

# Electronic Data Management

Wisconsin Department of Natural Resources  
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# Electronic Data Management

- Overview

- Electronic Data from WPDES permit holders is collected via eDMRs
- Data reporters are verified and tracked via WAMS
- Data is stored and analyzed using a custom designed database



# Data Storage

- WI DNR stores wastewater data in our database system, called the System for Wastewater Applications, Monitoring and Permits
- Otherwise know as:

**SWAMP**


# SWAMP

SWAMP 11.5.0 - Production

File Edit View Data Window Help



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**SWAMP** [New Features](#)

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- Permit Documents

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SWAMP WEB


Import Data

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Tasks

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# About SWAMP

- Designed in 1998
- Implemented in 1999
- Currently version 11.5.0 is in use
- Oracle based data processing
- User interface constructed with PowerBuilder
- Used for CAFO, wastewater and stormwater permit tracking and data analysis
- Also used to store documents electronically



# More About SWAMP

- It has strict user level controls
- Initial permittee data input is limited
  - Pros
    - Significantly reduces user input error
    - Makes it easy to keep processes uniform
    - Makes it easy to maintain data standardization
  - Cons
    - Significant bottleneck for changes
    - Limited overall knowledge of the system
    - System can be cryptic to new users



# SWAMP is a legacy system

- After initial design and implementation, SWAMP has been significantly expanded
- Additional functionality added as needed
- Sometimes has issues due to piecemeal expansion
- The department has retained one of the original designers



# Data Storage

- Like any database, you need a “space” to put data
- If the table isn’t there, the data can’t be stored
- Tables have been added as regulatory requirements have increased
- Data is available for review by regulators





Permit		Effective	Expires
0023370-10-2	BELOIT WASTEWATER TREATMENT FACILITY	07/01/2022	09/30/2025

- Monitoring Requirements
- Monitoring Data**
- Violations, Warnings & Exceedances
- Reports

**Data by Form** | eForm | Document | Archive Data | Data in Error

Form: All Forms | Year: All Years

Doc ID	Form Name	Reporting Begin Date	Reporting End Date	Received Date	Review Date
508559	Wastewater Discharge Monitoring Lor	03/01/2023	03/31/2023	04/14/2023	00/00/00
508558	Wastewater Discharge Monitoring Lor	02/01/2023	02/28/2023	03/09/2023	00/00/00
510349	Wastewater Discharge Monitoring Shc	01/01/2023	03/31/2023	02/16/2023	00/00/00
508557	Wastewater Discharge Monitoring Lor	01/01/2023	01/31/2023	02/16/2023	00/00/00
503108	Wastewater Discharge Monitoring Lor	12/01/2022	12/31/2022	01/11/2023	00/00/00
506691	Land Application Monitoring Form	11/01/2022	12/31/2022	01/06/2023	04/06/2023
503107	Wastewater Discharge Monitoring Lor	11/01/2022	11/30/2022	12/15/2022	00/00/00
504744	Wastewater Discharge Monitoring Shc	10/01/2022	12/31/2022	11/01/2022	00/00/00
503106	Wastewater Discharge Monitoring Lor	10/01/2022	10/31/2022	11/14/2022	00/00/00
501800	Land Application Monitoring Form	09/01/2022	10/31/2022	01/06/2023	00/00/00
501796	Wastewater Discharge Monitoring Lor	09/01/2022	09/30/2022	10/11/2022	00/00/00
501795	Wastewater Discharge Monitoring Lor	08/01/2022	08/31/2022	09/15/2022	10/05/2023

**Averages and Totals**

Form Information

Results by Month

Results by Samp Pt

Results by Parameter

Graph

View Form

Pathogen/Vector

Details

Report



# Data storage set up

- SWAMP is used for permit drafting
- The drafter can copy parameters for each sample point from another permit, using the existing permit, or select individually from a picklist
- Drafters have the ability to add, delete or modify the individual parameters during drafting
- Sampling frequency, method, etc. are all user selectable during drafting

# Monitoring Requirements

SWAMP 11.5.0 - Production

File Edit View Data Window Help

Draft Permit: 0001019 ARDISAM INC

Permit No: 0001019-03-0

Process Type: Reissue

Status: Drafting Permit

Permit Detail **Draft Permit** Documents Checklist

Permit Sections: (DoubleClick to open)

- Table of Contents
- Cover Page
- Pretreatment
- Standard Requirements
- Summary of Reports Due

Open Section

Edit Section List

Pretreatment Input

Sample Point Number	Sample Point Location, Waste Type/Sample Contents, and Treatment Description (as applicable)	Short Description
002	Representative samples shall be taken from the drain pipe to the plastic drum collectin	Three-Stg. Washer - Upstairs
003	Representative samples shall be taken from the overflow of the stripping tank rinse du	Stripping Tank Discharge
005	Parts cleaner - self contained, not connected to sanitary sewer. No pretreatment pro	Parts cleaner

Monitoring Table Notes Input & Footnotes EPA Category

Parameters: All parameters

Order	Start Date	End Date	Parameter Number	Parameter Description	Unit
1	06/01/2023	06/01/2033	155	Cyanide, Total	mg/L
2	06/01/2023	06/01/2033	87	Cadmium, Total Recoverable	mg/L
3	06/01/2023	06/01/2033	133	Chromium, Total Recoverable	mg/L
4	06/01/2023	06/01/2033	147	Copper, Total Recoverable	mg/L
5	06/01/2023	06/01/2033	264	Lead, Total Recoverable	mg/L
6	06/01/2023	06/01/2033	315	Nickel, Total Recoverable	mg/L
7	06/01/2023	06/01/2033	430	Silver, Total Recoverable	mg/L
8	06/01/2023	06/01/2033	553	Zinc, Total Recoverable	mg/L
9	06/01/2023	06/01/2033	507	Total Toxic Organics	mg/L

- Draft
- Existing
- Copy Limits...

Regenerate  
Open Section  
Picklist  
Copy...  
Limits  
Save  
OK  
Cancel

Ready



# Automatic data analysis

- SWAMP validates entered data by comparing it to parameters which can include-
  - Units of measurement
  - Range of reported data
  - Variation from established data sets
  - Testing laboratory certification
  - Missing or late reporting
  - a variety of other parameters



# Data is automatically flagged

- Any instance of out of spec data automatically generates a “flag” tied to that WPDES permit
- The types of flags vary from “warnings” to “violations”
- Flags are accessible to any regulator with appropriate permissions
- Flags can be searched by date range for each WPDES permittee
- Assigned regulatory staff check their permitted facilities on a regular basis

# Flags

SWAMP 11.5.0 - Production - [Monitoring]

File Edit View Data Window Help



Permit	Effective	Expires
0023370-10-2	BELOIT WASTEWATER TREATMENT FACILITY	Specific Permit
		07/01/2022 09/30/2025

**Violations & Warnings** PAL/ES Pretreatment NON Letter

Form: All Forms Form Begin Date: 07/01/2000 Form End Date: 09/30/2025

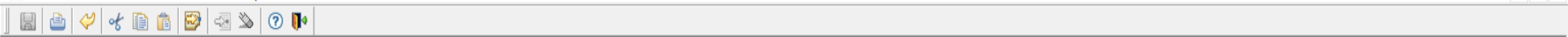
Violation Type: All Action Taken: Review Needed

Begin Date	End Date	Sample Pt #	Description	Re: ^
06/01/2015	06/30/2015	701	Suspended Solids, Total under reported. Expecting 30 results in mg/L units. (Daily). Only 29 r	
05/01/2015	05/31/2015	701	Suspended Solids, Total under reported. Expecting 31 results in mg/L units. (Daily). Only 30 r	
04/01/2015	04/30/2015	701	Suspended Solids, Total under reported. Expecting 30 results in mg/L units. (Daily). Only 29 r	
02/01/2015	02/28/2015		Form with reporting period of : 01-FEB-15 to 28-FEB-15 was late. Due on 21-MAR-15 receive	
02/01/2015	02/28/2015	701	CBOD5 under reported. Expecting 5 results in mg/L units. (5/Week). Only 4 reported (week 4	
02/01/2015	02/28/2015	701	CBOD5 under reported. Expecting 5 results in mg/L units. (5/Week). Only 4 reported (week 4	
02/01/2015	02/28/2015	701	Suspended Solids, Total under reported. Expecting 28 results in mg/L units. (Daily). Only 27 r	
05/01/2014	05/31/2014		Form with reporting period of : 01-MAY-14 to 31-MAY-14 was late. Due on 21-JUN-14 receive	
09/01/2011	09/30/2011		Form with reporting period of : 01-SEP-11 to 30-SEP-11 was late. Due on 15-OCT-11 receive	
12/01/2009	12/31/2009	701	Lab ID 145001650 for BOD5, Total is not valid	
12/01/2009	12/31/2009	701	Lab ID 145001650 for BOD5, Total is not valid	
12/01/2009	12/31/2009	701	Lab ID 145001650 for BOD5, Total is not valid	
12/01/2009	12/31/2009	701	Lab ID 145001650 for BOD5, Total is not valid	



# Manual reports

- The data from the eDMR is available in a spreadsheet format
- A variety of other reports are also available to be reviewed as needed



Permit			Effective	Expires	
0001019-03-0	ARDISAM INC	Specific	C	06/01/2023	06/01/2033

- Monitoring Requirements
- Monitoring Data
- Violations, Warnings & Exceedances

**Reports**

**Select Report**

Report Filter:

Report Description
Groundwater Monitoring Form
Labels for Monitoring forms
Labels for Permits
Land Application Annual Label Report
Land Application Monitoring Form
Limit Exceedance Report - EPA Acute Review Criteria (TRC)
Limit Exceedance Report - EPA Chronic Review Criteria
Limit Exceedance Report - WDNR Review Criteria
Missing Forms Report
Non-Reporting Report
PCS DMR Report
Pretreatment Facility Listing
Pretreatment Limit Exceedance Report
Pretreatment Monitoring Form
Pretreatment Notification Status
Pretreatment Periodic Compliance Summary
Wastewater Discharge Monitoring Long Report
Wastewater Discharge Monitoring Short Report

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# Data Entry Forms

- Once a WPDES permit is drafted and “generated” in SWAMP, the system has all the necessary information for entry forms
- These entry forms are called eDMRs, or electronic Discharge Monitoring Reports



# eDMRs

- Web based entry forms
- eDMRs are automatically generated by SWAMP as needed for users based on permit parameters
- They are available to the designated user for each permittee based on their required monitoring frequency

# eDMR

Wisconsin Department of Natural Resources  
 Wastewater Discharge Monitoring Long Report -- 06/01/2023 - 06/30/2023

Facility Name: BELOIT WASTEWATER TREATMENT FACILITY  
 Form Status: [MORE...](#)

[PRINT](#) [First](#) [Back](#) [1 of 4](#) [NEXT](#) [LAST](#)

Sample Point	701	701	701	701	001
Description	INFLUENT TO PLANT	INFLUENT TO PLANT	INFLUENT TO PLANT	INFLUENT TO PLANT	EFFLUENT
Description	Flow Rate	BOD5, Total	CBOD5	Suspended Solids, Total	Flow Rate
Unit	MGD	mg/L	mg/L	mg/L	MGD
Sample Type	CONTINUOUS	24 HR FLOW PROP	24 HR FLOW PROP	24 HR FLOW PROP	CONTINUOUS
Frequency	DAILY	MONTHLY	5WEEK	DAILY	DAILY

[Click to Show Daily Details \(LOD/LOQ and Lab IDs\)](#)

01 - Result					
02 - Result					
03 - Result					
04 - Result					
05 - Result					
06 - Result					
07 - Result					
08 - Result					
09 - Result					

**Summary**

Sample Point	701	701	701	701	001
Description	Flow Rate	BOD5, Total	CBOD5	Suspended Solids, Total	Flow Rate

**Summary Information**

Monthly Avg					
Daily Max					
Daily Min					
Geometric Mean - Monthly					
Week 1 Avg					



# Data addition

- The user completes the required eDMRs
- The user then finalized the form and submits the data
- Submitted data is stored in a temporary buffer
- Overnight, the buffer is scanned and uploaded into the database



# eDMR adds efficiency

- Only one person touches the data
- Less chance for transposition errors or typos
- Tracking an incorrect entry is much simpler
- Reduces departmental resource allocation for data collection



# Data collection

- eDMRs are only available to specific individuals
- WAMS (Web Access Management System) is used to verify a user's identity
- Once verified, they are linked to a specific WPDES permit's eDMR
- Logging onto the system and finalizing the forms are considered a digital signature by that individual
- Identities are not transferrable, a change in staff requires a new WAMS ID

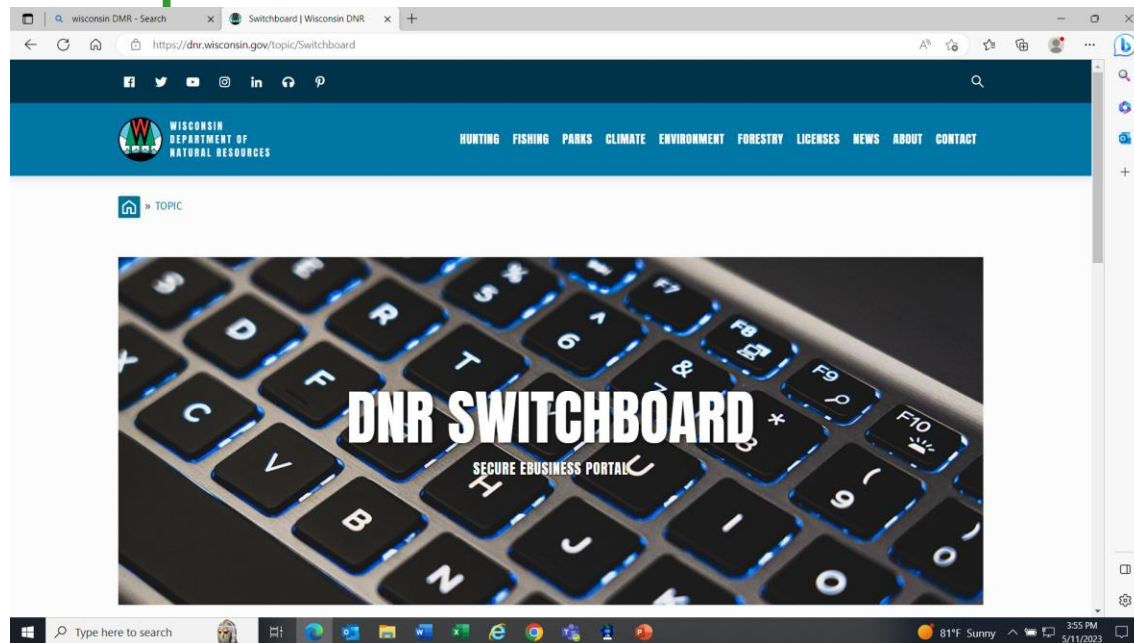


# WAMS

The **State's Web Access Management System** (WAMS) allows authorized individuals to access State Internet applications using the same means of identification for all State Web applications. For example, a citizen can use the same Wisconsin User ID and password to acquire overweight trucking permits and Emergency Medical Technician certification

# WAMS access

- WAMS is only accessed through a secure portal
- The DNR Switchboard is the web access portal for eDMRs on WAMS







# Resources

- Switchboard Website  
<https://dnr.wisconsin.gov/topic/Switchboard>
- eReporting help  
<https://dnr.wisconsin.gov/topic/Wastewater/eReporting.html>
- Richard.douglas@wisconsin.gov
- 608-513-5604



Questions?