

GROUNDWATER DISCHARGE COMPLIANCE INSPECTIONS

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- I. Groundwater Program is covered in 3.2.4 of the Manufacturer's Guide (Direct Discharge)
- II. Permitting vs. Compliance -- Division of Responsibilities

<u>Permits Unit Role</u>	<u>District Office Role</u>
<ul style="list-style-type: none">• Administrative processing• Basis of Design (general)• Technical review<ul style="list-style-type: none">• Hydro-geological<ul style="list-style-type: none">• Hydro-geological Studies• Sampling and Analysis Plans (SAP)• Monitoring Well Networks• Soils<ul style="list-style-type: none">• Slow Rate and Rapid Infiltration Discharge Beds• Permeability Test Review• Discharge Management Plan (DMP) Review• Phosphorus Adsorption Analysis• Sodium Adsorption Analysis• Permit generation and issuance	<ul style="list-style-type: none">• Compliance<ul style="list-style-type: none">• Permit Conditions• Overall Facility Operations• Compliance Monitoring Reports• Groundwater Concentrations• Schedules of Compliance• Administrative Consent Orders• Compliance and Enforcement Action• Part 41 Construction Permitting and Review• Basis of Design (technical review)• Facility Classification• Provide Application Comments and Schedule of Compliance (SOC) Recommendations

III. Groundwater Discharge Authorization (Permit) Application

- For most dischargers, generally only a minimal number of pages is applicable
- Pages 1-13 contains guidance on completing the forms of the application
- Pages 14-17 must be filled out by everyone (general information)
- Index on page 18, which directs the applicant to the appropriate additional pages that must be included in the application
- Larger discharges may require:
 - Hydro-geological Studies
 - Soils Data
 - Toxicological Data
- Application and Guidance Documents are located on the DEQ website or you can contact Permits Unit staff at (517) 373-8148

IV. Why is Permit Compliance Important?

- DEQ records estimate 40 billion gallons of wastewater is discharged into the groundwater on an annual basis
- ~1.1 million household wells and public water supplies rely on groundwater for drinking water
- As a result, ~4 million people depend on groundwater for drinking water
- 11,000+ inland lakes receive a percentage of water from recharge by groundwater

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V. Discharge General Requirements

- Cannot be injurious or cause nuisance conditions
- Maintain adequate isolation distance
- Be protective of groundwater quality
- Cannot create site of environmental contamination (i.e. Rule 2204 of Part 22 and Part 201)
- Groundwater discharges in close proximity to available sanitary sewer service is not recommended.

VI. Groundwater Discharge Compliance Inspection

- All permittees are subject to a compliance inspection
- Types of inspections
- Reconnaissance – surveillance of discharge
 - Time: typically 1-2 hours
- Compliance Evaluation Inspection - high level inspection
 - Time: typically 4-8 hours
- We follow the water flow:



VII. Compliance Inspection Objectives

- Overall condition of the facility
- Evaluate operation and maintenance activities
- Completeness and accuracy of compliance records
- Is the system achieving required treatment?
- Is permittee compliant?
- If non-compliant, how can we assist in returning to compliance?

VIII. Regulatory Authority

- State of Michigan Program
 - Self Monitoring Program, DEQ verifies compliance
- Groundwater discharge permits issued pursuant to Part 31 ("Water Resources Protection") of the Natural Resources and Environmental Protection Act (NREPA), Public Act 451 of 1994, as amended (Act 451)
- Rules promulgated as Part 22 ("Groundwater Quality")
- Part 201 ("Environmental Remediation") of NREPA

SEARCH MICHIGAN LAW ONLINE:

www.legislature.mi.gov

MCL Search (First Section of Part):

324.3101 (Part 31, NREPA)

324.20101 (Part 201, NREPA)

SEARCH MICHIGAN RULES
(The Administrative Code) ONLINE:

www.michigan.gov/orr

Michigan Administrative Code

- Search by Department (DEQ)
- Water Bureau
- Part 22, Groundwater Quality

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IX. How Do You Prepare for an Inspection?

- Common Compliance Inspection Elements:
 - Permit Review
 - Compliance Monitoring Reports
 - Records Retention and Reporting
 - Operator Certification
 - Physical Plant Inspection
 - Facility Operations and Maintenance
 - Operation and Maintenance Manual
 - Site Security and Signage
 - Sampling Policies and Procedures
 - Effluent Discharge
 - Biosolids/Residual Solids Management

X. Permit Review

- Copy of the permit or Administrative Consent Order (ACO)
- Is the permit current?
- If the permit is expired, was re-application made?
- Does the information in the permit, adequately reflect current operations (e.g. flows, discharge location, monitoring points, etc.)?
- Meeting permit-required Schedules of Compliance (SOC)

XI. Compliance Monitoring Reports (CMRs)

- If CMRs are required for the facility, have they been submitted in accordance with permit requirements?
- Are the CMRs complete?
 - Flow, Sampling Parameters, Sampling
 - Location(s), and Signed by Certified Operator
 - Timely Submittals
 - Permit Exceedances
 - Report Exceedances (and follow Rule 2227 of Part 22)
- Have the extent and nature of exceedances been evaluated?
 - This can be a useful tool in troubleshooting problems.

XII. Records Retention and Reporting

- Retained records (minimum of 3 years)
- Determine division of sample analysis
 - In-House vs. Contract Laboratory
- Analytical results/bench sheets consistent with data supplied on CMRs
- Review monitoring records
 - Effluent and groundwater
 - Chain of custody records
- Review laboratory QA/QC procedures

XIII. Operator Certification

- Verify facility classification
- District staff to classify facility operations/certification required
- Does the Operator have a current certification covering all aspects of the facility operations?
- Have the wastewater system operators received critical training on treatment process control, safety, sampling, laboratory analyses procedures etc.?
- Is a copy of the certification on-site?
- Does the DEQ have a copy on file?

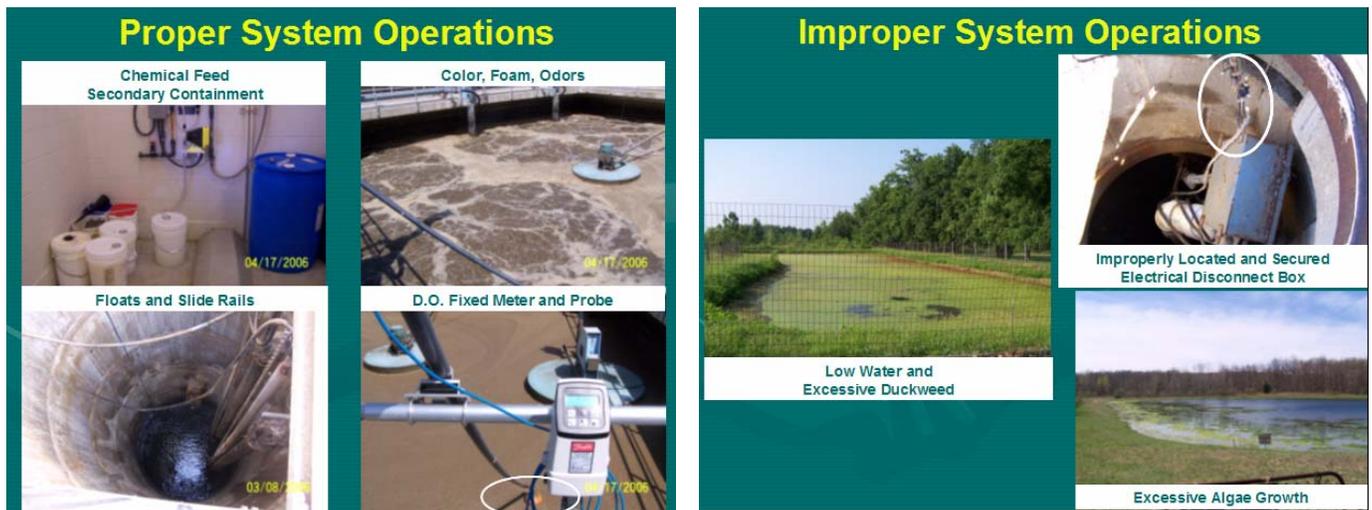
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XIV. Facility Operation and Maintenance Review

- Influent Characteristics
- Process Control
- Unit Operations
- Water Treatment Additives (WTAs)
 - Use requires prior approval from DEQ Water Toxics Unit
- Equipment Condition
- Maintenance and Operation Staff
- Safety Controls
- Effluent Characteristics
- Monitoring Wells
- Disposal Area

XV. Facility Operation and Maintenance Review -- Review of Collection System

- Service Area Map(s)
- Who maintains the system?
- Inspect pump stations
 - System Operation
 - Alarm System
 - Back-up Power
 - Integrity



XVI. Operation & Maintenance Manual

- Is the O&M Manual current and does it adequately reflect facility operations
- Suggested minimum content
 - Background Information (History and Service Area Map)
 - Maps (Site, Flow Pattern, Collection System, etc.)
 - System Operations (Basis of Design)
 - Copy of Permit and Operator Certification
 - Start-Up and Shut-Down Procedures
 - Maintenance Schedule and Procedures
 - Emergency Procedures and Contacts, Including Back-Up Power
 - Field Data Collection Forms
 - Records Retention
 - Monitoring Program to Monitor Process Efficiency
 - Sampling and Laboratory Procedures
 - Biosolids/Residual Solids Management
- Staff and Mock Exercise Training

Refer to DEQ Part 22 Guide Sheet VI
"Operations and Maintenance Manual"
Accessible on the DEQ Website

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XVII. Site Security and Signage -- Appropriate Site Security and Signage

- Facility
- Pump Stations
- Disposal Area

XVIII. Sampling Policies and Procedures

- Formal Policies and/or Procedures
 - Documented in O&M Manual
 - Approved Sampling and Analysis Plan (SAP) on file with DEQ
- Sample Location(s) Conducted in Accordance With Permit
 - Influent, Effluent and Monitoring Wells
 - Flow Measurement Method and Calibration Records
- How are staff trained to collect samples?
- Sample Collection Containers
 - Laboratory Supplied or Sanitized On-Site
- Is the appropriate PPE utilized?

XIX. Sampling Policies and Procedures

- Written Procedures, Records Retention, Sampling Forms, Chain-of-Custody, QA/QC Procedures and Properly Trained Personnel
- Influent and/or Effluent Sampling
 - Representative Sample Location
 - Composite or Grab Samples
 - Sampling Procedures
- Groundwater Sampling
 - Monitoring Well Location(s) and Integrity
 - Depth to water measurements, well purging and sample collection
 - Are monitoring wells and staff gauges surveyed?
 - Verify groundwater flow direction for proper placement of MWs
 - Any potential Part 201 compliance issues

XX. Disposal Area Review

- Discharge Management Plan (DMP)
 - Copy retained on-site
 - Is the DMP being followed?
 - Overall condition of disposal area
 - Ponding or runoff
 - System components operating correctly
 - Entire disposal area being utilized
 - General Maintenance
 - Nuisance Concerns (odors or overspray)
- Biosolids/Residual Solids Management
 - Approved pursuant to Part 24 for land application
 - Proper notification to DEQ Biosolids staff
 - Quantity, location, frequency of applications
 - Isolation distance to nearest sensitive receptors

XXI. So How Can You Stay in Compliance With Your Permit?

- Read and understand your permit.
- Educate your employees so they don't unknowingly create a problem or violation.
- If you aren't sure if DEQ needs to be called for a problem, call anyway.
- Get to know your compliance person so you can work together when problems arise.
- We both share the same goal -- maintaining compliance and protection of public health and the environment

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XXII. What Happens Next? Closing Conference Discussion Elements

- Areas in compliance
- Areas that need improvement
- Areas/Items of noncompliance identified
- Additional information DEQ may need
- Information DEQ will be providing to the facility
- Identify DEQ next steps (e-mail, letter, another inspection)

XXIII. Common Non-Compliance Issues

- Unauthorized Discharges
- Noncompliance Reporting
- Not having a Certified Operator
- Failing to send something that was required (or not timely sending)
- Not collecting and/or maintaining required data
- Asset Management (growth, infrastructure upgrades and O&M, customer rates, future upgrades based on rules and standards changes)

XXIV. EDTA

- Ethylene diamine tetra acetic acid
- Problematic last 3-5 years
- Extensively used (over 100,000 metric tons produced annually)
 - Boiler Additive
 - Cleaners/Detergents
 - Preservative in packaged food Items
 - Dairy and Beverage Industry
 - Cosmetics Additive
 - Medical and Dental
- Complex Interaction of pH, BOD and EDTA
- Very persistent
- Chelates metals (mobilizes them), which are normally bound to soil and leaches into Groundwater.
 - "Aesthetic" Metals Such as Fe and Mn
 - Toxic Metals Including Co, Pb, Ni, Cr
- Observed at several food processor sites
- Problematic in high BOD situations
- It is not degraded or removed during conventional wastewater treatment. Adjustment of pH and sludge residence time may result in improved mineralization of EDTA.
- Science has yet to determine how much EDTA may be land applied without causing metals to leach.

XXV. Environmental Science and Services Division Operator Training

- **Technical On-Site Assistance**
- **(Phone: 517-241-7199 or www.michigan.gov/deqoperatortraining)**

TRAINING WORKSHOPS

- Activated Sludge
- Oxidation Ditches
- Sequencing Batch Reactors
- Attached Growth
- Waste Stabilization Lagoons
- Anaerobic Digestion
- Laboratory (I, II, III)
- Phosphorus Removal
- Industrial Wastewater (I & II)
- Biosolids

CERTIFICATION EXAMS

- Industrial/Commercial (Nov.)
 - Municipal (May)
- Apply at least 45 days prior**

This document was produced by Water Bureau and Environmental Sciences and Services Division for guidance and compliance assistance purposes. Reliance on information from this document is not usable as a defense in any enforcement action or litigation