Canaan Valley Decentralized Wastewater Management Facility Plan Newsletter No. 2

Existing Development

The below table summarizes the number of developed and undeveloped parcels in each of the sewer services area and in the unsewered onsite septic system area.

WWTF	Developed Parcels	Undeveloped Parcels	Total Parcels
Beaver Ridge Resort	3	1	4
Black Bear Resort	83	24	107
Blackwater Center Association	5	0	5
Canaan Village, Inc	17	25	42
Canaan Valley National Wildlife Refuge	4	0	4
CVSP	21	39	60
Deerfield Village Development, Inc	7	2	9
Lochoa Industries	11	35	46
Canaan Mtn Resort - North Point/North Lake	67	60	127
Timberline Four Seasons Resort	237	115	352
Windwood and Talheim Village	27	33	60
Sewered Subtotal	***482***	***334***	***816***
Unsewered Subtotal	***474***	***469***	***943***
Total	**956**	**803**	**1,759**

Buildout Estimates

An analysis of buildout conditions was performed to determine the sustainable wastewater management strategy for Canaan Valley as shown below.

- Area of parcels outside of sewer service areas that is not developed – Area within wetlands = Developable onsite area
- Exclude State & Federal lands
- Approximately 3,500 developable acres
- Subtract 20% for slopes, roads, etc. results in ~2,800 acres available for development
- With development density of 1 EDU/acre & 2.6 capita/EDU = Buildout population of 7,260
- Using 70 gpd per capita, ***future wastewater flow is estimated at 508,500 gpd***
- Consistent with previous buildout estimates

Project Update

Below are the major steps in the Facility Planning process. Steps 1-5 are complete and step 6 is underway. This newsletter highlights some of the key elements of the work to date. By the end of February, a Preferred Plan incorporating feedback received on all components of the Plan will be issued.

1. Wastewater Needs Definition
    a. Existing Needs for WWTFs
    b. Existing Needs for Unsewered Areas
    c. Future Needs --based on 20 year projections
2. Technology Alternatives Screening
3. Management Alternatives Screening
4. Identification of Technically Viable Scenarios
5. Management Alternatives Evaluation
6. ***Development of Decentralized Preferred Plan***

WWTF Needs Assessment

Inflow and Infiltration (I/I) – Limited Observations

- Excessive I/I observed in 3 systems
- No I/I observed in 3 systems
- Remainder the extent of I/I is unknown
- ***Detailed Sewer System Evaluation Studies are required for all systems***

Physical Condition

- WWTFs 20+ years old
- Most have steel tanks with visible corrosion

Deficiencies

- WWTFs lack adequate instrumentation and control
- Most have no or insufficient flow equalization & sludge wasting tanks
- Lack of building inhibits nitrification

Treatment Alternatives

The following technologies were evaluated to replace the extended aeration and lagoons currently used.

- Recirculating Sand Filter (RSF) using Black Beauty
- Recirculating Media Filter (RMF) using high-rate synthetic filter media
- Membrane bioreactor

Management Entity

At this time, Hamrick PSD has agreed to consider adoption of a Canaan Valley Decentralized Wastewater Plan.

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WASTEWATER MANAGEMENT SCENARIOS

The base scenario replacing existing WWTFs in their current locations was considered and other scenarios were developed based on the following criteria:

- Permitted & existing flows
- Distance to nearby WWTFs
- Acceptance to consolidation
- Ease of implementation
- Cost effectiveness of consolidation

A total of 3 scenarios were evaluated. At this time, the analysis indicated that there is no economic incentive to consolidate the existing WWTFs. Thus, the selected scenario consists of replacing the existing WWTFs in their current location with RMFs. However, combining facilities in close proximity has some advantages. Should individual WWTF owners develop a preference for combining systems, there is no economic or performance based reason for them not to do so. RMFs were selected based on simplicity of operation, stability of the process, and lower life cycle costs. At higher flows, economies of scale tend to favor other treatment processes such as membrane bioreactors (MBRs).

PRELIMINARY COST ESTIMATES

Below are cost estimates for replacement of the participating facilities with RMF systems. The Preferred Plan will present final cost estimates, proposed user charges, and an implementation plan. It is estimated that costs per equivalent dwelling unit (EDU) would be:

	# of EDUs	Annual Capital Cost[1,2]	Annual O&M Cost	Total Annual User Cost
Existing Users only	534	$310	$620	$930
Buildout Users	753	$220	$440	$660

[1]Based upon 25% grant and 40 year loan at 1%

[2]Grant amount, capital costs, and user charges may increase or decrease based upon final plan

Annual capital cost will increase for any needed collection system improvements. Annual capital costs will decrease if system sizing can be reduced based upon actual wastewater generation.

PROJECT WEBSITE

All project reports, presentations, and meeting minutes are available at:

http://www.lombardoassociates.com/canaan-valley-west-virginia.php

PUBLIC MEETING

Feb 15th – Preferred Plan
Canaan Valley Fire Hall
6 pm