Department of Environmental Quality Straight Pipe Issues Southwest VA

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May 2010

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Straight Pipe Issues-Southwest VA

- History of straight pipes
- Pollutants associated with WWTPs
- Wastewater effects on aquatic systems from rural and small urban WWTPs
- Regional Planning
- Options for wastewater control in communities
- Case histories
- Relative effectiveness of wastewater controls for mitigating contaminants
- Costs of installation and maintenance for wastewater controls and regional wastewater planning

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History Straight Pipe Issues

- Clusters of older houses in mountainous regions
  - Mostly coal camps
- In hollows along streams
- No room for conventional drain fields
- VDH and SWCB estimated 20,000 straight pipe discharge in Southwest VA in 1980
- Great progress has been made since 1980

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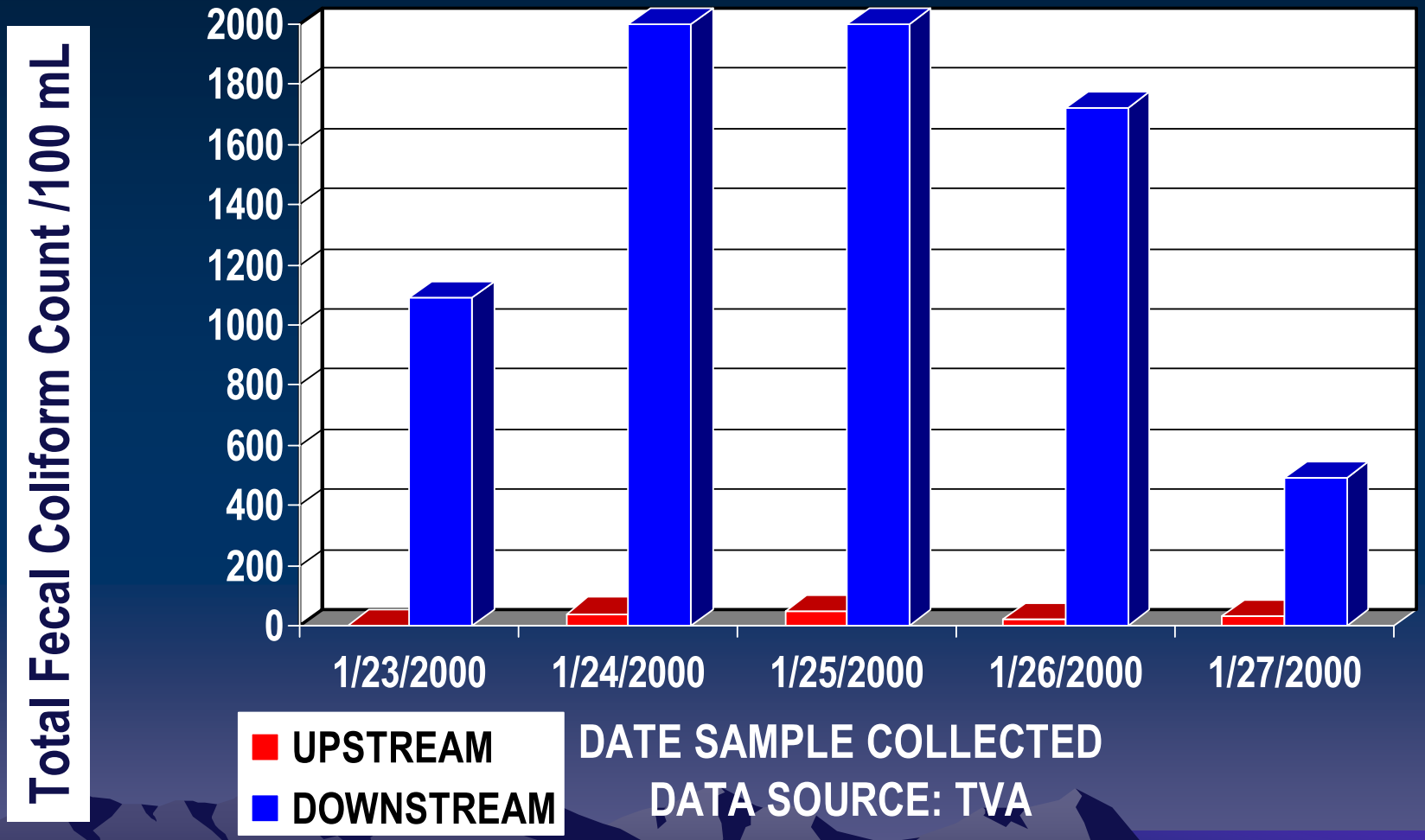
Pollutants Associated with WWTPs

- DEQ assessment of water quality
- Bacterial and benthic impairment
- Pollutants of concern
  - Bacteria
  - Organics-DO depletion
  - Household chemicals

Imboden Community-Wise Co Pigeon Creek Water Quality



Straight Pipes-TMDL

- Bacterial and benthic impairment
- DEQ has 24 TMDL's in Southwest VA that require 100% removal of straight pipes as a first step to meet the Water Quality Standard

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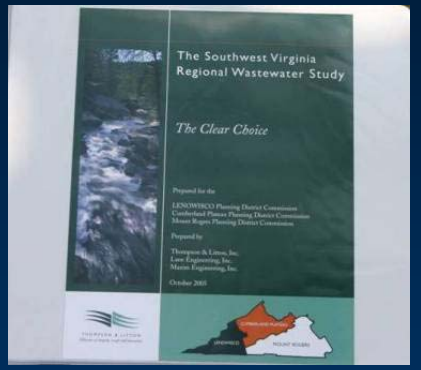
Regional Planning

Document Title: SW VA Regional Wastewater Study; October 2005

Provides Comprehensive Review of Sewer need in 13 counties and three Cities in SW VA



Prepared for: Three SW VA Planning Districts:

- LENOWISCO PDC
- Mount Rodgers PDC
- Cumberland Plateau PDC

Purpose: Identify wastewater needs

Prioritize need based on health hazard, water quality impacts, growth potential, no of customers served and cost.

Provide prioritized ranking and costs estimates for funding.

136 total projects identified

Recommends pursuing and funding

- 44 centralized sewer line extensions ($306 M)
- 12 de-centralized ($18.5 M for 15 projects)
- 3 hybrid projects

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Options for Wastewater Control in Straight Pipe Communities

- Central sewerage - sewer service extension
- Discharging systems
- No-discharging - on site
- De-centralized

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Case Examples-Dante

Discharging System

- Clinchfield Coal Company HQ
- Treatment constructed 1997
  - Cost $5,000,000
  - Cost/connection $12,500
  - Design flow 125,000 gpd
  - Population 1200
  - Conventional activated sludge treatment
  - Owned and maintained by Russell County PSA

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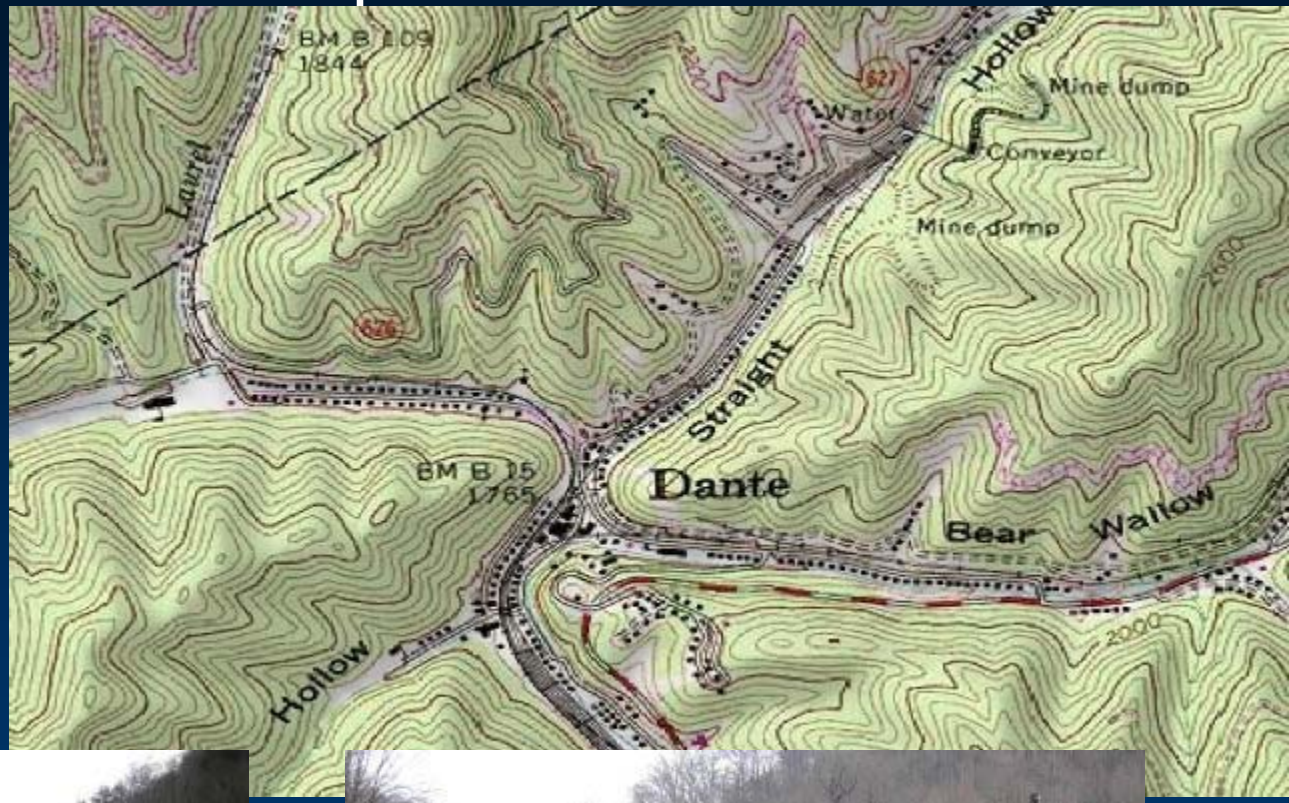
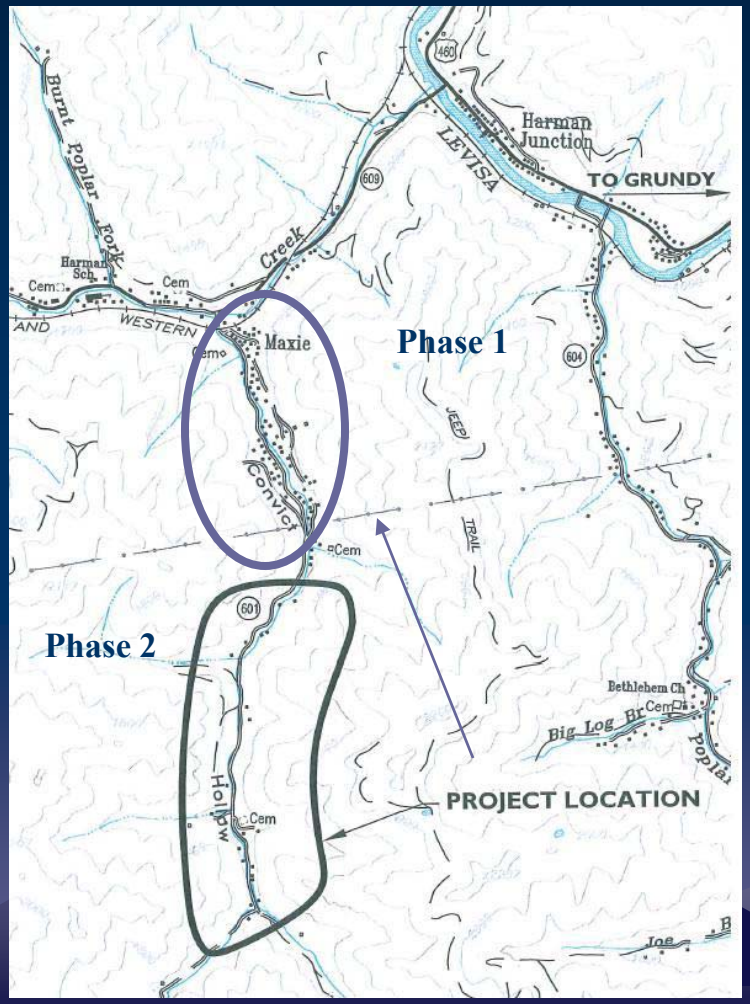
Case Example-Dante



Case Example-Convict Hollow Phase 2

Sewer Line Extensions



- 53 homes
- Design flow 6,700 gpd
- Project costs $684,000
  - Cost/connection $13,000
- Owned and Maintained by Buchanan County PSA

Case Example-Amonate

Discharging System

- Community of 60 homes
- Design flow 12,000 gpd
- Treatment constructed - 2005 cost $872,000
  - Cost/connection $14,500
  - Individual septic tanks at houses (O&M by PSA)
  - 6,750 linear feet sewer line
  - Sub-surface sand filters
  - Disinfection and dechlorination
  - Owned and maintained by Tazewell County PSA

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Case Example-Amonate

Case Example-Imboden

On Site No Discharging System

- 14 homes
- Constructed 2004
- 5,000 gpd
- Individual septic tanks at houses
- Common drain field
- Cost $160,000
  - Cost/connection $11,500
- User monthly sewer bill $29
- Owned and operated by Town of Appalachia

Case Example-Exeter

Discharging and On Site No Discharging Systems

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Case Examples-Upper Exeter

- Upper Exeter discharge
- Proposed construction 2010
- 130 homes
- 30,000 gpd
- Enhanced secondary treatment
- Cost $1,775,000
- Cost/connection $14,000
- Owned and operated by Town of Appalachia

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Case Examples-Lower Exeter

- Lower Exeter no discharge
- Constructed 2009
- 17 homes
- Secondary treatment plant
- Common drain field
- Cost $2,250,000
  - Cost/connection $13,250
- Owned and operated by Town of Appalachia

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Case Example-Ewing, Lee County

On Site No Discharging System

- 25 homes
- Constructed 2010
- 5,000 gpd
- Individual septic tanks at houses
- Secondary wastewater treatment
- Treated effluent to drain field
- Cost $381,000
- Cost/connection $15,200
- Owned operated by Lee County PSA

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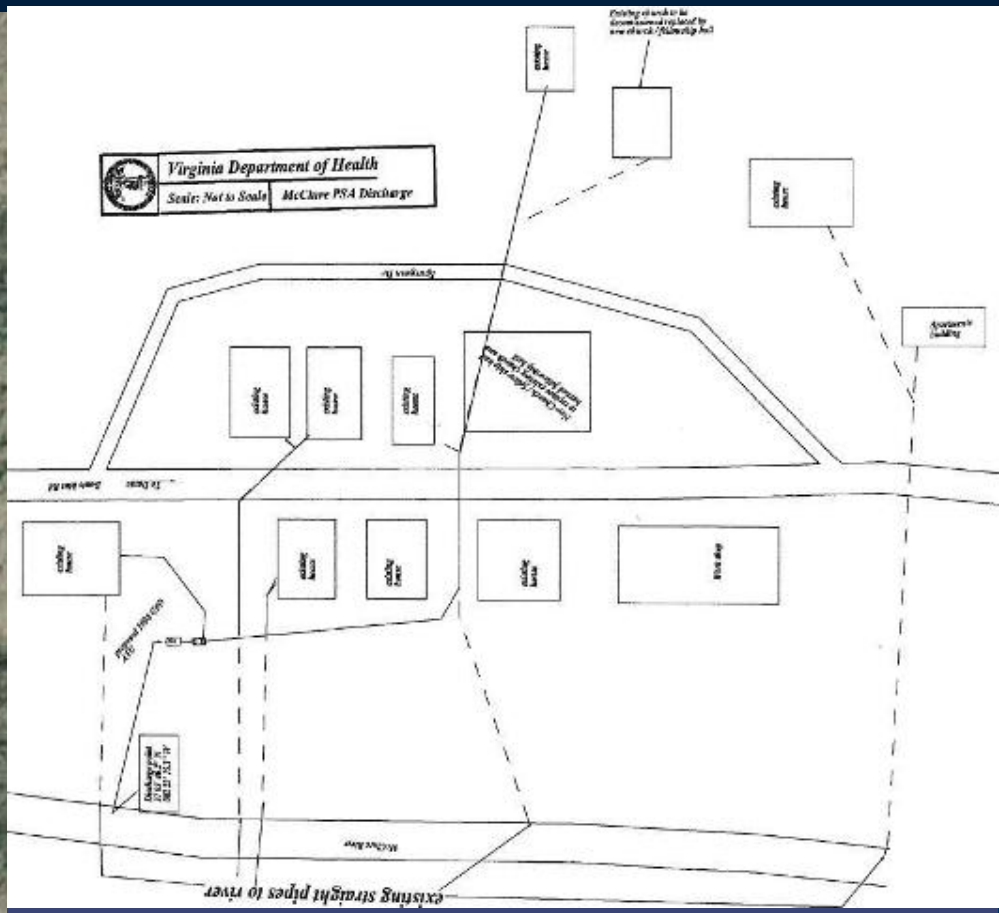
Case Example-McClure, VA

Eight Houses and a Church Straight Pipes

Cost Effective Solution?



VDH is assisting Dickenson Co PSA with solution

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Conclusions

1. Much progress has been made since 1980 when a estimated 20,000 straight pipes existed in Southwest VA
2. Larger clusters of homes served by sewer line extensions or new wastewater treatment plants that discharge.
3. Smaller individual and groups of homes remain with straight pipes (decentralized systems)
4. Smaller clusters of home served by discharging or non-discharging systems

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Planning and Adoption by Locality

1. Regional Planning: Southwest VA Regional Wastewater Study - October 2005: Ranking and prioritization of projects has been Key
2. Key to success is project promotion by locality
3. Operation and maintenance by locality is critical
4. Cost effective solutions for smaller clusters of houses is a necessity
5. Funding agencies are more willing to provide funding especially for decentralized systems.

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Challenges

1. Selling decentralized systems to an existing public utility is difficult

2. Finding cost effective solutions for small communities of Houses

3. Teaching and encouraging homeowners to accept and to properly use the new system

4. Obtaining funding (grants)

5. Project must be
   PERMANENT & SUSTAINABLE
   Plan for REPLACEMENT

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Funding

1. USDA Rural Development

2. DEQ Revolving Loan Fund

3. Coal Mine Permitting
   a) Offsets for TMDL
   b) Mitigation for ACOE permits

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Questions?

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