

Webcast Sponsored by EPA's Watershed Academy

TWIST: The Wastewater Information System Tool

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

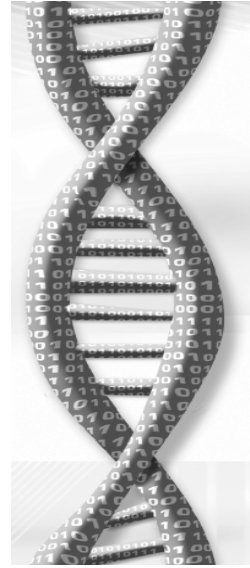


Barry Tanning and Sabu Paul, Tetra Tech
Steve Hogye, US EPA

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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



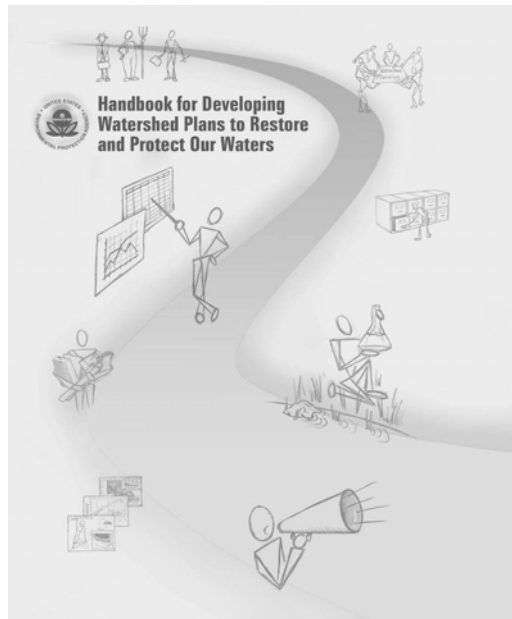
Condition of U.S. surface waters

- 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

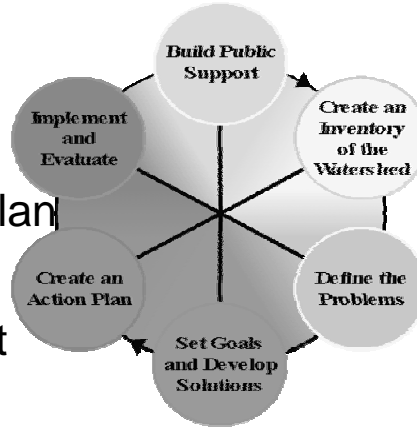


http://www.epa.gov/owow/nps/watershed_handbook/

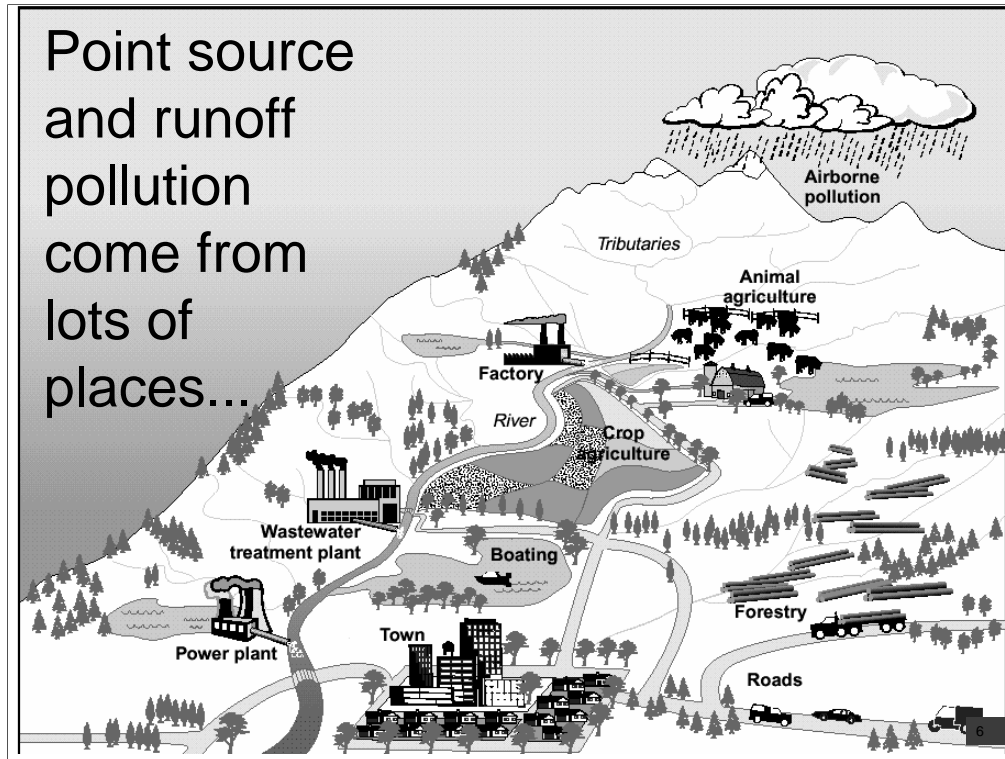
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Watershed planning steps

- 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...



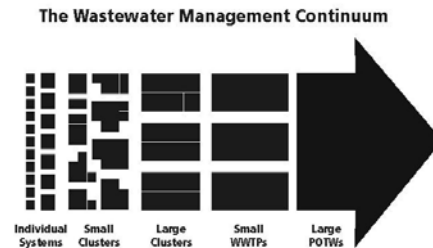
Wastewater pollutants of concern

- 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



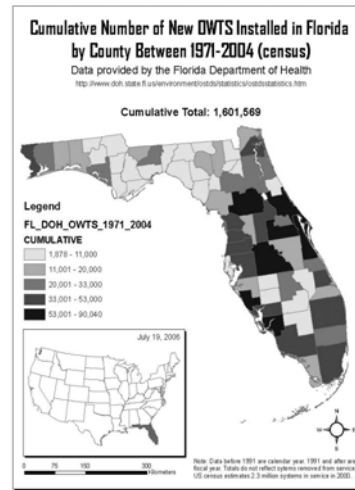
Centralized treatment plants

- 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

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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

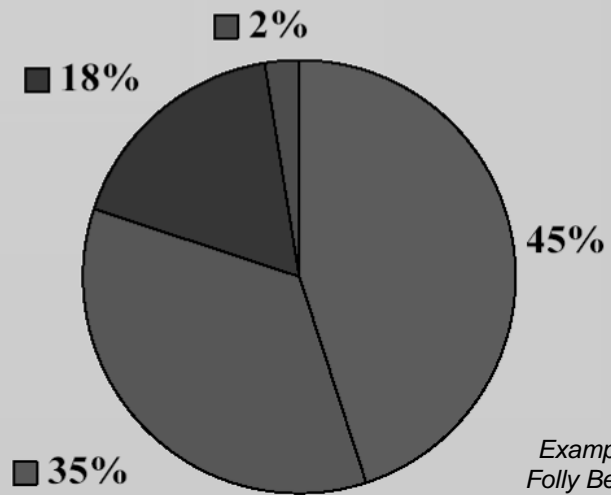
**Valuing Decentralized Wastewater
Technologies**

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*

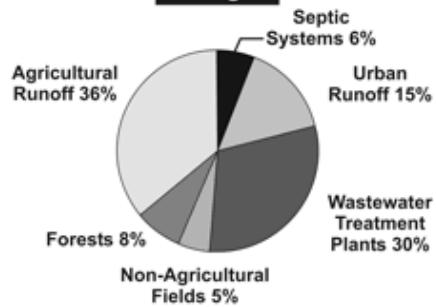
■ Good ■ OK ■ Failing ■ Not Determined

Localized impacts
can be significant

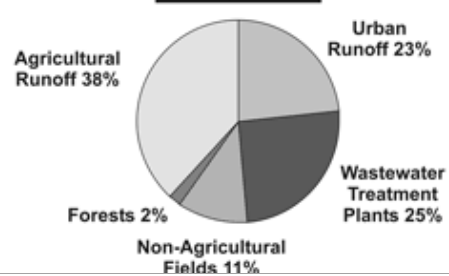
Landscape scale
effects can be
outweighed by other
factors

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

Nitrogen



Phosphorus





U.S. Environmental Protection Agency

STEPL - Spreadsheet Tool for Estimating Pollutant Load

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Home

Access STEPL Data Server for Input Data

Models and Documentation

Welcome to STEPL

<http://it.tetratex-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 workbook 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

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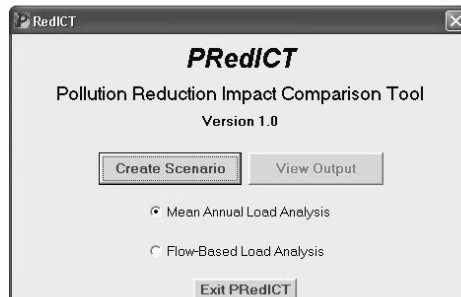
Last updated on Tuesday, February 10th, 2004



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/>

RedICT

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	549,626	4,829	505	549,626	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	%

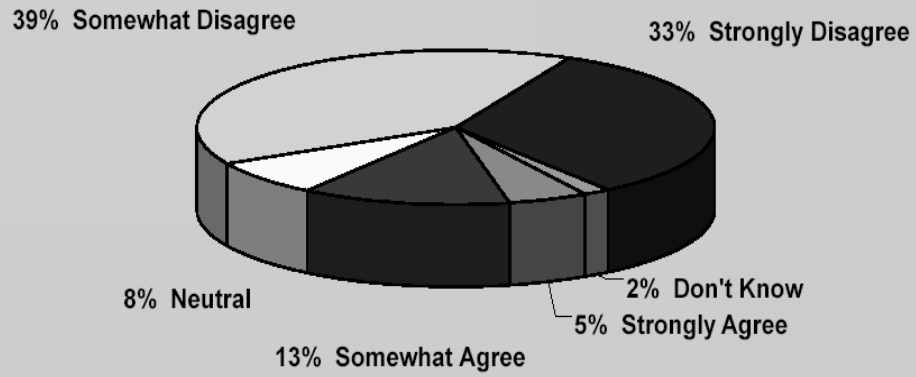
Back
Perform Optimization
Generate Report
Exit

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!



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



General management approach

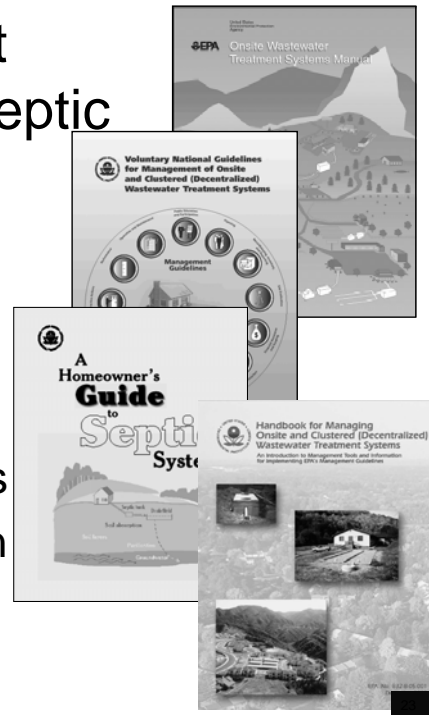
- Management intensity is tied to risk
 - Sensitivity of receiving water, local setting
 - Complexity & density of treatment systems
- Public/private mgmt entity is necessary!
 - Example: sanitation district
 - Maintenance contracts
 - Operating permits
 - 3rd party operation/ownership
- Public agencies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



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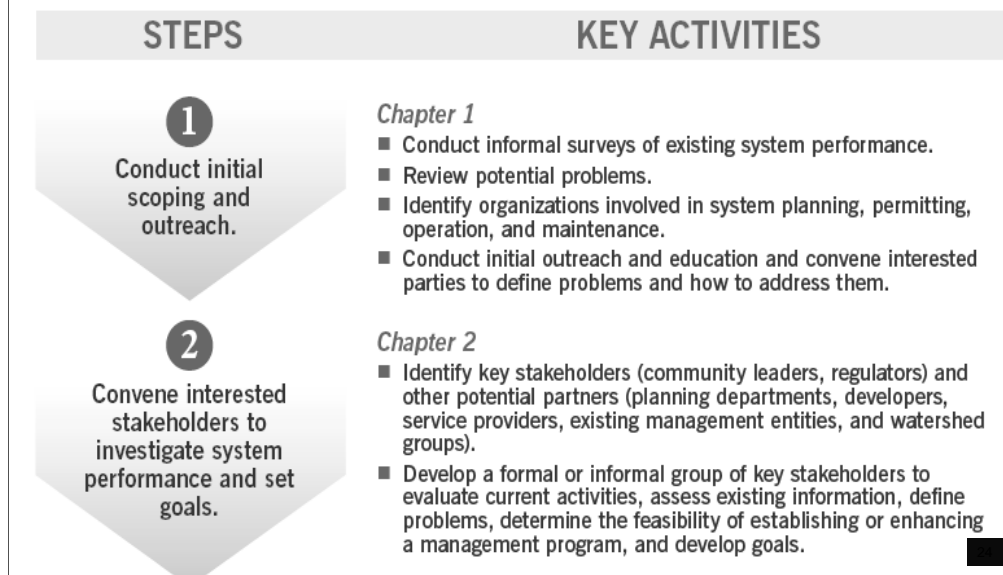
US EPA resources at www.epa.gov/owm/septic

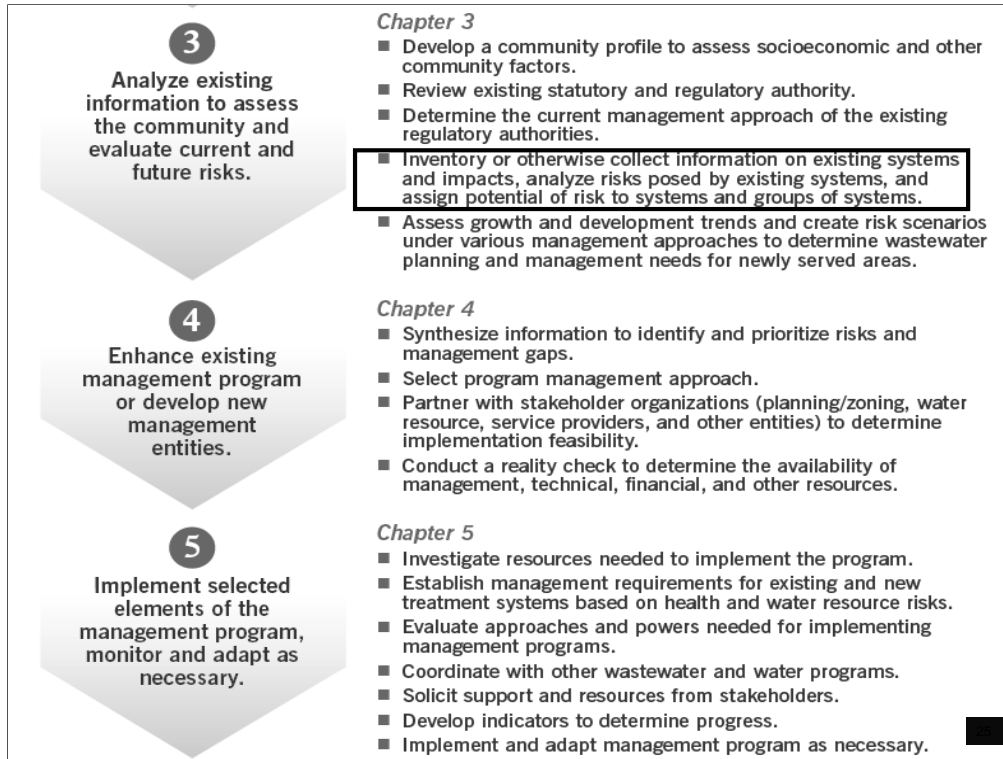
- Design guidance
- Management guidelines
- Case studies
- Technology fact sheets
- State and local examples
- Research, demonstration projects, and other tools



US EPA Management Handbook

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





Questions?



Barry Topping, Tetra Tech, Inc.

The Wastewater Information System Tool (TWIST)

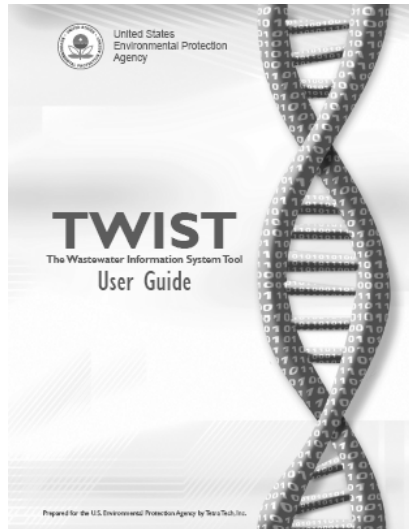
Part 2 TWIST Application

January 16, 2007

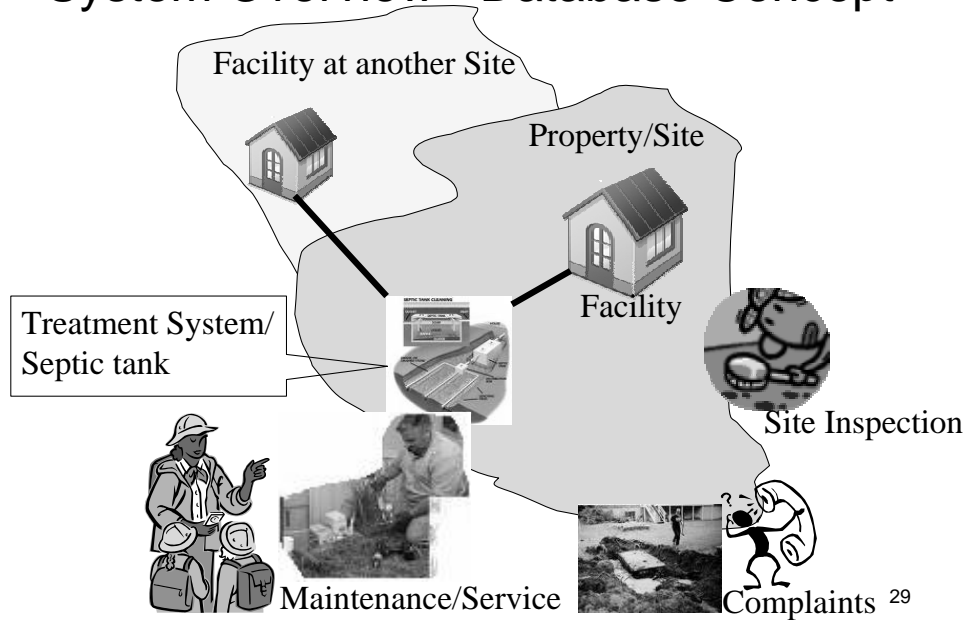
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Overview

- 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)

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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

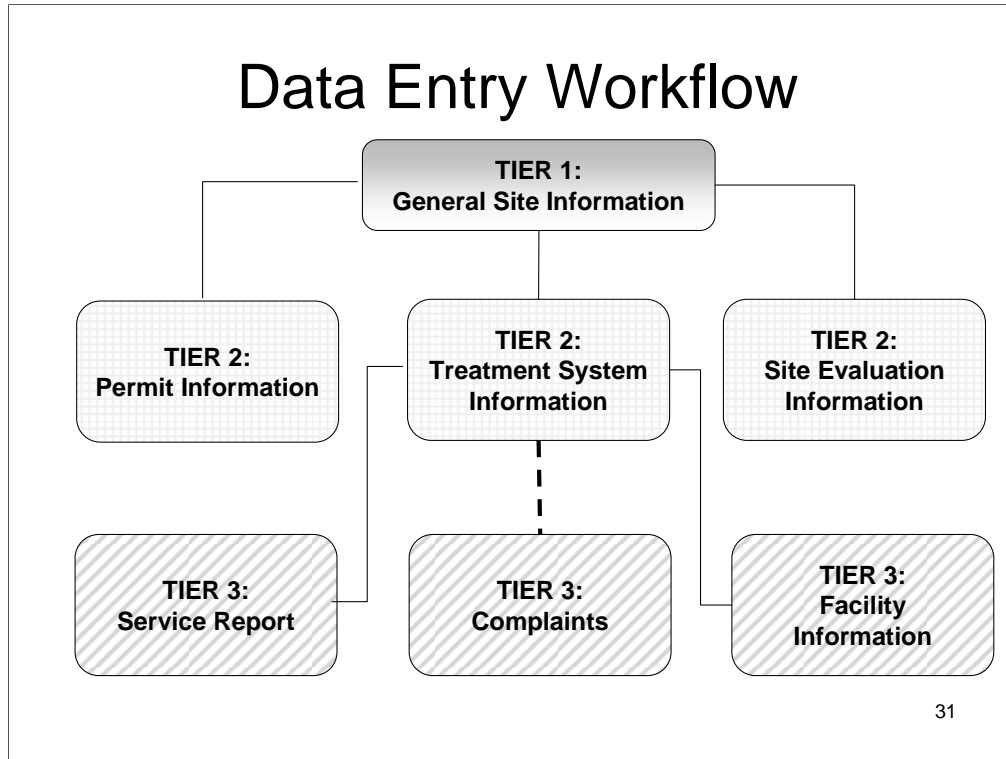
Permit Information -

Facility Served

Site Evaluation Information,

Treatment System, and

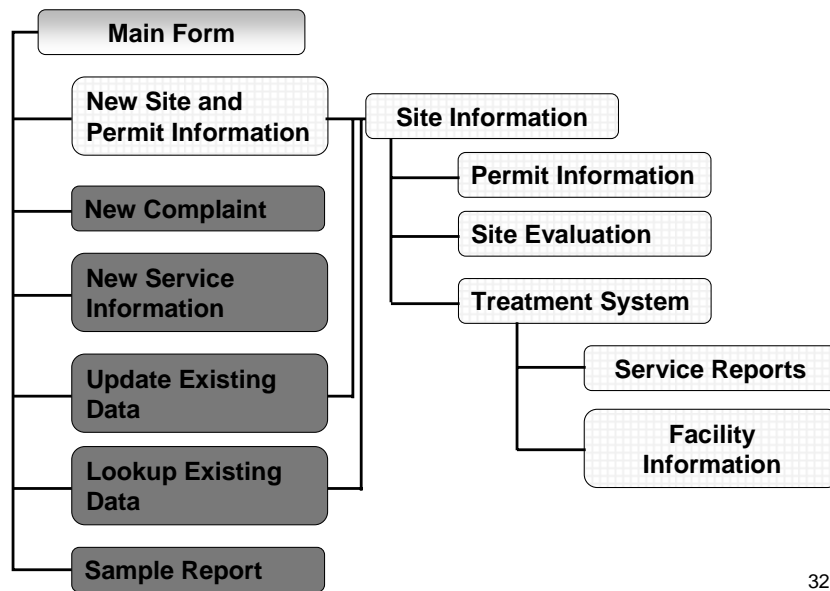
Service Reports.



Data is divided into three categories: Tier 1, Tier 2 and Tier3. 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.



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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 fields for Name, Apartment Or Suite, Street, City, State, Zip Code, Phone Number, and Email. The 'System Owner Details' section includes a checkbox for 'Same as Property Owner', a Name List dropdown, and the same set of address and contact fields. A 'Help' button is located on the right side of the form. Below the form, there are four navigation buttons: 'Previous record', 'Next record', 'Add new record', and 'Save record'. A 'Form View' button is also present. A 'Help Document' button is located at the top right. A 'To related forms' button is located below the 'Help Document' button. A 'To Main Form' button is located below the 'To related forms' button. A note at the bottom left states: '*Data will only be saved by clicking the Save button'.

Annotations:

- Help Document
- To related forms
- To Main Form
- Add new record
- Save record
- Next record
- Previous record

Tabbed forms

The figure consists of three screenshots of the Wastewater Information System Tool (TWIST) interface, specifically the 'General Site Information' tab.

- Top Left Screenshot:** Shows the 'Property Owner Details' section. A cloud bubble with the text 'Next tab' points to the 'Next' button in the navigation bar.
- Top Right Screenshot:** Shows the 'Help' button in the navigation bar.
- Bottom Right Screenshot:** Shows the 'General Site Information' section. It includes fields for Property Details (Country, Province, Municipality, Range, Section, Plot, Lot Number, Tax Number, Parcel Or Lot Name, Geographic Coordinates, Latitude, Longitude), Zoning (Zoning Classification, In Overlay Zone?, Overlay Zone Designation 1, Overlay Zone Designation 2, Property Control ID), and a 'Form View' button.

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@sil.com"/>	Phone Number	<input type="text" value="(777) 777-7777"/>
		Email	<input type="text" value="pal@sil.com"/>

*Edits will only be saved by clicking the Save button

Form View

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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"/>
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36

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Permit Information: Permit Details

**The Wastewater Information System Tool (TWIST):
Permit Information**

Permit Details | Permittee | Operating Permit | Maintenance | Permit Violations

General Information		Special Permit Conditions	
System Permit Number:	<input type="text"/>	Variance Issued?	<input type="text"/>
Permit Type	<input type="text"/>	Type Of Variance	<input type="text"/>
Permit Issuance Date (MM/DD/YYYY)	<input type="text"/>	Other Conditions	<input type="text"/>
Permit Fee	<input type="text"/>	Operating Permit Needed?	<input type="text"/>
Permit Fee Paid?	<input type="text"/>	Maintenance Contractor Needed?	<input type="text"/>
Building Permit Fee Paid?	<input type="text"/>		
Other Fee Paid?	<input type="text"/>		

Help
Back to Site
Return to Main Form

System permit number

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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	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	201	Operating Permit Fee (amount)	<input type="text"/>	
Street	2100 Anderson St	Operating Permit Fee Paid?	<input type="text"/>	
City	Faircity	Inspection Frequency Type	<input type="text"/>	
State	Virginia	Inspection Frequency	<input type="text" value="0"/>	
Zip Code	66555	Pumpout Frequency Type	<input type="text"/>	
Phone Number	(999) 000-7778	Pumpout Frequency	<input type="text" value="0"/>	
Email	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"/>	

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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

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Treatment System Information: General Information

The screenshot displays the 'The Wastewater Information System Tool (TWIST): Treatment System Information' window. The interface includes a tabbed menu at the top with 'General Info' selected. The main area is divided into two columns of input fields. The left column, titled 'System Details', contains fields for 'Control Id', 'Number of Structures', 'Date Installed (MM/DD/YYYY)', and a section for 'Installer Details' which includes 'Name List', 'Name', 'Apartment or Suite', 'Street', 'City', 'State', 'Zip Code', 'Phone', 'Email', and 'Registration/License'. The right column, titled 'System Manager', contains fields for 'Name List', 'Name', 'Apartment or Suite', 'Street', 'City', 'State', 'Zip Code', 'Phone', and 'Email'. To the right of these fields is a vertical stack of buttons: 'Help', 'Service Reports', 'Facility Served', 'Return to Site Info', and 'Return to Main Form'. At the bottom left, there are navigation icons (back, forward, search, and a plus sign) and a note: '*Edits will only be saved by clicking the Save button'. The bottom status bar shows 'Form View' and a series of small, empty checkboxes.

**The Wastewater Information System Tool (TWIST):
Treatment System Information**

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

System Details

Control Id
Number of Structures
Date Installed (MM/DD/YYYY)

Installer Details

Name List
Name
Apartment or Suite
Street
City
State
Zip Code
Phone
Email
Registration/License

System Manager

Name List
Name
Apartment or Suite
Street
City
State
Zip Code
Phone
Email

Help
Service Reports
Facility Served
Return to Site Info
Return to Main Form

*Edits will only be saved by clicking the Save button

Form View

40

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Treatment System Information: Tank Information

General Info	Tank Info	Treatment	Electrical/Mechanical Features	Infiltration Setback
Waste Flow Information				
Design Flow		<input type="text" value="1000"/>		
Waste Strength		<input type="text" value="3.4"/>		
Non Conventional Wastes (Specify)		<input type="text"/>		
Tank Risers Above Final Grade?		<input type="text" value="Yes"/>		
Effluent Filters on Tanks?		<input type="text" value="Yes"/>		
Grease Trap Tank Details				
Tank #1 Size (Total Gallons)		<input type="text" value="500"/>		
Tank #1 Material Type		<input type="text" value="Concrete"/>		
Tank #2 Size (Total Gallons)		<input type="text"/>		
Tank #2 Material Type		<input type="text"/>		
Septic Tank Details				
Tank # 1				
Size (Total Gallons)		<input type="text" value="1000"/>		
Material		<input type="text" value="Concrete"/>		
Compartments		<input type="text" value="1"/>		
Manufacturer		<input type="text"/>		
Tank # 2				
Size (Total Gallons)		<input type="text"/>		
Material		<input type="text"/>		
Compartments		<input type="text"/>		
Manufacturer		<input type="text"/>		
Tank # 3				
Size (Total Gallons)		<input type="text"/>		
Material		<input type="text"/>		
Compartments		<input type="text"/>		
Manufacturer		<input type="text"/>		

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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.

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Treatment System Information: Treatment

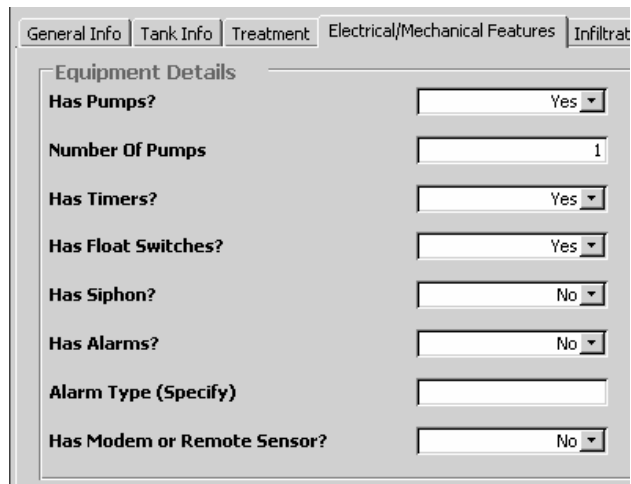
General Info	Tank Info	Treatment	Electrical/Mechanical Features	Infiltration Setback
<div style="border: 1px solid gray; padding: 2px;">Treatment Details</div>				
Post Tank Treatment		<input style="width: 90%;" type="text" value="Soil infiltration only"/>		
Recirculation?		<input style="width: 90%;" type="text" value="No"/>		
Soil Infiltration Area (Sq Ft)		<input style="width: 90%;" type="text" value="500"/>		
Soil Infiltration Depth (Inches)		<input style="width: 90%;" type="text" value="0"/>		
Distribution System Type		<input style="width: 90%;" type="text" value="Pressure drip tubing"/>		
Number of Trenches		<input style="width: 90%;" type="text" value="2"/>		
Total Length of Trenches (Ft)		<input style="width: 90%;" type="text" value="25"/>		
Observation Wells in Trenches?		<input style="width: 90%;" type="text" value="No"/>		
Receiving Water Name		<input style="width: 90%;" type="text"/>		
NPDES Permit Number		<input style="width: 90%;" type="text"/>		
Flow Type		<input style="width: 90%;" 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



Equipment Details	
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

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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"/>
Facility Area	<input type="text"/>	Capacity of Hot Tubs	<input type="text"/>
Number of Bathrooms	<input type="text"/>	Has Water Softener?	<input type="text"/>
Number of Bedrooms	<input type="text"/>	Additional Special Fixtures	<input type="text"/>
Number of Occupants/Employees	<input type="text"/>	Year Structure Built	<input type="text"/>
Number of Guests	<input type="text"/>	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

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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

Navigation:

Buttons:

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 Wastewater Information System Tool (TWIST): Service Reports

Select Treatment System Control ID

Treatment System Site Address

Street

City

State

Zip

General Information | Inspection Info | Components Info | Repair Info

Service Information

Service Date:

Name List

Service Provider Name

Apartment or Suite

Street

City

State

Zip Code

Phone Number

Email

Registration/License

Help

Treatment System

Return to Main Form

* Edits will only be saved by clicking the Save button

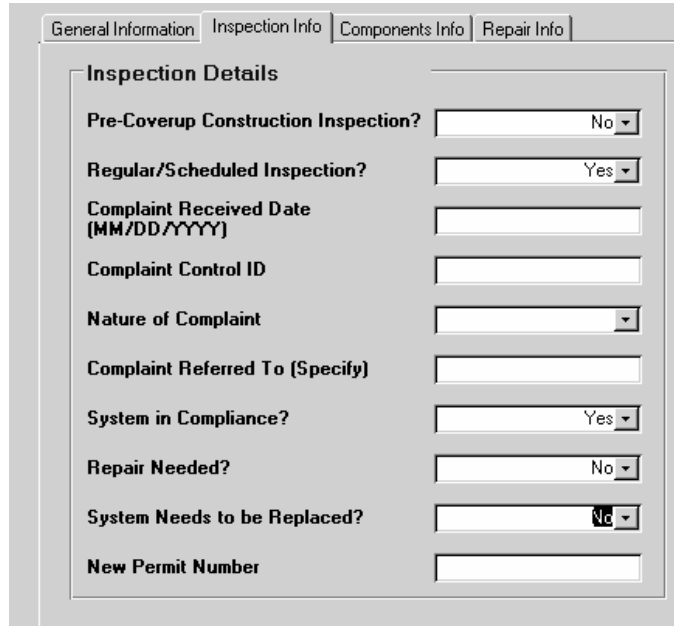
Form View

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?		<input type="text" value="No"/>	
Regular/Scheduled Inspection?		<input type="text" value="Yes"/>	
Complaint Received Date (MM/DD/YYYY)		<input type="text"/>	
Complaint Control ID		<input type="text"/>	
Nature of Complaint		<input type="text"/>	
Complaint Referred To (Specify)		<input type="text"/>	
System in Compliance?		<input type="text" value="Yes"/>	
Repair Needed?		<input type="text" value="No"/>	
System Needs to be Replaced?		<input type="text" value="No"/>	
New Permit Number		<input type="text"/>	

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Complaint

The screenshot displays a web-based form titled "The Wastewater Information System Tool (TWIST): Complaint". The form is organized into two main sections: "Treatment System Location" and "General Information".

Treatment System Location

- Apartment or Suite: Text input field
- Street: Text input field
- City: Text input field
- State: Dropdown menu
- Zip Code: Text input field

General Information

- Complaint Control ID: Text input field
- Complaint Type: Dropdown menu
- Complaint Description: Large text area for description

At the bottom of the form, there is a navigation bar with several buttons: a left arrow, a right arrow, a printer icon, a double right arrow, a "Return to Main Form" button, and a "Help" button. The text "Form View" is visible in the bottom left corner of the form area.

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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
Plot 1223
Phone Home Jermantown
Phone 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 Wastewater Information System Tool (TWIST): General Site Information

Property Owner Details

System Owner Details

Name, Address, City, State, Zip Code, Phone Number, Email

Twist.mdb

The Wastewater Information System Tool (TWIST)

Facility Types Table

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"/>

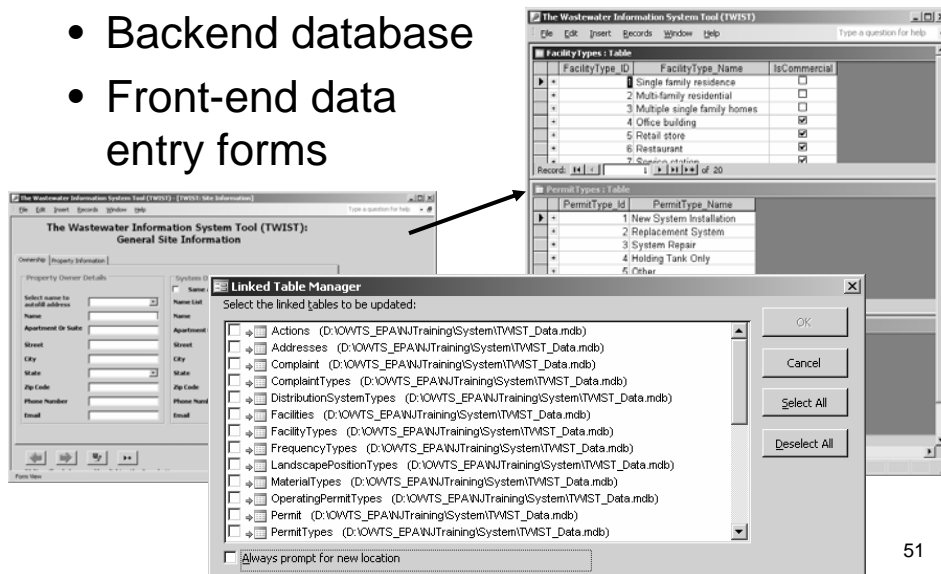
Records: 1 of 20

FacilityType_ID, FacilityType_Name, IsCommercial

Twist_data.mdb

System Implementation – contd.

- Backend database
- Front-end data entry forms



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User Authentication

- User validation

The screenshot shows a window titled "The Wastewater Information System Tool (TWIST) - [TWIST: Login]". The window has a menu bar with "File", "Edit", "Insert", "Records", "Window", and "Help". Below the menu bar, there is a text input field for help: "Type a question for help". The main content area has a title "The Wastewater Information System Tool (TWIST)" and a subtitle "Draft Beta-Test Version of July 2005". On the left, there is a description: "USEPA's Microsoft Access based Data Management Tool developed to manage onsite and clustered wastewater treatment systems." In the center, there is a "User Login" section with two input fields: "User Name" and "Password". Below these fields are four buttons: "Login", "Exit Database", "Register", and "Help". At the bottom of the window, there is a status bar that says "Form View".

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

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User Authentication

- User validation
- Registration
- Login



The screenshot shows a Windows-style dialog box titled "The Wastewater Information System Tool (TWIST): User Registration". The dialog has a menu bar with "File", "Edit", "Insert", "Records", "Window", and "Help". Below the menu bar is a text input field for "Type a question for help". The main content area is titled "First Time Registration" and contains a form with the following fields: "Name", "Agency Division", "Local Office Name", "User Name", "Password", and "Verify Password". Each field has a corresponding text input box. At the bottom of the form are three buttons: "Help", "Cancel", and "Register". The dialog box is set against a light gray background.

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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 functionality, press and hold the Shift key while opening the database. The database is in its editable mode when the screen shown in Figure 15 appears.

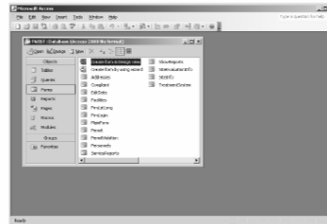


Figure 15. TWIST database window, showing the database's list of forms.

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.

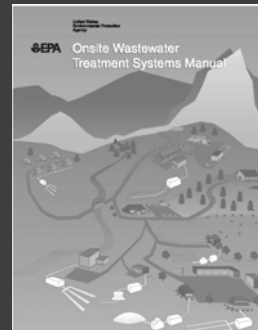
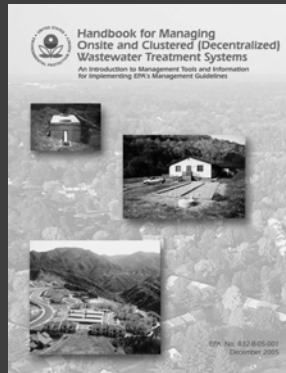
Join the Watershed Academy Webcast Team for Next Month's Webcast on:

Utilities and Watershed Management

Visit epa.gov/watershedwebcasts

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Other Tools for Managing Decentralized Systems



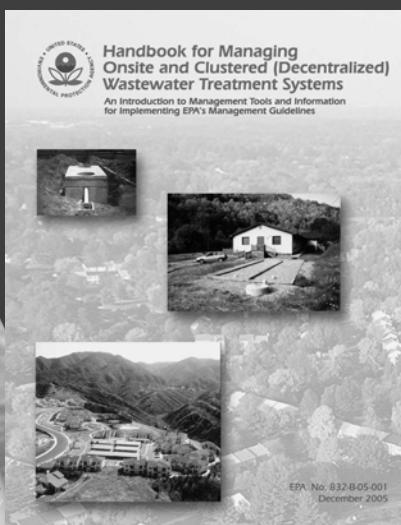
58

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

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



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?

CUPSS

Check-Up Program for Small Systems

[Set-up](#) | [Switch Utility](#) | [Create User](#) | [Help](#) | [Exit](#)

My Home

My Inventory

My O & M

My Finances

My Check-up

My CUPSS Plan

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 ?

EPA U.S. Environmental Protection Agency

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

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202-564-0631

www.epa.gov/owm



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Questions?



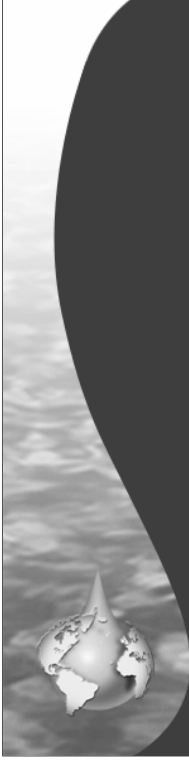
Barry Topping, Tetra Tech, Inc.

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>