



Webcast Sponsored by EPA's Watershed Academy

TWIST: The Wastewater Information System Tool

*for Managing Onsite and Clustered
(Decentralized) Wastewater Treatment Systems*

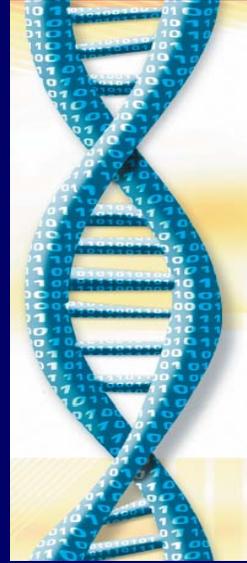


Barry Topping and Sabu Paul, Tetra Tech
Steve Hogue, US EPA

1

Topics for today's webcast

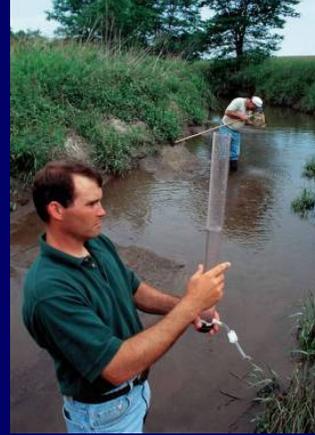
- Overview of watershed and wastewater management issues
- The need for treatment system inventory information
- Accessing and using TWIST
- Other US EPA tools for wastewater management



2

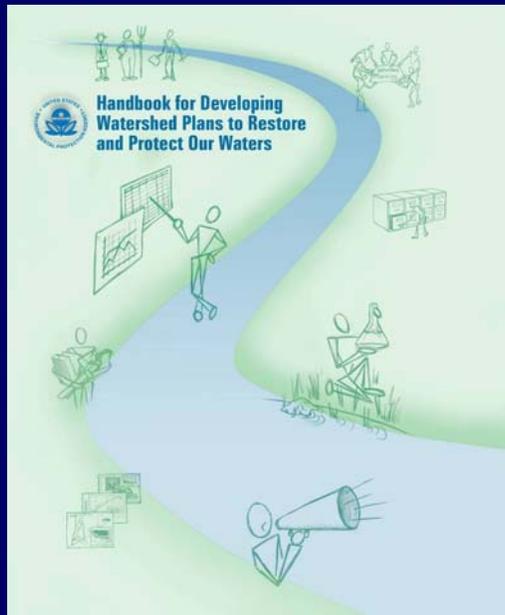
Condition of U.S. surface waters

- Pollutant-impaired waters include* :
 - 45% of assessed rivers and streams
 - 47% of assessed lake acres
 - 32% of assessed bay and estuarine square miles
- Polluted (nonpoint) runoff is mostly to blame
- Chief causes are nutrients, pathogens, and sediment



*National Water Quality Inventory, 2002 Reporting Cycle. About 30% of U.S. waters were assessed by the states for this report.

Watershed Planning Handbook

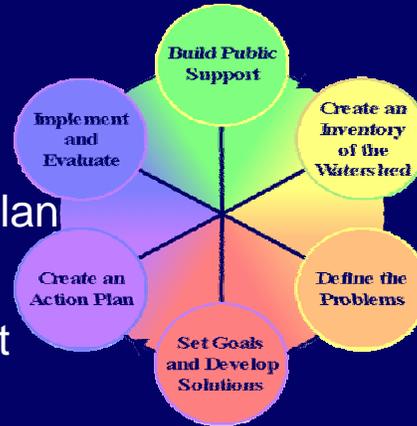


http://www.epa.gov/owow/nps/watershed_handbook/

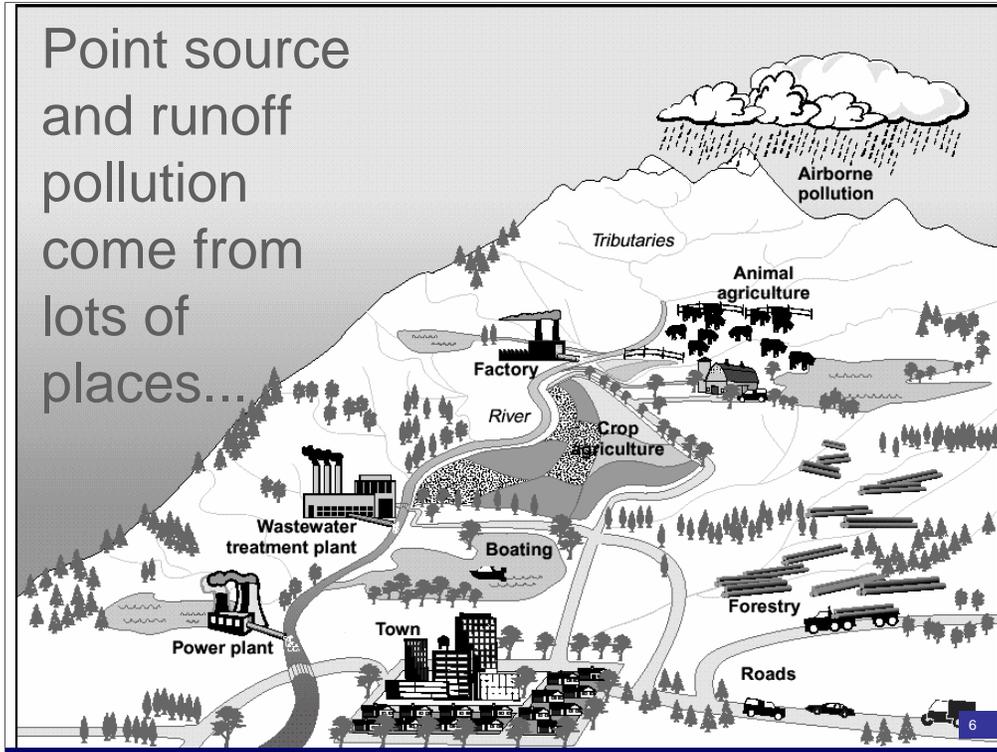
4

Watershed planning steps

- Build partnerships
- Assess the watershed
- Identify goals & BMPs
- Create implementation plan
- Implement the plan
- Measure progress, adapt



Point source
and runoff
pollution
come from
lots of
places...



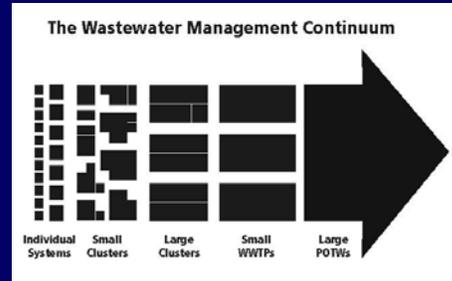
Wastewater pollutants of concern

- Pathogens – bacteria & viruses mainly; plus protozoa, worm eggs
- Nitrogen – causes algal growth in nitrogen-limited (mostly coastal) waters; nitrate can cause “blue baby” syndrome
- Phosphorus – causes algal growth in P-limited (mostly inland fresh) waters
- Others – pharmaceuticals, cleaners, solvents, & other toxics (most of which affect treatment processes)



Sewage treatment

- What are the options?
 - Individual onsite “septic” or advanced wastewater treatment systems
 - Clustered systems with soil infiltration
 - “Package” plants with ditch/stream discharge
 - Centralized plant with lake/river/ocean discharge



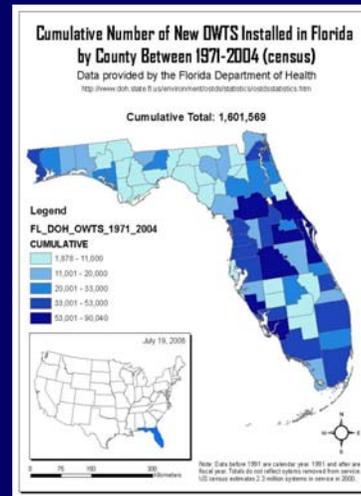
Centralized treatment plants

- Most discharge to rivers, lakes, streams, ocean, & need state/federal NPDES permit
- Some older plants have CSOs or SSOs
- New regulations forcing higher treatment levels
- Upgrades & expanded collection systems costly
- Local opposition to siting some new plants



Decentralized soil-discharging systems

- Individual systems
 - Septic tank with gravity flow
 - Tank with pressure dosing
 - Advanced systems with dosing
- Clustered systems
 - Each home has a tank
 - Effluent collected via gravity or pumped
 - Multiple options for treatment facility
 - Dosed or gravity flow dispersal





Integrated wastewater/stormwater management & low-impact development



- Conservation of natural drainage system, trees & vegetation
- Clustered wastewater treatment
- Open space / greenways provide for wastewater & stormwater dispersal

12

Conserving natural drainages, trees and other vegetation, and soils is the first step in low impact development. Trees and natural forest cover in the Pacific Northwest are terrific “sponges” for storing and slowly releasing stormwater. Comprehensive land use planning, watershed or basin planning, habitat conservation plans, and stream and wetland buffers are good tools to identify and set aside natural areas within a community and on an individual site.

Once conservation areas are established for each site, the designer can then work within the developable area envelope and evaluate the effects of design options on these areas. A significant portion of trees and other vegetation should be left in a natural state and not developed.

Rocky Mountain
Institute
Cost/Benefit
Analysis of
Centralized and
Decentralized
Wastewater
Options

www.rmi.org

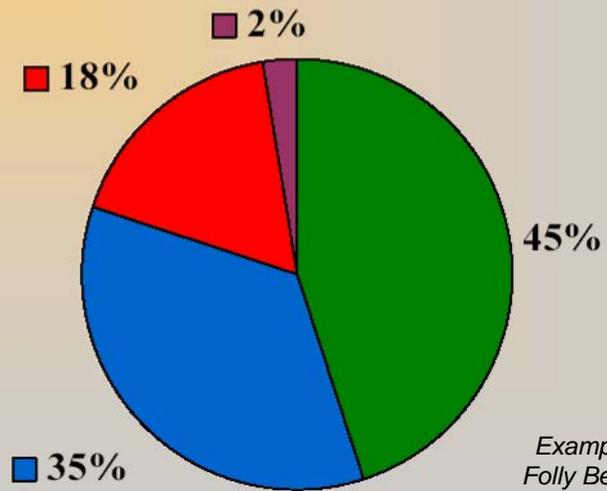
**Valuing Decentralized Wastewater
Technologies**

A Catalog of Benefits, Costs, and Economic Analysis Techniques



Prepared by Rocky Mountain Institute
For the U.S. Environmental Protection Agency
November, 2004

Performance Status of Inspected Systems



*Example from
Folly Beach, SC*

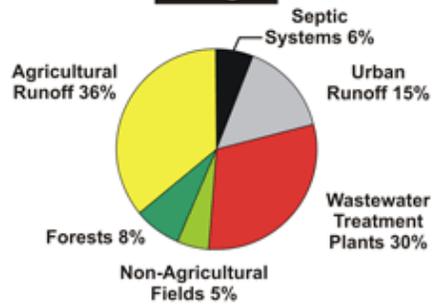
■ Good ■ OK ■ Failing ■ Not Determined

Localized impacts can be significant

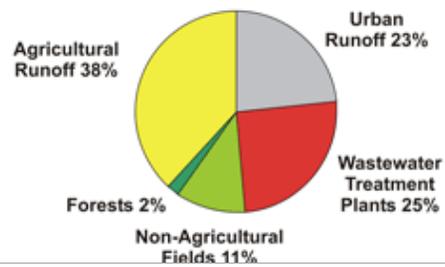
Landscape scale effects can be outweighed by other factors

Sources of Nutrient Loads to Chesapeake Bay from Maryland (2000)

Nitrogen



Phosphorus



U.S. Environmental Protection Agency

STEPL - Spreadsheet Tool for Estimating Pollutant Load

[Recent Additions](#) | [Contact Us](#) | [Print Version](#) Search:

[EPA Home](#) > [STEPL](#)

Welcome to STEPL <http://it.tetrattech-ffx.com/stepl>



Spreadsheet Tool for Estimating Pollutant Load (STEPL) employs simple algorithms to calculate nutrient and sediment loads from different land uses and the load reductions that would result from the implementation of various best management practices (BMPs). STEPL provides a user-friendly Visual Basic (VB) interface to create a customized spreadsheet-based model in Microsoft (MS) Excel. It computes watershed surface runoff, nutrient loads, including nitrogen, phosphorus, and 5-day biological oxygen demand (BOD5), and sediment delivery based on various land uses and management practices. For each watershed, the annual nutrient loading is calculated based on the runoff volume and the pollutant concentrations in the runoff water as influenced by factors such as the land use distribution and management practices. The annual sediment load (sheet and rill erosion only) is calculated based on the Universal Soil Loss Equation (USLE) and the sediment delivery ratio. The sediment and pollutant load reductions that result from the implementation of BMPs are computed using the known BMP efficiencies.





Region 5 model is an Excel work-book that provides a gross estimate of sediment and nutrient load reductions from the implementation of agricultural and urban BMPs. The algorithms for non-urban BMPs are based on the "Pollutants controlled: Calculation and documentation for Section 319 watersheds training manual" (Michigan Department of Environmental Quality, June 1999). The algorithms for urban BMPs are based on the data and calculations developed by Illinois EPA. Region 5 model does not estimate pollutant load reductions for dissolved constituents.

Questions? Please contact:
[STEPL E-mail support](#)
 Telephone support (EPA and EPA clients only): (703)385-6000 (Ting Dai or Henry Manguerra)
 Developed for [EPA Office of Water](#)
 Grants Reporting and Tracking System
 By [Tetra Tech, Inc.](#)
 Last revised: 7/3/2003

[EPA Home](#) | [Privacy and Security Notice](#) | [Contact Us](#)

16

Last updated on Tuesday, February 10th, 2004

STEPL Model Input Data Server

Step 1: Select a state

- Michigan
- Minnesota
- Missouri
- Mississippi
- Montana
- North Carolina

Step 2: Select a county

- Alcona
- Alger
- Alleghen
- Alpena
- Antrim
- Arenac

Or select a HUC

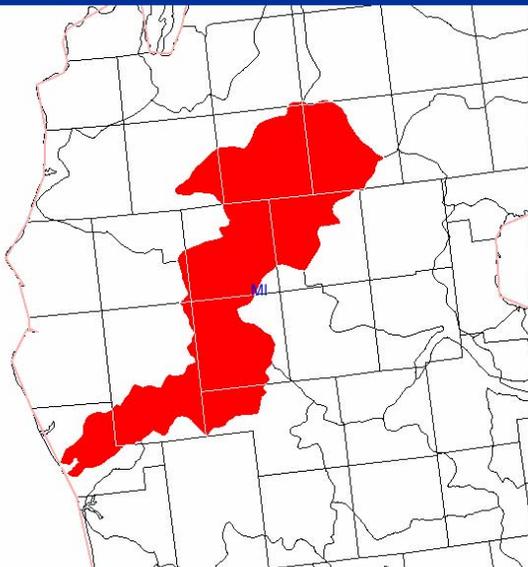
- 04060101 : Pere Marquette-W
- 04060102 : Muskegon
- 04060103 : Menistee
- 04060104 : Betsie-Platte
- 04060105 : Boardman-Charlev
- 04060106 : Menistique

Step 3: Activate the
Select tool  and click on the map to refine the area of interest

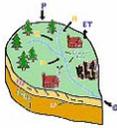
Step 4: Select report

Basic
Generates a preformatted report with tables that you can paste directly into the STEPL worksheets

Custom
Generates preformatted reports using custom percentages of HUC surface area



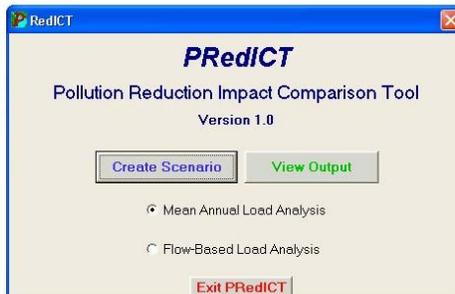
This tool can be used to estimate the landuse and animal distribution, number of septic system and failure rate, and hydrologic group for your area of interest. These information are required input for the STEPL model. The data are provided by HUCO (overlay of county and 8-digit hydrologic unit boundary).



AVGWLF

PRedICT Overview

A companion software tool for use with **AVGWLF** is has been developed for evaluating the implementation of both agricultural and non-agricultural pollution reduction strategies at the watershed level. This new tool, called **PRedICT** (Pollution Reduction Impact Comparison Tool), allows the user to create various "scenarios" in which current landscape conditions and pollutant loads (both point and non-point) can be compared against "future" conditions that reflect the use of different pollution reduction strategies (best management practices) such as agricultural and urban **BMPs**, the conversion of septic systems to centralized wastewater treatment, and upgrading of treatment plants from primary to secondary to tertiary. This tool includes pollutant reduction coefficients for nitrogen, phosphorus and sediment, and also has built-in cost information for an assortment of pollution mitigation techniques. Two different cost-accounting approaches are used in the present version to help a user identify the most efficient reduction strategy in terms of both pollution reduction and cost. While information for **PRedICT** can be compiled manually, the most efficient way to accomplish this task is to use the **AVGWLF** watershed modeling system. Among others things, this tool automatically creates a "scenario" file that can be used as input to **PRedICT**. This input file contains useful information on watershed conditions and pollutant loads that can serve as the "initial" conditions from which future scenarios can be developed.



<http://www.predict.psu.edu/>

Estimated Load Reductions								
	Existing (lbs)			Future (lbs)				
	Total Sediment	Total N	Total P	Total Sediment	Total N	Total P		
UPLAND EROSION / RUNOFF								
Row Crops	15,266,449	123,517	22,236	13,233,181	112,157	20,084		
Hay/Pasture	116,623	7,798	1,209	100,063	7,112	1,107		
High Intensity Urban	15,151	519	58	15,151	519	58		
Low Intensity Urban	65,607	376	50	65,607	376	50		
Other	548,626	4,829	505	548,626	4,829	505		
STREAMBANK EROSION	11,515,109	17,273	3,984	11,064,466	16,775	3,851		
GROUNDWATER / SUBSURFACE		786,968	14,708		787,214	14,708		
POINT SOURCE DISCHARGES		289,669	19,314		289,669	19,314		
SEPTIC SYSTEMS		20,296	101		20,296	101		
TOTALS	27,527,565	1,251,245	62,165	25,027,094	1,238,947	59,778		
PERCENT REDUCTIONS				9.1	1.0	3.8		
SCENARIO COST	\$1,298,794.50							
Agricultural BMP Cost	0.0	%	Wastewater Upgrade Cost	0.0	%	Urban BMP Cost	0.0	%
Back		Perform Optimization		Generate Report		Exit		

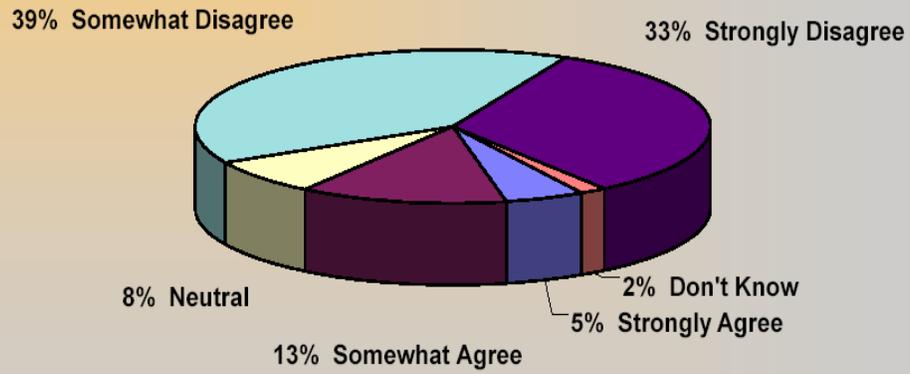
Managing onsite/clustered systems

- Management for existing systems
 - Assess surface & groundwater quality
 - Assess treatment systems & related risks
 - Find & fix problems
- New system mgmt
 - Planning & design
 - Construction
 - O&M
- System inventories are needed!



20

Most Homeowners with Septic Systems are Knowledgeable about Septic System Operation and Maintenance



General management approach

- Management intensity is tied to risk
 - Sensitivity of receiving water, local setting
 - Complexity & density of treatment systems
- Public/private mgmt entity is necessary!
 - Example: sanitation district
 - Maintenance contracts
 - Operating permits
 - 3rd party operation/ownership
- Public agencies provide regulatory oversight



22

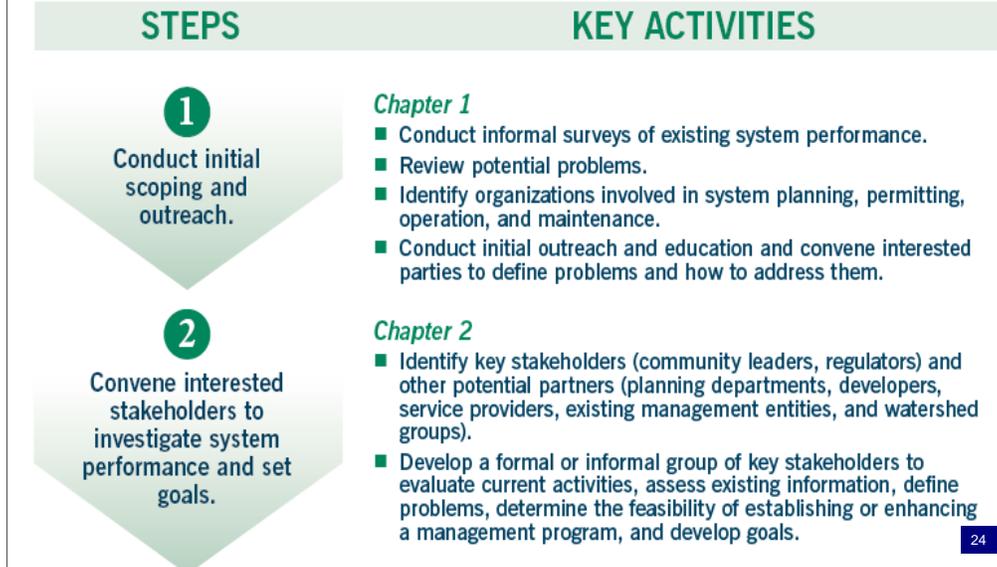
US EPA resources at www.epa.gov/owm/septic

- Design guidance
- Management guidelines
- Case studies
- Technology fact sheets
- State and local examples
- Research, demonstration projects, and other tools



US EPA Management Handbook

Figure 1. *Process for developing a decentralized wastewater management program*



3

Analyze existing information to assess the community and evaluate current and future risks.

4

Enhance existing management program or develop new management entities.

5

Implement selected elements of the management program, monitor and adapt as necessary.

Chapter 3

- Develop a community profile to assess socioeconomic and other community factors.
- Review existing statutory and regulatory authority.
- Determine the current management approach of the existing regulatory authorities.
- Inventory or otherwise collect information on existing systems and impacts, analyze risks posed by existing systems, and assign potential of risk to systems and groups of systems.
- Assess growth and development trends and create risk scenarios under various management approaches to determine wastewater planning and management needs for newly served areas.

Chapter 4

- Synthesize information to identify and prioritize risks and management gaps.
- Select program management approach.
- Partner with stakeholder organizations (planning/zoning, water resource, service providers, and other entities) to determine implementation feasibility.
- Conduct a reality check to determine the availability of management, technical, financial, and other resources.

Chapter 5

- Investigate resources needed to implement the program.
- Establish management requirements for existing and new treatment systems based on health and water resource risks.
- Evaluate approaches and powers needed for implementing management programs.
- Coordinate with other wastewater and water programs.
- Solicit support and resources from stakeholders.
- Develop indicators to determine progress.
- Implement and adapt management program as necessary.

Questions?



Barry Toning, Tetra Tech, Inc.

The Wastewater Information System Tool (TWIST)

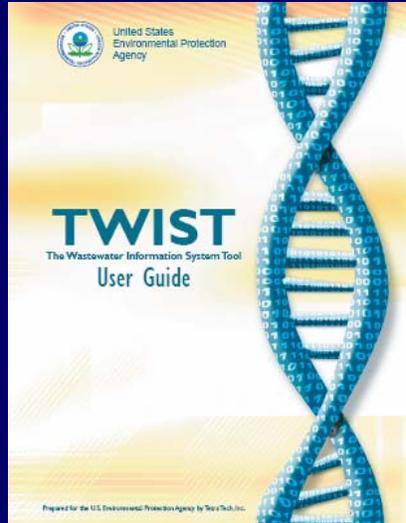
Part 2 TWIST Application

January 16, 2007

27

Overview

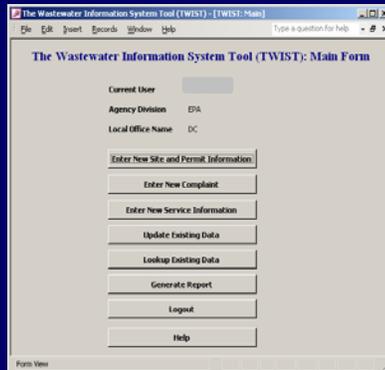
- TWIST Application Overview
- Data Entry Workflow
- Functionalities
- System Implementation



System Overview - Database Concept



System Overview – contd.



- MS Access database developed with EPA's guidance to help local, county, and state health departments
 - adaptable tool for tracking and managing onsite and clustered wastewater treatment systems
- Asset management system or Inventory tool
 - To enter new data
 - To update existing data
 - To view existing data and
 - To view report (sample available)

30

Developed for EPA to help local, county, and state health departments

-It is a tool to track and manage onsite and clustered wastewater treatment systems.

-Any agency and take the tool, adapt it to their own requirement and use it.

The database is structured to inventory all the relevant information about the wastewater treatment systems such as,

General Site Information – Ownership information and property details

Permit Information -

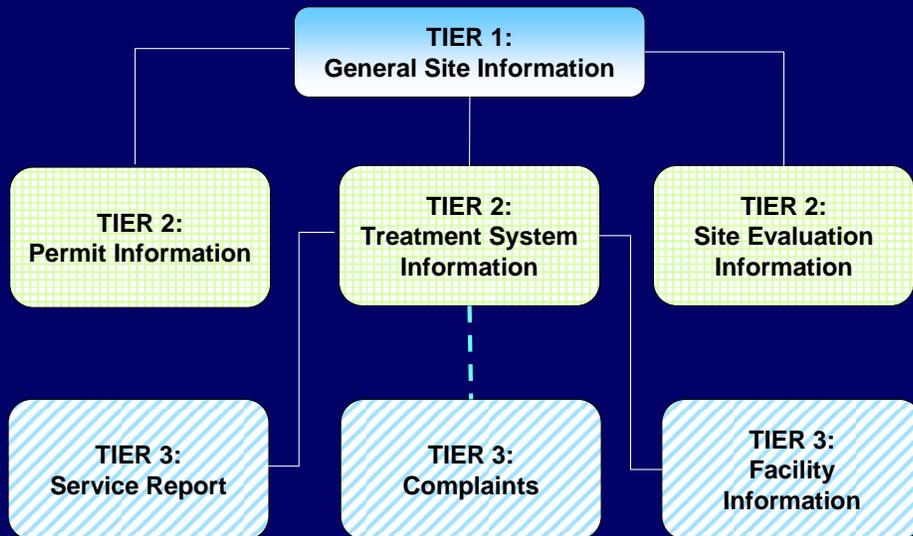
Facility Served

Site Evaluation Information,

Treatment System, and

Service Reports.

Data Entry Workflow

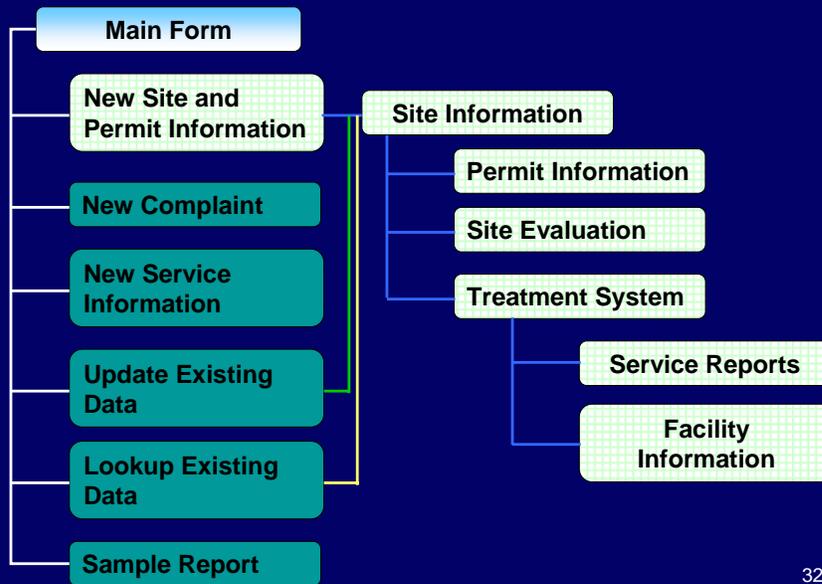


31

Data is divided into three categories: Tier 1, Tier 2 and Tier 3. Nearly all data in TWIST is dependent upon the data entered in *General Site Information* labeled TIER 1.

Until data are entered in the *General Site Information* data form, data regarding permits, site details, and the wastewater treatment system (represented by the TIER 2 *Permit Information*, *Site Evaluation Information*, and *Treatment System Information* boxes, respectively) cannot be entered. Likewise, TIER 3 data can be entered only after the requisite TIER 2 data are entered.

Data Entry Workflow – contd.



Navigation

The screenshot shows the 'General Site Information' form in the TWIST application. The form is divided into two main sections: 'Property Owner Details' and 'System Owner Details'. The 'Property Owner Details' section includes a dropdown for 'Select name to autofill address', and text input fields for 'Name', 'Apartment Or Suite', 'Street', 'City', 'State', 'Zip Code', 'Phone Number', and 'Email'. The 'System Owner Details' section has a checkbox for 'Same as Property Owner' and corresponding text input fields for 'Name List', 'Name', 'Apartment Or Suite', 'Street', 'City', 'State', 'Zip Code', 'Phone Number', and 'Email'. To the right of the form is a 'Help' menu with options: 'Permit Info', 'Site Evaluation', 'Treatment System', and 'Return to Main Form'. At the bottom of the form are navigation buttons: a left arrow, a right arrow, a save icon (floppy disk), and a plus sign. A red line points from the save icon to a text box that says '*Data will only be saved by clicking the Save button'. Below the screenshot, several callout boxes with red lines pointing to the form and buttons provide navigation instructions: 'Help Document' points to the 'Help' menu; 'To related forms' points to the 'Permit Info', 'Site Evaluation', and 'Treatment System' options; 'To Main Form' points to the 'Return to Main Form' option; 'Add new record' points to the plus sign button; 'Save record' points to the save icon; 'Next record' points to the right arrow button; and 'Previous record' points to the left arrow button.

Help Document

To related forms

To Main Form

*Data will only be saved by clicking the Save button

Form View

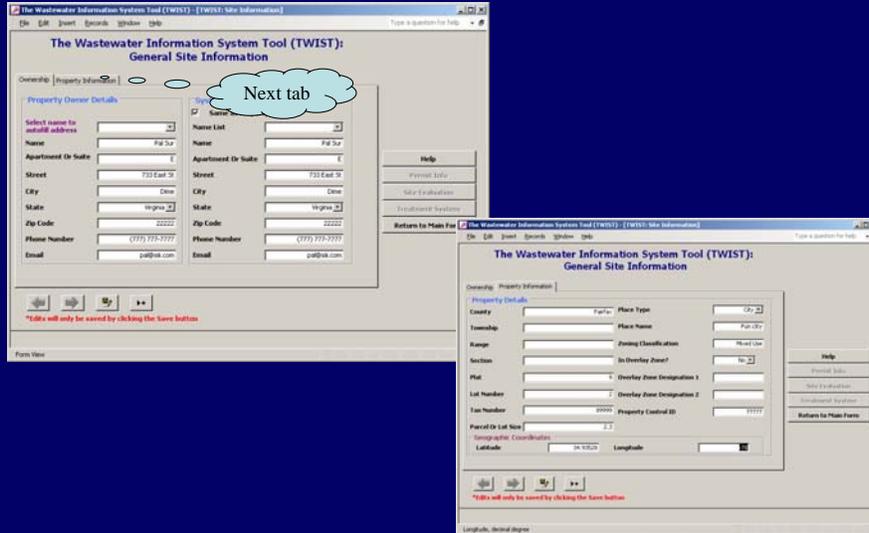
Add new record

Save record

Next record

Previous record

Tabbed forms



34

General Site Information: Ownership

**The Wastewater Information System Tool (TWIST):
General Site Information**

Ownership | Property Information

Property Owner Details		System Owner Details	
Select name to autofill address	<input type="text"/>	<input checked="" type="checkbox"/> Same as Property Owner	
Name	<input type="text" value="Pal Sur"/>	Name List	<input type="text"/>
Apartment Or Suite	<input type="text" value="E"/>	Name	<input type="text" value="Pal Sur"/>
Street	<input type="text" value="733 East St"/>	Apartment Or Suite	<input type="text" value="E"/>
City	<input type="text" value="Dime"/>	Street	<input type="text" value="733 East St"/>
State	<input type="text" value="Virginia"/>	City	<input type="text" value="Dime"/>
Zip Code	<input type="text" value="22222"/>	State	<input type="text" value="Virginia"/>
Phone Number	<input type="text" value="(777) 777-7777"/>	Zip Code	<input type="text" value="22222"/>
Email	<input type="text" value="pal@siii.com"/>	Phone Number	<input type="text" value="(777) 777-7777"/>
		Email	<input type="text" value="pal@siii.com"/>

Help

Permit Info

Site Evaluation

Treatment System

Return to Main Form

Form View

*Edits will only be saved by clicking the Save button

35

The tool is a template containing all relevant data fields to inventory the wastewater systems. However, the end users can modify appropriately to fit to their specific needs.

Contains required interfaces to enter new data, update existing data, and view existing data. The database includes a sample report and the users can add more reports to fit to their requirement.

General Site Information: Property Information

**The Wastewater Information System Tool (TWIST):
General Site Information**

Ownership | Property Information

Property Details

County	<input type="text" value="Fairfax"/>	Place Type	<input type="text" value="Village"/>
Township	<input type="text"/>	Place Name	<input type="text" value="Jermantown"/>
Range	<input type="text"/>	Zoning Classification	<input type="text" value="A"/>
Section	<input type="text"/>	In Overlay Zone?	<input type="text" value="No"/>
Plat	<input type="text" value="1223"/>	Overlay Zone Designation 1	<input type="text"/>
Lot Number	<input type="text" value="23"/>	Overlay Zone Designation 2	<input type="text"/>
Tax Number	<input type="text" value="9766655"/>	Property Control ID	<input type="text" value="199888"/>
Parcel Or Lot Size	<input type="text" value="67"/>		

Geographic Coordinates

Latitude	<input type="text" value="34.94583"/>	Longitude	<input type="text" value="-77.57083"/>
----------	---------------------------------------	-----------	--

36

The tool is a template containing all relevant data fields to inventory the wastewater systems. However, the end users can modify appropriately to fit to their specific needs.

Contains required interfaces to enter new data, update existing data, and view existing data. The database includes a sample report and the users can add more reports to fit to their requirement.

Permit Information: Permit Details

The screenshot displays the 'Permit Information' form within the 'The Wastewater Information System Tool (TWIST)'. The form is titled 'Permit Information' and features a navigation bar with tabs for 'Permit Details', 'Permittee', 'Operating Permit', 'Maintenance', and 'Permit Violations'. The 'Permit Details' tab is active. The form is divided into two main sections: 'General Information' and 'Special Permit Conditions'. The 'General Information' section includes fields for 'System Permit Number', 'Permit Type', 'Permit Issuance Date (MM/DD/YYYY)', 'Permit Fee', 'Permit Fee Paid?', 'Building Permit Fee Paid?', and 'Other Fee Paid?'. The 'Special Permit Conditions' section includes fields for 'Variance Issued?', 'Type Of Variance', 'Other Conditions', 'Operating Permit Needed?', and 'Maintenance Contractor Needed?'. To the right of the form are three buttons: 'Help', 'Back to Site', and 'Return to Main Form'. At the bottom of the form, there are navigation icons and a label 'System permit number'.

37

The tool is a template containing all relevant data fields to inventory the wastewater systems. However, the end users can modify appropriately to fit to their specific needs.

Contains required interfaces to enter new data, update existing data, and view existing data. The database includes a sample report and the users can add more reports to fit to their requirement.

Permit Information: Operating Permit

Permit Details	Permittee	Operating Permit	Maintenance	Permit Violations
Operating Permit Details				
Name List	<input type="text"/>	Operating Permit Type	<input type="text"/>	
Name	<input type="text" value="Alex Jackson"/>	Operating Permit Number	<input type="text"/>	
ID Number	<input type="text"/>	Operating Permit Expiration Date (MM/DD/YYYY)	<input type="text"/>	
Apartment or Suite	<input type="text" value="201"/>	Operating Permit Fee (amount)	<input type="text"/>	
Street	<input type="text" value="2100 Anderson St"/>	Operating Permit Fee Paid?	<input type="text"/>	
City	<input type="text" value="Faircity"/>	Inspection Frequency Type	<input type="text"/>	
State	<input type="text" value="Virginia"/>	Inspection Frequency	<input type="text" value="0"/>	
Zip Code	<input type="text" value="66555"/>	Pumpout Frequency Type	<input type="text"/>	
Phone Number	<input type="text" value="(999) 000-7778"/>	Pumpout Frequency	<input type="text" value="0"/>	
Email	<input type="text" value="s@b.com"/>	Effluent Sampled?	<input type="text"/>	
		Effluent Sampling Frequency Type	<input type="text"/>	
		Ground Water Sampled?	<input type="text"/>	
		Ground Water Sampling Frequency Type	<input type="text"/>	

38

The tool is a template containing all relevant data fields to inventory the wastewater systems. However, the end users can modify appropriately to fit to their specific needs.

Contains required interfaces to enter new data, update existing data, and view existing data. The database includes a sample report and the users can add more reports to fit to their requirement.

Permit Information: Permit Violations

Permit Violation Details

Permit Violation Date (MM/DD/YYYY)	<input type="text"/>
Permit Violation Number	<input type="text"/>
Investigator Name	<input type="text"/>
Investigator ID	<input type="text"/>
Type of Violation	<input type="text"/>
Action Taken	<input type="text"/>
Compliance Date (MM/DD/YYYY)	<input type="text"/>
Compliance Confirmed?	<input type="text"/>
Fine Assessed?	<input type="text"/>
Fine Amount	<input type="text"/>
Fine Paid?	<input type="text"/>

Click Save button to commit changes

39

The tool is a template containing all relevant data fields to inventory the wastewater systems. However, the end users can modify appropriately to fit to their specific needs.

Contains required interfaces to enter new data, update existing data, and view existing data. The database includes a sample report and the users can add more reports to fit to their requirement.

Treatment System Information: General Information

The screenshot displays the 'The Wastewater Information System Tool (TWIST): Treatment System Information' interface. At the top, there are navigation tabs: 'General Info', 'Tank Info', 'Treatment', 'Electrical/Mechanical Features', and 'Infiltration Setback'. The main content area is divided into three sections: 'System Details', 'Installer Details', and 'System Manager'. 'System Details' includes fields for 'Control Id', 'Number of Structures', and 'Date Installed (MM/DD/YYYY)'. 'Installer Details' includes fields for 'Name List', 'Name', 'Apartment or Suite', 'Street', 'City', 'State', 'Zip Code', 'Phone', 'Email', and 'Registration/License'. 'System Manager' includes fields for 'Name List', 'Name', 'Apartment or Suite', 'Street', 'City', 'State', 'Zip Code', 'Phone', and 'Email'. On the right side, there is a vertical menu with buttons for 'Help', 'Service Reports', 'Facility Served', 'Return to Site Info', and 'Return to Main Form'. At the bottom left, there are navigation icons (back, forward, home, refresh) and a red note: '*Edits will only be saved by clicking the Save button'. The bottom left corner of the form area says 'Form View' and the bottom right corner has the number '40'.

The tool is a template containing all relevant data fields to inventory the wastewater systems. However, the end users can modify appropriately to fit to their specific needs.

Contains required interfaces to enter new data, update existing data, and view existing data. The database includes a sample report and the users can add more reports to fit to their requirement.

Treatment System Information: Tank Information

General Info | Tank Info | Treatment | Electrical/Mechanical Features | Infiltration Setback

Waste Flow Information

Design Flow: 1000

Waste Strength: 3.4

Non Conventional Wastes (Specify):

Tank Risers Above Final Grade?: Yes

Effluent Filters on Tanks?: Yes

Grease Trap Tank Details

Tank #1 Size (Total Gallons): 500

Tank #1 Material Type: Concrete

Tank #2 Size (Total Gallons):

Tank #2 Material Type:

Septic Tank Details

Tank # 1

Size (Total Gallons): 1000

Material: Concrete

Compartments: 1

Manufacturer:

Tank # 2

Size (Total Gallons):

Material:

Compartments:

Manufacturer:

Tank # 3

Size (Total Gallons):

Material:

Compartments:

Manufacturer:

41

The tool is a template containing all relevant data fields to inventory the wastewater systems. However, the end users can modify appropriately to fit to their specific needs.

Contains required interfaces to enter new data, update existing data, and view existing data. The database includes a sample report and the users can add more reports to fit to their requirement.

Treatment System Information: Treatment

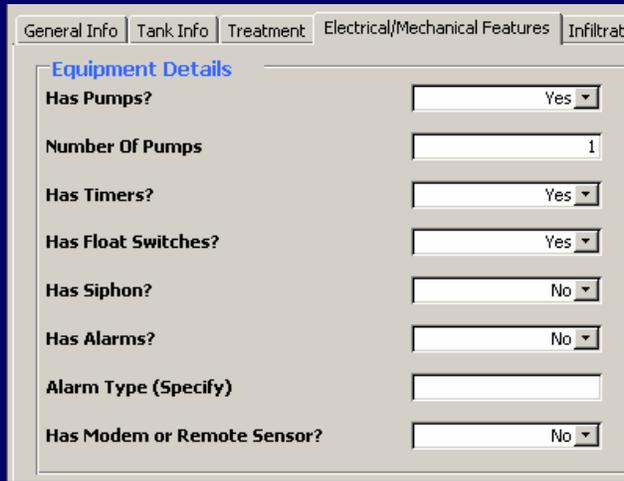
General Info	Tank Info	Treatment	Electrical/Mechanical Features	Infiltration Setback
Treatment Details				
Post Tank Treatment	<input type="text" value="Soil infiltration only"/>			
Recirculation?	<input type="text" value="No"/>			
Soil Infiltration Area (Sq Ft)	<input type="text" value="500"/>			
Soil Infiltration Depth (Inches)	<input type="text" value="0"/>			
Distribution System Type	<input type="text" value="Pressure drip tubing"/>			
Number of Trenches	<input type="text" value="2"/>			
Total Length of Trenches (Ft)	<input type="text" value="25"/>			
Observation Wells in Trenches?	<input type="text" value="No"/>			
Receiving Water Name	<input type="text"/>			
NPDES Permit Number	<input type="text"/>			
Flow Type	<input type="text"/>			

42

The tool is a template containing all relevant data fields to inventory the wastewater systems. However, the end users can modify appropriately to fit to their specific needs.

Contains required interfaces to enter new data, update existing data, and view existing data. The database includes a sample report and the users can add more reports to fit to their requirement.

Treatment System Information: Electrical/Mechanical Features



Field Name	Value
Has Pumps?	Yes
Number Of Pumps	1
Has Timers?	Yes
Has Float Switches?	Yes
Has Siphon?	No
Has Alarms?	No
Alarm Type (Specify)	
Has Modem or Remote Sensor?	No

43

The tool is a template containing all relevant data fields to inventory the wastewater systems. However, the end users can modify appropriately to fit to their specific needs.

Contains required interfaces to enter new data, update existing data, and view existing data. The database includes a sample report and the users can add more reports to fit to their requirement.

Facility Information

The Wastewater Information System Tool (TWIST):
Facility Information

Facility Address

Apartment or Suite
Street
City
State
Zip Code

Facility Details

Facility Type	<input type="text"/>	Has Hot Tubs?	<input type="text"/>
Other Facility Type	<input type="text"/>	Number of Hot Tubs	<input type="text" value="0"/>
Facility Area	<input type="text" value="0"/>	Capacity of Hot Tubs	<input type="text" value="0"/>
Number of Bathrooms	<input type="text" value="0"/>	Has Water Softener?	<input type="text"/>
Number of Bedrooms	<input type="text" value="0"/>	Additional Special Fixtures	<input type="text"/>
Number of Occupants/Employees	<input type="text" value="0"/>	Year Structure Built	<input type="text" value="0"/>
Number of Guests	<input type="text" value="0"/>	Is Rental Property?	<input type="text"/>
Seasonal Use Only?	<input type="text"/>	Last Property Transfer	<input type="text"/>
Season Period (MM-MM)	<input type="text"/>	Water Supply Source	<input type="text"/>
Has In-Sink Grinders?	<input type="text"/>	Other Water Supply Source	<input type="text"/>

Help
Return to Treatment System
Return to Main Form

*Edits will only be saved by clicking the Save button

Apartment or suite number

44

The tool is a template containing all relevant data fields to inventory the wastewater systems. However, the end users can modify appropriately to fit to their specific needs.

Contains required interfaces to enter new data, update existing data, and view existing data. The database includes a sample report and the users can add more reports to fit to their requirement.

Site Evaluation Information

The Wastewater Information System Tool (TWIST):
Site Evaluation Information

Site Description		Soil Analysis	
Control ID	<input type="text"/>	Soil Analysis Type	<input type="text"/>
Date of Evaluation (MM/DD/YYYY)	<input type="text"/>	If Other, Specify	<input type="text"/>
Evaluator Name	<input type="text"/>	Soil Analysis Result	<input type="text"/>
Evaluator ID	<input type="text"/>	Depth of Pit (for Pit/Bore Hole)	<input type="text"/>
Did Site Pass Evaluation?	<input type="text"/>	Percolation Rate (minutes/in.)	<input type="text"/>
Area System Density	<input type="text"/>	Is Soil Compacted?	<input type="text"/>
Infiltration Area Landscape Information		Depth To Seasonal Ground Water	<input type="text"/>
Landscape Type	<input type="text"/>	Perched Ground Water?	<input type="text"/>
Landscape Position	<input type="text"/>	Depth To Bedrock	<input type="text"/>
Slope Angle (Hor to Ver)	<input type="text"/>	Curtain Drain Needed?	<input type="text"/>
		Curtain Drain Installation	<input type="text"/>
		Available Drainfield Area	<input type="text"/>
		Drainfield Area Replaced?	<input type="text"/>
		Replaced Area	<input type="text"/>

Form View

45

The tool is a template containing all relevant data fields to inventory the wastewater systems. However, the end users can modify appropriately to fit to their specific needs.

Contains required interfaces to enter new data, update existing data, and view existing data. The database includes a sample report and the users can add more reports to fit to their requirement.

Service Reports – General Information

The screenshot displays the 'The Wastewater Information System Tool (TWIST): Service Reports' interface. At the top, there is a title bar and a navigation menu with tabs for 'General Information', 'Inspection Info', 'Components Info', and 'Repair Info'. The 'General Information' tab is active, showing a 'Service Information' section. This section includes a 'Select Treatment System Control ID' dropdown menu, a 'Treatment System Site Address' section with fields for Street, City, State, and Zip, and a 'Service Date' field. Below these are fields for Name List, Service Provider Name, Apartment or Suite, Street, City, State, Zip Code, Phone Number, Email, and Registration/License. To the right of the form are three buttons: 'Help', 'Treatment System', and 'Return to Main Form'. At the bottom of the form, there are navigation icons and a red warning message: '* Edits will only be saved by clicking the Save button'. The bottom left corner of the form area says 'Form View' and the bottom right corner of the entire image shows the number '46'.

The tool is a template containing all relevant data fields to inventory the wastewater systems. However, the end users can modify appropriately to fit to their specific needs.

Contains required interfaces to enter new data, update existing data, and view existing data. The database includes a sample report and the users can add more reports to fit to their requirement.

Service Reports – Inspection Info

General Information | Inspection Info | Components Info | Repair Info

Inspection Details

Pre-Coverup Construction Inspection?

Regular/Scheduled Inspection?

Complaint Received Date (MM/DD/YYYY)

Complaint Control ID

Nature of Complaint

Complaint Referred To (Specify)

System in Compliance?

Repair Needed?

System Needs to be Replaced?

New Permit Number

47

The tool is a template containing all relevant data fields to inventory the wastewater systems. However, the end users can modify appropriately to fit to their specific needs.

Contains required interfaces to enter new data, update existing data, and view existing data. The database includes a sample report and the users can add more reports to fit to their requirement.

Complaint

The Wastewater Information System Tool
(TWIST): Complaint

Treatment System Location

Apartment or Suite

Street

City

State

Zip Code

General Information

Complaint Control ID

Complaint Type

Complaint Description

Form View

48

The tool is a template containing all relevant data fields to inventory the wastewater systems. However, the end users can modify appropriately to fit to their specific needs.

Contains required interfaces to enter new data, update existing data, and view existing data. The database includes a sample report and the users can add more reports to fit to their requirement.

Site Information Report

State Wastewater Information System Enumerator (StateWISE): Site Information Report

Property Owner Details

Name Alex Jackson
 Apartment or Suite 201
 Street 2100 Anderson St
 City Fairfax
 State VA
 Zip Code 66555
 Phone 9990007778
 Email s@b.com

System Owner Details

Name Alex Jackson
 Apartment or Suite 201
 Street 2100 Anderson St
 City Fairfax
 State VA
 Zip Code 66555
 Phone 9990007778
 Email s@b.com

General Information

County Fairfax
 Township
 Range
 Section
 Plat 1223
 Plat Name Jermantown
 Plat Type Village
 Lot Number 23

Tax Number 9766655
 Parcel or Lot Size 67
 Property Control I 199888
 Latitude -77.57083
 Longitude 34.94383
 Zoning Class A
 Is Overlay Zone?
 Overlay Zone Designation 1
 Overlay Zone Designation 2

System Implementation

- Backend database
- Front-end data entry forms

The screenshot shows the 'General Site Information' form in the TWIST application. It is divided into two main sections: 'Property Owner Details' and 'System Owner Details'. Each section contains fields for Name, Address (Street, City, State, Zip Code), and Contact Information (Phone Number, Email). A red arrow points from the 'System Owner Details' section to the 'Facility Types' table in the adjacent screenshot.

Twist.mdb

The screenshot displays three tables from the 'Twist_data.mdb' database. The 'Facility Types' table lists various facility types with checkboxes for 'IsCommercial'. The 'Permit Types' table lists different permit categories. The 'Complaint Types' table lists various complaint descriptions.

FacilityType_ID	FacilityType_Name	IsCommercial
1	Single family residence	<input type="checkbox"/>
2	Multi-family residential	<input type="checkbox"/>
3	Multiple single family homes	<input type="checkbox"/>
4	Office building	<input checked="" type="checkbox"/>
5	Retail store	<input checked="" type="checkbox"/>
6	Restaurant	<input checked="" type="checkbox"/>
7	Supermarket	<input checked="" type="checkbox"/>

PermitType_ID	PermitType_Name
1	New System Installation
2	Replacement System
3	System Repair
4	Holding Tank Only
5	Other

ComplaintType_ID	ComplaintType_Desc
1	Sewage surfacing
2	Discharge to waterbody
3	Odors
4	No installation permit
5	Installation Irregularities
6	Sewer line backup/blockage

Twist_data.mdb

System Implementation – contd.

- Backend database
- Front-end data entry forms

The screenshot displays the Wastewater Information System Tool (TWIST) interface. On the left, the 'General Site Information' form is visible, with a red arrow pointing to the 'Facilities' field. In the center, the 'Facilities Table' is shown with the following data:

FacilityType_ID	FacilityType_Name	IsCommercial
1	Single family residence	<input type="checkbox"/>
2	Multi-family residential	<input type="checkbox"/>
3	Multiple single family homes	<input type="checkbox"/>
4	Office building	<input checked="" type="checkbox"/>
5	Retail store	<input checked="" type="checkbox"/>
6	Restaurant	<input checked="" type="checkbox"/>
7	Supermarket	<input checked="" type="checkbox"/>

Below the table, the 'Permit Types Table' is also visible:

PermitType_ID	PermitType_Name
1	New System Installation
2	Replacement System
3	System Repair
4	Holding Tank Only
5	Other

In the foreground, the 'Linked Table Manager' dialog box is open, listing various tables for selection:

- Actions (D:\OWTS_EPANUTraining\System\TWST_Data.mdb)
- Addresses (D:\OWTS_EPANUTraining\System\TWST_Data.mdb)
- Complaint (D:\OWTS_EPANUTraining\System\TWST_Data.mdb)
- ComplaintTypes (D:\OWTS_EPANUTraining\System\TWST_Data.mdb)
- DistributionSystemTypes (D:\OWTS_EPANUTraining\System\TWST_Data.mdb)
- Facilities (D:\OWTS_EPANUTraining\System\TWST_Data.mdb)
- FacilityTypes (D:\OWTS_EPANUTraining\System\TWST_Data.mdb)
- FrequencyTypes (D:\OWTS_EPANUTraining\System\TWST_Data.mdb)
- LandscapePositionTypes (D:\OWTS_EPANUTraining\System\TWST_Data.mdb)
- MaterialTypes (D:\OWTS_EPANUTraining\System\TWST_Data.mdb)
- OperatingPermitTypes (D:\OWTS_EPANUTraining\System\TWST_Data.mdb)
- Permit (D:\OWTS_EPANUTraining\System\TWST_Data.mdb)
- PermitTypes (D:\OWTS_EPANUTraining\System\TWST_Data.mdb)

The dialog also includes an 'Always prompt for new location' checkbox and buttons for 'OK', 'Cancel', 'Select All', and 'Deselect All'.

51

User Authentication

- User validation

The screenshot shows a web browser window titled "The Wastewater Information System Tool (TWIST) - [TWIST: Login]". The browser's address bar contains "Type a question for help". The main content area of the browser displays the following text:

The Wastewater Information System Tool (TWIST)
Draft Beta-Test Version of July 2005.

USEPA's Microsoft Access based Data Management Tool developed to manage onsite and clustered wastewater treatment systems.

User Login

User Name

Password

This tool was developed for US EPA by Tetra Tech as a service to state and local agencies involved with managing decentralized wastewater treatment systems. No updates are planned. Users may adapt or amend this tool without restriction.

Form View

User Authentication

- User validation
- Registration
- Login

The screenshot shows a Windows-style dialog box titled "The Wastewater Information System Tool (TWIST): User Registration". The window title bar includes "The Wastewater Information System Tool (TWIST) [TWIST:Personnel]" and standard window controls. The menu bar contains "File", "Edit", "Insert", "Records", "Window", and "Help". The main content area is titled "User Registration" and contains a section for "First Time Registration" with the following fields: "Name", "Agency Division", "Local Office Name", "User Name", "Password", and "Verify Password". Each field is represented by a text input box. At the bottom of the dialog, there are three buttons: "Help", "Cancel", and "Registers". The status bar at the bottom left of the dialog indicates "Fields View".

53

Customizing the tool

- User Guide - Section IV
 - Data structure
 - Security

IV. Database Design

The regular menus and toolbars are disabled when the user opens the database. To be able to modify the database design or functionalities, press and hold the Shift key while opening the database. The database is in an editable mode when the screen shown in Figure 15 appears.

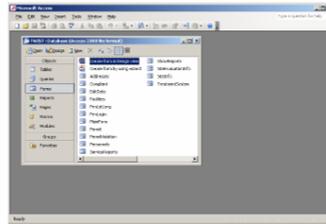


Figure 15. TWIST database window, showing the database's list of forms.

Adding New Data Fields or Modifying Fields

With the database in the "editable" mode and the screen in Figure 15 is showing, select Tables in the Objects list.

Right-click the table to be modified and then click on Design View. This will open the desired table in design view.

To add a new field move below the last existing field, type the field name in the Field Name column and select the field data type under the Data Type column (Figure 16). The user can optionally insert information about the newly-added field under the Description column.

How to get TWIST

- Download from EPA Website

http://cfpub.epa.gov/owm/septic/septic.cfm?page_id=220

- In a CD from EPA

- User guide

– PDF format

Questions?



Dr. Sabu Paul, Tetra Tech, Inc.

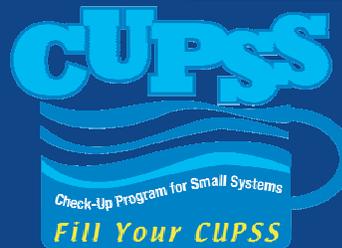
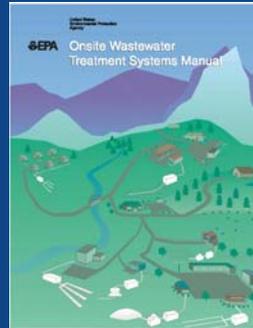
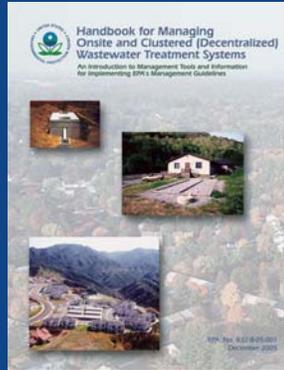
Join the Watershed Academy Webcast Team for Next Month's Webcast on:

Utilities and Watershed Management

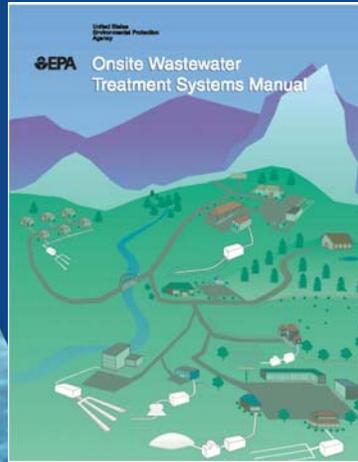
Visit: epa.gov/watershedwebcasts

57

Other Tools for Managing Decentralized Systems



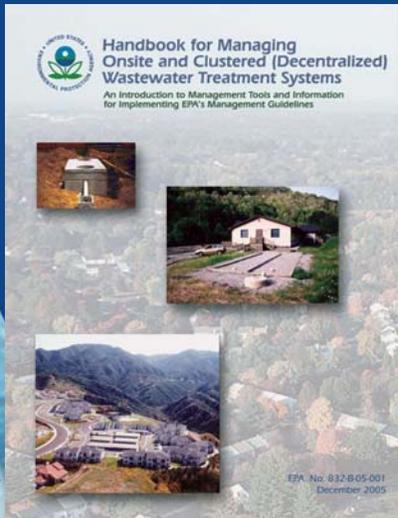
Onsite System Design Manual



- Management concepts
- Performance-based
- Cluster systems
- Technologies
- Fact sheets
- System Selection
- On EPA's Web site at:
http://www.epa.gov/owm/septic/pubs/septic_2002_osdm_all.pdf

59

Management Handbook



- How to implement management guidelines
- Fact sheets on 13 elements
- 2005 Edition at: http://cfpub.epa.gov/owm/septic/septic.cfm?page_id=289

Asset Management for Small Systems

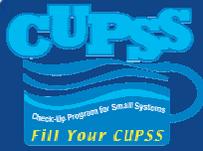
CUPSS

Check-Up Program for Small Systems

Fill Your CUPSS

Ready: Spring, 2008

61



- What is current state of assets?
- What level of service is required?
- Which assets are critical?
- What is best capital improvement and O&M approach?
- What is best long-term funding strategy?



Welcome Back Joe, Asset Management for Virginia Water Authority
 Welcome Back Joe. What would you like to do today?

Do Some Training	Enter a New Task or Work Order
Create or Update My Schematic	Search Asset and Maintenance Data
Create or Update My Inventory	Enter My Finances
Print My Check-Up Reports	Work on My CUPSS Plan

My Calendar

Mouse over the tasks to view information

August 2007						
S	M	T	W	T	F	S
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1

My Messages and Alerts

Pop-Up Messages Are Off Click To Turn On

CUPSS Plan Ticker	50%	
Tasks Past Due	7	
Assets Needing Update	5	
A Work Order Due	2	

Other Tools Available



<http://www.mcet.org/am/index.html>



<http://firehole.humboldt.edu/wawttar/>

For More Information

Steve Hogue

USEPA

Office of Wastewater Management

hogue.stephen@epa.gov

202-564-0631

www.epa.gov/owm



65

Questions?



Barry Toning, Tetra Tech, Inc.

Dr. Sabu Paul, Tetra Tech, Inc.



Stephen Hogye, EPA's Office of Wastewater Management



Check out our Additional Resources at:

<http://www.cluin.org/conf/tio/owTWIST/resource.cfm>

Please give us feedback on the Webcast at:

<http://www.cluin.org/conf/tio/owTWIST/feedback.cfm>

