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| Minnesota Pollution Control Agency (MPCA), 520 Lafayette Road North, St. Paul, MN 55155-4194 | Sludge Storage and Disposal Design Checklist  NPDES/SDS Permit Program  National Pollutant Discharge Elimination System (NPDES)/ State Disposal System (SDS)  Doc Type: Plan/Specification Review Summary |

**Purpose:** This checklist is intended for use by design engineers, to assist Minnesota Pollution Control Agency (MPCA) review engineers in the efficient review of planning and design documents. The information requested is the minimum technical data necessary for MPCA staff to review proposed designs and to determine whether there is reasonable assurance that the treatment system, when constructed, will comply with permit conditions, regulations, and criteria of the MPCA.

**Instructions:** The information in this checklist is based on the ***Recommended Standards for Wastewater Facilities published by the Great Lakes Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers (Ten State Standards) 2014 Edition,*** other accepted engineering references, and MPCA recommendations. Specific references, other than Ten State Standards, are listed where appropriate. The checklist is organized according to the numbering sequence found in Ten State Standards to allow for ease in locating the entire content and text of the recommendations.

The checklist is designed so that a “**yes**” answer indicates compliance with Ten State Standards et al.

A “**no**” answer indicates a deviation from Ten State Standards et al. Answering “no” to any question will require justification that can be provided at the end of the checklist and possibly supporting information, from wastewater treatment plant operational data, to demonstrate how the intent of the recommendation will be met. Additional information may be requested based on site specific conditions.

A “**N/A**” answer means not applicable because the equipment associated with the question is not included in the design.

Wastewater Treatment Facility information

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| --- | --- | --- | --- | --- |
| **Date** (mm/dd/yyyy): | |  | **MPCA Project No:** |  |
| **Title of project:** |  | | | |

Permittee information

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Facility name: | |  | | | | |
| Contact name and title: | | |  | NPDES/SDS Permit No: | MN |  |
| Email: |  | | | Phone number: |  | |

Design Engineer information

|  |  |  |  |
| --- | --- | --- | --- |
| Contact name: |  | Contact phone number: |  |
| Email: |  |  |  |

**Phase:**  Planning Phase  Design Phase

**Type of sludge:**  Primary  Secondary  Waste Activated  Combination

Influent Characteristics

|  |  |  |
| --- | --- | --- |
| **Solids concentration** |  | % |
| **Sludge flow per day** |  | gallons per day |

89. Sludge Storage and Disposal

*(Only use a “NA” answer if the equipment associated with the question is not included in the design)*

**89.1 Storage**

| ***89.11 General*** | **Yes** | **No** |
| --- | --- | --- |
| Do sludge/biosolids storage facilities consist of any combination of drying beds, lagoons, separate tanks, additional volume in sludge stabilization units, pad areas or other means to store either liquid or dried sludge/biosolids? |  |  |

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| ***89.11 General (continued)*** | | | | **Yes** | | | **No** | | | **N/A** | | |
| Does the design provide for odor control in sludge/biosolids storage tanks and sludge/biosolids lagoons including aeration, covering, or other appropriate means? | | | |  | | |  | | |  | | |
| Identify types of sludge/biosolids storage facilities: |  | | | | | | | | | | | |
| Identify methods to control odor: |  | | | | | | | | | | | |
| Do sludge/biosolids storage facilities, designed to store liquid sludge/biosolids, seep at a rate less than 500 gallons per acre per day? (Minn. R. 7041.0900) | | | |  | | |  | | |  | | |
| Are areas used to store dewatered biosolids paved with asphalt, concrete, or other material, capable of meeting the seepage requirement of less than 500 gallons per acre per day and able to bear the weight of unloading and loading trucks and equipment without cracking? (Minn. R. 7041.0900) | | | |  | | |  | | |  | | |
| Is the pad used to store dewatered biosolids sloped and curbed to collect all runoff water and is this water routed to the wastewater treatment facility? (Minn. R. 7041.0900) | | | |  | | |  | | |  | | |
| ***89.12 Volume*** | | | | | | | | | | | | |
| Are rational calculations justifying the number of days of storage to be provided based on the total sludge handling and disposal system? Refer to Paragraphs 84.7 and 85.8 for anaerobically and aerobically digested sludge production values and provide justification in the basis of design for biosolids production values for other stabilization processes. **Provide calculations.** | | | | |  | | |  | | |  | |
| If land application is the only means of disposal, is storage provided based on the following, at a minimum: inclement weather effect on access to the application land; temperatures including frozen ground and stored biosolids cake conditions; haul road restrictions including spring thawing conditions; area seasonal rainfall patterns; cropping practices on available land; potential for increased sludge volumes from industrial sources during the design life of the plant; available area for expanding biosolids storage; and appropriate pathogen reduction and vector attraction reduction requirements? | | | | |  | | |  | | |  | |
| Is a minimum range of 120 to 180 days storage provided for the design life of the plant unless a different period is approved by the reviewing authority? | | | | |  | | |  | | |  | |
| Identify numbers of days of storage available: | |  | days | | | | | | | | | |
| **89.1 Sludge Storage Lagoons** | | | | | | | | | | | | |
| ***89.21 General*** | | | | | | | | | | | | |
| Is the character of the digested sludge such that with the design mode of operation, offensive odors will not result? | | | | |  | | |  | | |  | |
| Are adequate provisions made for other acceptable sludge handling methods in the event of upset or failure of the sludge digestion process? | | | | |  | | |  | | |  | |
| ***89.22 Location*** | | | | | | | | | | | | |
| Are sludge/biosolids lagoons located as far as practicable from inhabited areas or areas likely to be inhabited during the lifetime of the structures? | | | | |  | | |  | | |  | |
| Does the siting of sludge/biosolids lagoons comply with the requirements of the reviewing authority? | | | | |  | | |  | | |  | |
| ***89.23 Seal*** | | | | | | | | | | | | |
| Are there adequate provisions to seal the sludge/biosolids lagoon bottoms and embankments in accordance with the requirements of Paragraph 93.422 to prevent leaching into adjacent soils or ground water? | | | | | |  | | |  | | |  |
| Will the seal be protected to prevent damage from sludge/biosolids removal activities? | | | | | |  | | |  | | |  |
| Will groundwater monitoring be conducted if required by the reviewing authority in accordance with Paragraph 93.65? | | | | | |  | | |  | | |  |
| ***89.24 Access*** | | | | | | | | | | | | |
| Are there provisions for pumping or heavy equipment access for sludge/biosolids removal from the lagoon on a routine basis? | | | | | |  | | |  | | |  |
| ***89.25 Supernatant Disposal*** | | | | | | | | | | | | |
| Will lagoon supernatant be returned to the wastewater treatment process at appropriate points and rates? | | | | | |  | | |  | | |  |
| Will sampling equipment be provided as needed to monitor supernatant waste streams? | | | | | |  | | |  | | |  |

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| **89.3 Disposal** | | | | | | | |
| ***89.31 General*** | | **Yes** | | **No** | | **N/A** | |
| Are drainage facilities for biosolids vehicle transfer stations provided to allow any spillage or washdown material to be collected and returned to the wastewater treatment plant or sludge/biosolids storage facility? | |  | |  | |  | |
| ***89.32 Sanitary Landfilling*** | | | | | | | |
| If biosolids and biosolids residues will be landfilled, will they be disposed of in an approved landfill under the terms and conditions of the regulatory agency? | |  | |  | |  | |
| Location of final disposal: |  | | | | | | |
| ***89.33 Land Application*** | | | | | | | |
| Are the specific design and approval requirements of the reviewing authority factored into the land application plan for municipal biosolids? | |  | |  | |  | |
| Does the design of biosolids handling and storage facilities include, at a minimum: sludge stabilization process, appropriate pathogen and vector attraction reduction, biosolids characteristics including the presence of inorganic and organic chemicals, application site characteristics (soils, groundwater elevations, setback distance requirements, etc.), local topography and hydrology, cropping practices, spreading and incorporation techniques, population density and odor control, and local groundwater quality and usage? | |  | |  | |  | |
| Are biosolids mixing equipment or other provisions to assist in the monitoring of land applied biosolids considered in the design of biosolids handling and storage facilities? | |  | |  | |  | |
| Are alternative biosolids disposal options available to ensure the biosolids is properly managed if it cannot be land applied due to inclement weather and cropping practices? | |  | |  | |  | |
| Will application of biosolids on land which is used for growing food crops to be eaten raw, such as leafed vegetable and root crops, be avoided? | |  | |  | |  | |
| ***89.34 Sludge Lagoons for Disposal*** | | | | | | | |
| Will biosolids disposal be managed such that lagoons will not be used for ultimate disposal of biosolids due to odor potential, area and volume required, and possible long-term problems from groundwater contamination? | |  | |  | |  | |
| ***89.35 Other Disposal Methods*** | | | | | | | |
| If other methods of biosolids disposal are proposed, does a detailed description of the technique and design data accompany the plans? | | |  | |  | |  |

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| Justification for all questions answered with a “no”: |
|  |
| Additional comments: |
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**References**

GLUMRB (2014 Edition) *Recommended Standards for Wastewater Facilities* (Ten State Standards), Health Research, Inc., Health Education Services Division, Albany NY.

Minnesota Administrative Rules, Chapter 7041, Sewage Sludge Management, Official Publication of the State of Minnesota. (Minn. R. 7041.0900)