to: Mississippi Department of Environmental Quality**

**By Mail:**

**P. O. Box 2261, Jackson, MS 39225**

**By Delivery:**

**515 Amite Street, Jackson, MS 39201**

**CERTIFICATION FORM FOR THE OFF-SITE CLOSURE OF A MUNICIPAL WASTEWATER TREATMENT (MWW) LAGOON**

MDEQ/EPD Municipal & Private Facilities Branch  
P. O. Box 2261  
Jackson, MS 39225

Based on my oversight and involvement with this MWW lagoon closure project, I hereby certify to the best of my belief and knowledge that closure of *(include the lagoon name and location here)* is now complete. All of the wastewater and sludge were removed as described in the closure plan approved by the MDEQ. Subsequently, the emptied lagoon has been covered with clean earthen fill material to restore its natural grade and then sloped, compacted and seeded to prevent the ponding of water and/or erosion of the earthen cover.

I am submitting this correspondence on behalf of the lagoon owner to verify the completion of the clean closure.

\_\_\_\_\_  
Name and Address of Lagoon Owner

\_\_\_\_\_  
Signature of Registered Professional Engineer

\_\_\_\_\_  
Date

\_\_\_\_\_  
Typed Name (as signed)

\_\_\_\_\_  
Seal

**CERTIFICATION FORM FOR ON-SITE CLOSURE OF A  
MUNICIPAL WASTEWATER TREATMENT (MWW) LAGOON**

MDEQ/EPD Municipal & Private Facilities Branch  
P. O. Box 2261  
Jackson, MS 39225

Based on my oversight and involvement with this MWW lagoon closure project, I hereby certify to the best of my belief and knowledge that closure of *(include the lagoon name and location here)* is now complete. All wastewater was removed from the lagoon and the remaining sludge was left in the lagoon for on-site burial as described in the approved closure plan. Additionally, I hereby certify that the lagoon and the remaining sludge have been covered with clean earthen fill material to restore its natural grade and then sloped, compacted and seeded to prevent the ponding of water and/or erosion of the earthen cover as described in the approved closure plan.

Following closure of the lagoon, the owner recorded a notation on the property deed that the property was used as a municipal wastewater treatment lagoon and that a final closure was completed leaving the residual sludge onsite.

I am submitting this correspondence on behalf of the lagoon owner to verify the completion of the on-site closure.

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Name and Address of Lagoon Owner

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Signature of Registered Professional Engineer

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Date

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Typed Name (as signed)

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Seal