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STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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June 18, 2003

Mr. James L. Day, Manager  
Water Utilities  
Fluor Hanford  
P.O. Box 1000, MSIN: R3-15  
Richland, Washington 99352

**RECEIVED**  
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**EDMC**

Ms. Mary F. Jarvis  
Regulatory Compliance  
Richland Operations Office  
United States Department of Energy  
P.O. Box 550, MSIN: A5-15  
Richland, Washington 99352

Dear Mr. Day and Ms. Jarvis:

Re: REVIEW OF 100-N SEWAGE LAGOON REVISED OPERATIONS  
AND MAINTENANCE MANUAL (U1-0-16.01, Revision 5), FH-0301884,  
MAY 8, 2003

This letter is in response to the updates for the 100-N Sewage Lagoon Operations and Maintenance (O&M) Manual which was submitted to the Washington State Department of Ecology (Ecology), in accordance with State Water Discharge Permit ST 4507, Section S5.G May 8, 2003. The letter indicated changes to the manual incorporating information on lift station #1 and recent changes in the aeration equipment (InStream®) for the aeration lagoon. A copy of the revised manual was enclosed.

Ecology has reviewed the updates to the O&M Manual and the revised manual in its entirety. Ecology does expect and will require the O&M deficiencies to be corrected and resolved with the permit re-issuance and the required first submittal of the O&M Manual (within the first year of the new permit). The O&M Manual should be prepared and submitted by the Permittee in accordance with Washington Administrative Code (WAC)-173-240-080. The re-issued permit will contain new permit language requiring changes and updates to the O&M Manual be reviewed and approved by Ecology. Below are our comments and recommendations.

## **REGULATION SPECIFIC COMMENTS**

### **WAC 173-240-080, Operation and Maintenance Manual**

- 1) The proposed method of operation and maintenance of the domestic wastewater facility must be stated in the engineering report or plans and specifications and must be approved by the department. The statement must be a discussion of who will own, operate, and maintain the facility and what the staffing and testing requirements are. The owner shall follow the approved method of operation after the facility is constructed, unless changes have been approved by the department.
- 2) In those cases where the facility includes mechanical components, a detailed operation and maintenance manual must be prepared before completing the construction. The purpose of the manual is to present technical guidance and regulatory requirements to the operator to enhance operation under both normal and emergency conditions. Two copies of the manual must be submitted to the department for approval before completing the construction.
- 3) In order to assure proper operation during construction and timely review and approval of the final operation and maintenance manual, a draft manual must be submitted in the early stages of the construction of a facility. In addition, manufacturer's information on equipment must be available to the plant operator before unit start-up.
- 4) The operation and maintenance manual shall include the following list of topics. For those projects funded by the Environmental Protection Agency (EPA) the manual shall also follow the requirements of the EPA publication, "Considerations for Preparation of Operation and Maintenance Manuals."
  - a) The assignment of managerial and operational responsibilities, including plant classification and classification of required operators.  
*This information does not appear to be addressed in the manual.*
  - b) A description of plant type, flow pattern, operation, and efficiency expected.  
*The "description of plant type" is not provided. The "flow pattern" is not descriptively provided but is shown in Figure 2 of Appendix G. However, the narrative doesn't refer to Appendix G. A description of the system "operation" is not clearly presented, although operational details are spread throughout the manual.*
  - c) The principal design criteria.  
*The "principal design criteria" is not presented in the manual. If the facility was constructed prior to permitting, explain or describe this in the manual.*

- d) WAC 173-240-080 (4)(d): A process description of each plant unit, including function, relationship to other plant units, and schematic diagrams.  
***This is reasonably well covered in the manual, however, the operation of the InStream unit should be described in detail.***
- e) A discussion of the detailed operation of each unit and description of various controls, recommended settings, fail-safe features, etc.  
***Again, the InStream unit should be described as to the operation and function.***
- f) A discussion of how the treatment facilities are to be operated during anticipated maintenance procedures, and under less than design loading conditions, if applicable, such as initial loading on a system designed for substantial growth.  
***This is fairly well covered in the manual.***
- g) A section on laboratory procedures, including sampling techniques, monitoring requirements, and sample analysis.  
***This section of the current manual contains minimal information concerning procedures, sampling techniques, and analysis. More information is needed.***
- h) Recordkeeping procedures and sample forms to be used.  
***There is no description of how records are to be kept. The forms currently shown in the manual are not adequate.***
- i) A maintenance schedule that incorporates manufacturer's recommendations, preventative maintenance, housekeeping schedules, special tools and equipment usage.  
***There is no master maintenance schedule, procedures, or completion forms. Some of the equipment in the appendices have suggested maintenance schedules, but the reviewer has to search for them in the appendices, making it difficult to find. Routine maintenance needs to be specified in a table separate from the equipment appendices.***
- j) A section on safety.  
***The section on Occupational Health and Safety is fairly well done.***
- k) WAC 173-240-080 (4) (k): A section that lists the spare parts inventory, addresses of local suppliers, equipment warranties, and appropriate equipment catalogues.  
***This section does not exist as a stand alone section. Some of the information exists in the equipment appendices and again the reviewer has to search this out, making it difficult to find.***
- l) Emergency plans and procedures.  
***There is no section detailing emergency plans and procedures in the manual.***

### **GENERAL COMMENTS**

- 1) Section 2.2 of the O&M Manual references Figure 2, but there is no indication as to where the figure is located. It was found in Appendix G. **Section 2.2 should direct the reviewer to Appendix G.**
- 2) Section 2.2.1 of the O&M Manual references the need to remove solids should they build up. **However, there is no description given as to how a determination will be made when to remove the solids. Also, there is no description of the method that will be used to actually remove the solids.**
- 3) Table 3.1 in Section 3.1 contains a **"Daily Surveillance Report"**. This report form does not address the InStream unit. In the description of the lagoon aerator, it says that the aerator must be **"running properly"** and be **"properly aligned"**. **There is no description of how to determine if the aerator is properly running or properly aligned. In the description of the section "Lagoon Site", the word "into" should be inserted into the last sentence.**
- 4) In Section 3.2, no criteria is provided that would be used to determine if sludge removal is necessary. **These criteria should be described in detail in the Manual. Also, section 3.2 should reference the Appendix F forms, because the forms address instructions in performing maintenance to the aeration lagoon. Define "inert matter".**
- 5) Section 3.2.1 describes lagoon cleaning, but there is no basis given for determining when cleaning is necessary. This section also says that sludge measurement in both the aeration and stabilization lagoons will be conducted once per five year permit cycle. **There is no description as to what measurement method will be used and how it will be determined if sludge removal is necessary. Condition S2 of the ST 4507 permit also requires that the results will be reported to Ecology and that is not mentioned. Has the United States Department of Energy (USDOE) applied for a Biosolid permit or notice of intent (NOI)?**
- 6) In Section 3.2.4, which describes algae bloom, the words **"to grow"** are repeated in the first sentence. Also, in the section on volume loss, sludge buildup is given as a possible cause of volume loss. **However, there is no criteria given for determining if a sludge buildup has occurred or if the excess sludge must be removed. How sludge is to be monitored/measured should be clearly described in the manual.**
- 7) In Section 3.2.4, **"Low Dissolved Oxygen"** is discussed and it is stated that possible **"toxic materials"** in the wastewater could be the cause of low dissolved oxygen levels. **What**

**toxic materials are these, where do they come from, and what is being done to prevent their discharge to the groundwater? This needs to be explained in detail.**

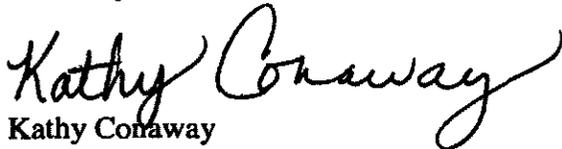
- 8) Section 3.2.4, "**Problems and Possible Solutions**" makes no mention of the InStream unit and how it might contribute to, or help solve, operational problems. **Should InStream be mentioned as a possible solution to problems?**
- 9) Section 5.0 on "**Maintenance**" refers to Table 5.0. It should refer to Figure 5.0. **This section also makes no references about maintenance of the InStream unit.**
- 10) Section 6.0 refers to possible radiological hazards and says that samples will be taken "**as deemed necessary by the Wastewater Lagoon Manager**". **The criteria to be used to determine if it is necessary to take a sample for testing should be identified and listed.**
- 11) In Ecology's *Notice of Correction, May 30, 2002, Docket Number 02NWPKW -4031* letter, (NOC) Violation #1 and #2 found inadequate calibration of system flow meters. USDOE's response letter, *02-RCA-0413, June, 2002*, states that procedures for calibration have been prepared and presents those procedures as attachments 4 and 5 to the letter. **These procedures are O&M Manual procedures but are not included (or could not be found) in the manual. In addition, there is no reference to the procedures in the manual.**
- 12) Ecology's NOC letter, violation #3, concerned inadequate record keeping of the calibration records. USDOE's response letter refers to the *MAXIMO Preventative Maintenance system* as the method that will be used to document maintenance procedures. **The O&M manual does not describe the MAXIMO system and how it will be used when performing sewage lagoon maintenance.**
- 13) Ecology's NOC letter, violation #4, concerns the inadequacy of the O&M manual regarding maintenance procedures. USDOE's response letter includes attachments 4, 5, 7, 8, and 9 which are detailed maintenance procedures for various lagoon system components. **These attachments are not included in the O&M manual.**
- 14) Ecology's NOC letter, concern (11), states "**Sludge depth measurement methods are not consistent.**" It is further stated that, "**This method needs to be described in detail in the O&M Manual**". The USDOE response letter states that, "*...the O&M manual will be revised to address sludge measuring techniques.*" **The current Manual revision does not contain a sludge measurement procedure.**
- 15) Ecology's NOC letter, concern (12) stated, "**There is no reference in the Operation and Maintenance Manual on what level of sludge in the aeration and stabilization lagoons**

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**will determine sludge removal.” USDOE’s response letter states, “Research into trigger levels for removal of sludge based on the 100-N lagoon flows, wastewater characteristics, and other factors has been initiated.” However, no sludge removal criteria are included in the current revision of the Manual.**

If you have any questions regarding this letter, please feel free to contact me at the above address, or call me at (509) 736-3045.

Sincerely,



Kathy Conaway  
Environmental Specialist  
Nuclear Waste Program

KC:nc

cc: D. J. Ortiz, USDOE  
Sally A. Sieracki, USDOE  
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Environmental Portal, LMSI  
Administrative Record: ST 4507