Wastewater Treatment on the Shore

Rapid Infiltration Basin System Technology

October 24, 2012
QUALIFICATIONS

- 83 Water Plants
- 6 Wastewater Treatment Plants
- 36 State of Delaware licensed water operators (over 350 years combined experience)
- 30 State of Delaware licensed wastewater operators (over 100 years combined experience)
- 5 Water/Wastewater Operators licensed to operate in other States (PA, NC & MD)
- 8 Delaware Water / Wastewater Operators of the Year
- 3 Lifetime Achievement Winners
- 85 years of DNREC and Div. of Public Health Regulatory Experience
- Licensed to operate in Maryland and North Carolina.
Regulated Wastewater Utility

- Design
- Build
- Own
- Operate
- Maintain
TIDEWATER RESPONSIBLE FOR:

- REGIONALIZATION
- FINANCING (IF REQUESTED)
- OWNERSHIP
- MONITORING
- OPERATION & MAINTENANCE
- SCHEDULED PREVENTIVE MAINTENANCE
- 24/7 CUSTOMER SERVICE
- REGULATORY BACKSTOP
Governmental Agency Oversight

- PSC oversee us for:
  - Tariff
  - Franchise
  - Service

- DNREC – for environmental aspects
  - Coastal Zone permit
  - Construction permit
  - Operating permit

- Sussex County
  - Conditional use approval
Wastewater Onsite System Design and Construction Strategy Schematic

Step 1 - Contract with Utility

Step 2 - Preliminary Site Investigation and Reconnaissance

Step 3 - Preliminary Project Discussion with DNREC

Step 4 - Site Investigation and Characterization
DNREC Nonbinding Letter of Feasibility

Step 5 - Preliminary Screening of Disposal Options

Step 6 - Detailed Site Evaluation

Step 7 - Groundwater Impact Assessment

Step 8 - Selection of Disposal Area

Step 9 - Meet with DNREC and County Officials

Step 10 - Receive Approval for Soils Work

Step 11 - Selection of Treatment Components

Step 12 - Design System to Address Treatment, Disposal, and Residuals

Step 13a - Permit Application and Approval

Step 13b - Meet with PSC to Discuss Rates, Impact Fees, and Contributions

Step 14 - Start Construction

Step 15 - Construction Complete and Facility Brought Online

Wastewater Onsite System Design and Construction Strategy Schematic
Types of Wastewater Treatment Used by TUI

- Facultative Lagoons
- SBR
- RBC
- Various forms of activated sludge
- MBR
Types of Wastewater Disposal Systems Used by TUI

- Rapid Infiltration Basins (RIBs)
- Drip Irrigation
- Spray Irrigation (Slow rate land treatment)
- Subsurface Disposal Beds
- NPDES Discharge
- Others
Proper Treatment Must Match Proper Disposal Depending Upon Circumstances

High Level Treatment Must Precede RIB Disposal
Nearby MBR’s

- Cecil County, MD
- Baltimore County, MD
- Hart’s Landing, Lewes, DE
- City of Lewes, DE
- Wandendale (proposed)
- Bayfront, Lewes, DE
- Town of Millsboro, DE
- Glen Riddle Development – Ocean City, MD.
Rapid Infiltration Basins (RIBs)

- Ground Surface
- I/P Pond
- Groundwater Mound
- Original Groundwater Surface
Breeders Crown Facility
Breeders Crown

- Parkson Geo-Reactor 60 RBC
- Discharging to Six Rapid Infiltration Beds (RIBs)
- 63 Wastewater units
- Plant Capacity - 18,900 GPD
- Plant Treatment Capabilities:
  - 30 mg/l BOD
  - 30mg/l TSS
Breeders Crown RIB Disposal
Previous Day RIB
Breeders Crown After Dosing
Country Grove

- Fluidyne ISAM Sequential Batch Reactor
- Discharging to Rapid Six Infiltration Beds (RIBs)
- 180 Water and Wastewater units
- Plant Capacity 54,000 GPD
- Plant Treatment Capabilities:
  - 10mg/l BOD
  - 10mg/l TSS
  - 10mg/l TN

Wastewater Treatment Facility
Country Grove Previous Day
Country Grove After Dosing
Country Grove Effluent Pipe
Proposed Wandendale Facility
Wandendale Type of Disposal

RIBS
- Shallow basins (18-24” deep) that accept the treated water
- 15.4 acres area approved for RIBs
- Six (6) basins
- Dose one basin per day, then let it rest for five days and rotate the basins.
Bay Front RIB System
Kubota Membrane Bio-Reactor Facility

Discharging to Rapid Five Infiltration Beds (RIBs)

360 Water and Wastewater units

Plant Capacity - 54,000 GPD – Capacity can be expanded to 108,000

Plant Treatment Capabilities:
- 3mg/l BOD
- 3 mg/l TSS
- 3 mg/l TN
Bay Front RIB Disposal
Bay Front Effluent Pipe
Inside View of Bay Front

Aeration Blowers

Membranes

Diffusers

Bar Screen

Bay Front
RIB During Dose video1

GOPR0072.MP4
RIB After Dose Video 2

GOPR0073.MP4
West Bay Park RIB Disposal
West Bay Park RIB Disposal
“Providing Water and Wastewater Solutions That Make Sense”