



# PIPELINE

DECEMBER 2012

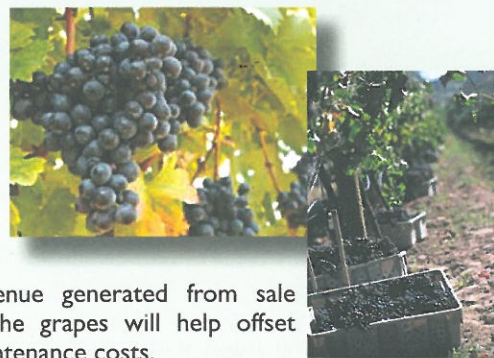
## Vineyard to Glass

Growing grapes and developing a vineyard might not be the first thing a wastewater facility would think of doing to upgrade the landscape of a treatment plant. But that's exactly what the Clifton Sanitation District did to help transform a former wastewater lagoon site into a sustainable agricultural area and wildlife habitat. A small 3.5 acre vineyard was selected to be the focal point of the 37-acre reclaimed area.

Clifton Sanitation in partnership with Talbot Farms has completed the first annual wine grape harvest. The initial harvest of over 4 tons was purchased by Vino Salida Wine Cellars and Silver Vines Winery, both wineries are located in Colorado.

The wine grapes are the Cabernet Franc variety and were chosen for this location based upon their popularity with Colorado winemakers as a blending wine and the vines are hardy with good winter resistance and vigorous growth. The wine produced from Cabernet Franc is slightly acidic, aromatic and a deep purple color.

It is anticipated the grapes harvested in 2012 will be completed and available at the annual Colorado Mountain Winefest in September 2013.



Revenue generated from sale of the grapes will help offset maintenance costs.

## Wine Facts, Statistics, and Trivia

- Age of vine before producing useful grapes: 3 years
- Age of vine before full production: 5 years
- Tons per acre: 4 (average can vary greatly)
- Gallons of wine per ton of grapes: 120
- Bottles per ton: 500-700
- Glasses per acre: 16,000

## Nutrients Emerging As New Water-Quality Concern

In June 2012, the Colorado Water Quality Control Commission approved two new regulations to control the discharge of nutrients in Colorado. Nutrients, mainly nitrogen and phosphorous, are essential for plant and animal growth, but in the environment, they can create algae blooms that steal oxygen from aquatic life and can cause taste and odor problems in drinking water. Phosphorus concentrations as low as 0.1 parts per million can cause algae blooms. One part per million is equivalent to one minute in two years. Wastewater treatment plants are the major source of nutrients, although leaking sewers and storm drains and fertilizer from farms and ranches also produce them. Colorado has nutrient standards for only a few problem bodies of water (e.g., Cherry Creek Reservoir, Fruit Growers Reservoir), but no statewide standards. Only 17 states do currently have nutrient standards, but none have standards that apply to all streams and lakes as Colorado is proposing.

The first regulation, Regulation 85, limits the amount of total inorganic nitrogen (TIN) and total phosphorus (TP) that can be discharged from certain larger Wastewater Treatment Facilities (WWTF) in the state. Regulation 85 implements technology-based effluent limitations for TIN and TP for all WWTFs with a flow equal to or greater than 1 million gallons per day (mgd) and which discharge to a "priority"

water. Wastewater treatment facilities with less than 1 mgd treatment capacity or discharge to "low" priority waters are exempt from Regulation 85, but will be regulated in the future under Regulation 31. Regulation 31 contains water quality based standards that are designed to protect aquatic life and designated water uses including drinking water and recreation. The water quality based limits for nitrogen can not be met with today's wastewater treatment technologies. Regulation 85 bridges the technology gap by setting higher limits that can be met today.

It is anticipated that Regulation 85 requirements will be implemented into the next Clifton WWTF Colorado Discharge Permit when the Colorado River Basin is reviewed in 2013 or early 2014. The Clifton WWTF is located in a high priority watershed and has a permitted capacity of 2.5 mgd. which makes it ineligible for delayed implementation. The existing facility is capable of meeting Regulation 85 TIN limits, but was not designed to remove PhosphorusTP. The District has begun to evaluate what modifications would result in reliable compliance with the TP requirements of Regulation 85. The District is committed to putting out the best water quality possible to protect aquatic life, drinking water, and recreational uses while simultaneously keeping rates as low as possible.

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# How Does Your Wastewater Treatment Plant Work?

## What is wastewater treatment?

It's cleaning used water and sewage so it can be returned safely to our environment.



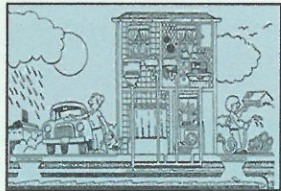
## How do treatment plants protect our water?

### Wastewater treatment plants:

- Remove solids, everything from rags and plastics to sand and smaller particles found in wastewater;
- Reduce organic matter and pollutants--naturally occurring helpful bacteria and other microorganisms consume organic matter in wastewater and are then separated from the water; and,
- Restore oxygen--the treatment process ensures that the water put back into our river has enough oxygen to support life.

## Where does wastewater come from?

- **Homes**--human and household wastes from toilets, sinks, baths, dishwashers, garbage grinders, clothes washers and drains.
- **Industry, Schools, and Business**--chemical and other wastes from factories, food-service operations, school activities, hospitals, shopping centers, etc.
- **Storm Water Infiltration and Inflow from Runoff and Groundwater**--water that enters the sanitary sewer system during a storm, as well as groundwater that enters through cracks in sewers.



On the average, each person in the U.S. contributes 50 to 100 gallons of wastewater every day. If you include industrial and commercial water uses, the per person usage of water is as high as 150 gallons per day.

## How does our wastewater treatment plant work?

The 1.2 million gallons per day (average) entering the facility is conveyed by over 75 miles of interceptor sewers, varying in size from 6 inches to 30 inches in diameter.

The type of wastewater treatment used in the Clifton Sanitation Wastewater Treatment Plant is a biological process in which naturally occurring living microorganisms (bacteria, protozoa, tiny plants and animals) are maintained at a very high population level. They quickly consume the dissolved and suspended organic material carried over from the primary treatment of the incoming wastewater as a source of food. This process promotes the formation of biological masses that clump together by adhesion and settle to the bottom forming "sludge."

## Wastewater treatment basically takes place in three stages:

### Preliminary & Primary Treatment STEP 1

Sanitary sewers carry wastewater from homes and businesses to the raw wastewater pumping station at the treatment plant. The wastewater flows by gravity, rather than pressurized pipe flow, in the sanitary sewer pipes. Routine cleaning and closed circuit television inspection of Clifton's sanitary sewer lines helps keep the sewer collection system in good shape. Each year new construction in the Clifton service area adds about 3-10,000 feet of new sanitary sewer lines and 25 manholes to the sanitary sewer collection system.



### STEP 2

From the sewer line, flows enter the headworks for Pretreatment. Pretreatment consists of a mechanical barscreen and a grit basin. The bar screen lets water pass, but not trash (such as rags, diapers, etc.). The grit removal basin uses a circular vortex to collect the grit. The trash and grit is collected and properly disposed of. The screened wastewater is pumped to the Oxidation Ditches where the biological process begins.



### Secondary Treatment

#### STEP 1

Two Oxidation Ditches supply large amounts of dissolved oxygen to the mixture of primary wastewater and helpful bacteria and the other microorganisms that consume the harmful organic matter. The growth of the helpful microorganisms is sped up by vigorous mixing of air (aeration) with the concentrated microorganisms (activated sludge) and the wastewater. Adequate oxygen is supplied to support the biological process at a very active level. The ratio of food (organic matter) to organisms to oxygen is continually monitored and adjusted to meet daily variations in the wastewater. The oxidation ditch activated sludge processes represent the current state-of-the-art approach for achieving both carbon oxidation and low nitrogen concentration levels in treated wastewater.



#### STEP 2

Mixed liquor (the mixture of raw wastewater and microorganisms contained in an aeration basin) from each oxidation ditch flows into two Secondary Clarifiers where the biological mass (the microorganisms)

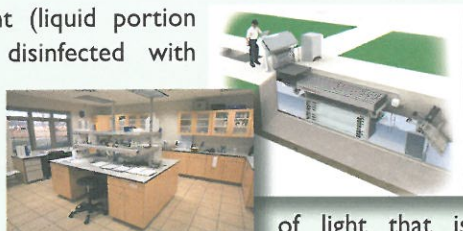




is allowed to settle from the water by gravity. 90-95 % of this mixture, called “activated sludge,” is returned to the aeration basins to help maintain the needed amount of microorganisms. The remaining 5-10 % is pumped to the aerobic digester (described later).

### STEP 3

The treated effluent (liquid portion from Step 2) is disinfected with Ultraviolet light (UV) prior to discharge into the Colorado River.



UV light is a form of light that is invisible to the human eye. Specific wavelengths, between 200 and 300 nanometers (or billionths of a meter), are categorized as germicidal – meaning they eliminate bacteria and viruses. UV light is an environmentally-friendly, chemical-free, highly-effective way to safeguard water against harmful microorganisms.

All effluent returned to natural bodies of water must meet National Pollutant Discharge Elimination System (NPDES) criteria. The final effluent is monitored daily. In-house laboratory staff performs sampling and analysis for process control and NPDES compliance.

### Third Sludge (Biosolids) Treatment

#### STEP 1

Solids removed from the secondary clarifiers, known as waste activated sludge (WAS), are treated in the aerobic digestion process. In the aerobic digesters, solids are aerated continuously to further break down and stabilize the biodegradable solids concentrated from wastewater. Once stabilized the solids are referred as biosolids.



The biosolids are pumped to a centrifuge to dewater the

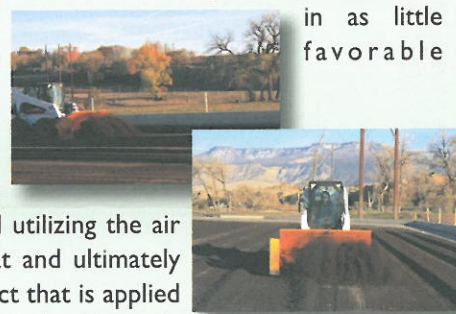
aerobically digested biosolids. The centrifuge is a sedimentation device that rotates at high speeds to enhance liquid-solids separation. Biosolids are spun in a 14 inch-diameter cylinder at 1,800 rpm, which induces a centrifugal force 3,000 times the normal gravitational force. The dewatered biosolids are discharged from the centrifuge for additional treatment and beneficial reuse or disposal at the Mesa County Landfill.

Stabilized sludge has little odor and conforms to the EPA requirements to further reduce harmful microorganisms.

#### STEP 2

Step 2 is the stabilization and disposal of biosolids. The Clifton Sanitation District has implemented a low-tech air drying facilities to produce Class “A” biosolids material. Class “A” biosolids are biosolids that are treated to the highest standard in the Biosolids Regulations issued by Environmental Protection Agency and the Colorado Department of Public Health and the Environment. Biosolids that meet the Class “A” standard are considered fertilizer rather than sludge and are acceptable for distribution for public use on gardens and landscaping. The low-tech air drying/storage process has been demonstrated to be successful in meeting Class “A” stability requirements with significant volume reduction. The resulting solids produced are between 50% and 80% as one week during favorable weather conditions.

Approximately 70% of the biosolids produced at Clifton Sanitation is processed utilizing the air drying process to treat and ultimately create a Class A product that is applied as a soil amendment on the District’s land. Eventually, the material could also be distributed for public use on gardens and landscaping. The colder months hinder the air drying process and the untreated Class B biosolids are disposed of at the Mesa County Landfill.



## Colorado Wastewater Operator of the Year 2011



Doug Hill, a Plant Operator for Clifton Sanitation District, has been awarded the Colorado Rural Water Association 2011 Operator of the Year Award. Mr. Hill received this honor during the association’s annual ceremony held on

February 15, 2012 at the Crown Plaza in Colorado Springs. The statewide Operator of the Year Awards ceremony serves to highlight the role of Colorado’s water and wastewater operators in protecting the environment. Award winners are chosen for their “outstanding technical excellence and exemplary work ethic contributing to the high level of water quality in Colorado.”

Mr. Hill joined Clifton Sanitation District in 2008 and has an extensive background in wastewater treatment

plant operations. In addition to his 28 years of dedicated service Doug holds the highest levels of certification in both wastewater operations as a Colorado Class A Wastewater Operator and in the collections as a Collections 3 operator as well as a Colorado Class A CDL license. As a senior operator Doug was instrumental during the initial start-up of the new facility and a smooth transition from the old lagoon system. In addition to the daily duties as an operator he performs public education tours and talks, has been essential in training new employees, prepares reports; conducts compliance monitoring, sampling and laboratory testing. During his span of time, the plant has maintained and exceeded the compliance standards.

Doug’s contributions and accomplishments to Clifton Sanitation and the water environment field have been considerable. His work performance, moral and ethical values are a leading example for others to follow.



## 2012 to 2016 Rate Structure

Clifton Sanitation District (District) provides wastewater treatment and collection service to approximately 5,000 customers who represent about 8,000 equivalent residential units (EQU) with a population of 18,000 people. The monthly sewer service charges are based upon the cost to collect, treat and dispose of wastewater from one EQU. Clifton Sanitation District is an Enterprise Fund and is self-supporting from its own revenue sources and does not receive any revenues from property or sales taxes. Charges for collection and treatment of wastewater comprise the funds for operations, maintenance and debt service.

Red Oak Consulting (Red Oak) completed a cost of service analysis in late 2011 for the District that includes development of a long-range financial plan, cost analysis of providing service to each customer class, and design of monthly service fees. The comprehensive financial planning study period, 2011 through 2020 reviewed

the financial status and recommended service fee adjustments, as necessary to assure the District's continuing financial viability. This study was necessitated

by urban growth, (impacting the collection system, treatment plant, pretreatment program), regulatory changes affecting treatment plant processes through more stringent water quality standards in receiving waters and a desire to be proactive in the preservation and enhancement of system capacities and preparation for impending water quality regulations.

The District adopted a transition to cost of service rates over a multi-year period to mitigate customer bill impacts. The following rate structure for residential and commercial service fees has been adopted for 2013. For residential

customers, the District intends to continue its historic method of assessing flat rates. For commercial and industrial classifications, the District is transitioning to a consumptive use method of assessing rates and charges. This will result in rate increases for most customers and rate decreases for some. These fees are intended to be the second step of a five-year transition to cost-of-service rates.

The District's rates are projected to increase by 3.5% annually during the five year period if the District is to remain fiscally sound while paying for capital improvements and meeting regulatory laws and regulations.

The sewer service fee and sewer base charge for homeowners and business will increase in FY 2013, effective January 1, 2012.

The tap fees for new development will be adjusted by 3.5% effective January 1, 2013. The District's tap fee is the

sum of capital improvement charge and the plant improvement fee. Revenue from the capital improvement charge is dedicated to collection system capital projects. Revenue from

the plant improvement fee is dedicated to treatment plant capital replacement and future expansion. Residential tap fees will be adjusted from \$5,500 to \$5,700. Non-residential capital improvement charge is based upon the water service line size. The non-residential plant improvement fee is based upon the number of EQU's. Non-residential EQU charge will be adjusted from \$3,100/EQU to \$3,200/EQU.

Wastewater rates shall be effective January 1, 2013 to ensure that the District will continue to generate funds sufficient for operations, maintenance, debt service, and capital improvement needs.

Customer Type	2012	2013	2014	2015	2016
Residential, per EQU	\$26.40	\$27.20	\$28.10	\$28.90	\$29.70
Nonresidential (EQU<=1)					
First 4,000 gallons, per bill	\$26.40	\$27.20	\$28.10	\$28.90	\$29.70
Over 4,000 gallons, per Kgal	\$0.94	\$1.91	\$2.90	\$3.91	\$4.96
Nonresidential (EQU>1)					
Base Charge, per EQU	\$22.50	\$19.10	\$15.60	\$12.10	\$8.40
Volume Charge, per Kgal	\$0.94	\$1.91	\$2.90	\$3.91	\$4.96
Whitewater, per Kgal	\$6.69	\$6.85	\$7.00	\$7.24	\$7.45

### 2013 Residential Monthly Service Fee Comparison

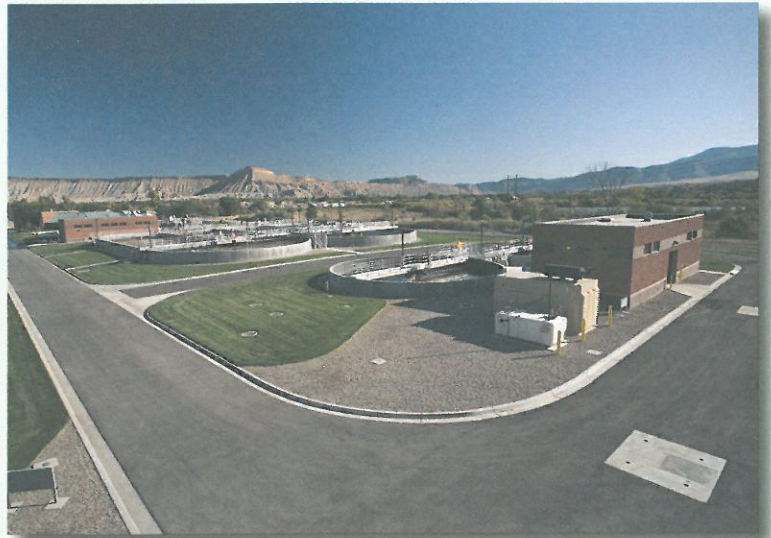




## You're Invited to Take a Tour!

We invite you to take a tour of your facility to see how your wastewater is cleaned or how your solid waste is managed. Tours are scheduled Wednesday and Thursdays, between 9:00 a.m. and 3:00 p.m. Weekend tours are not available.

CSD is committed to providing a valuable educational experience that focuses on learning the importance of wastewater treatment in protecting the public's health and the environment. We provide tours of your facility to any group, big or small. We welcome children (10 or older) and adults on our tours. Tours are free, so please make reservations at least two weeks in advance and review our tour safety guidelines. For more information please go to our website at [www.cliftonsanitation.com](http://www.cliftonsanitation.com) or call **970-434-7422**.



## Illegal Dumping



Illegal/illicit dumping can be a major cause of water pollution. Public witness complaints provide the most common source of information. To report illegal/illicit dumping, call the Clifton Sanitation District office **970-434-7422**.

When a complaint is received, the Clifton Sanitation District investigates and when possible, assembles evidence for prosecution. The case is then released to the appropriate State and Federal authorities. A reward of up to \$500 will be given to any witness(es) providing information leading to the conviction for violation of "unlawful disposal" into the sanitary sewer system.

## CLIFTON SANITATION AND THE COMMUNITY

*"Teamwork - Together we achieve the extraordinary"*



For any questions about the rates please contact Clifton Sanitation District 970-434-7422

## IN CASE OF EMERGENCY

**970-434-7422 OR 911**



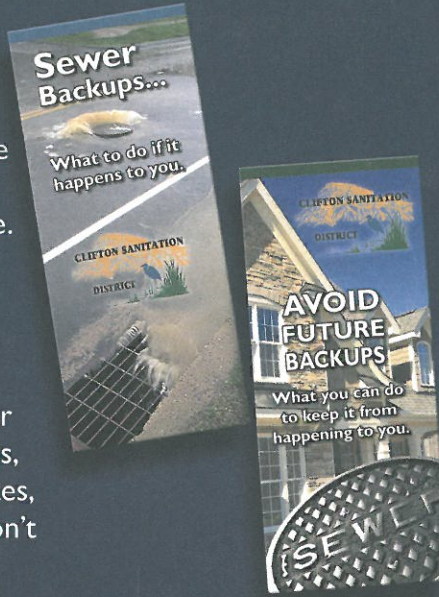
For billing questions please contact Clifton Water District 970-434-7328



## Questions or Comments?

If you have any questions, comments, concerns or need more information about the facility, please contact the District at 434-7422 or stop by the office at 3217 D Road in Clifton. You may also submit comments on-line at our web site. We value your input and comments.

**On the Web** Visit our website at [www.cliftonsanitation.com](http://www.cliftonsanitation.com) for frequently asked questions, such as sewer backups and how to avoid future backups, you can also find upcoming meetings, rates, services and other information. If you don't have access to a computer please call us directly at 970-434-7422.



**Colorado Mesa University** through Western Colorado Community College now offers a program in **Water Quality Management** to prepare students for entry-level employment as technicians in the water and wastewater processing industry. Clifton Sanitation is proud to partner along with other local entities to provide this program. For more information visit [www.coloradomesa.edu/wccc](http://www.coloradomesa.edu/wccc) or call **970.255.2600** to learn more.

## Our Mission...

...to provide excellent wastewater service of the highest possible standards at the lowest practical cost in keeping with sound business practice and the public trust. We will conduct cooperative affairs with the highest degree of integrity. We will serve the needs of consumers fairly and impartially. We proclaim district development in the best interest of public health and to improve harmony with the natural environment.

**BOARD MEMBERS:**  
Kent Brumback  
• Chairman  
Mike Kohn  
• Director  
Greg Martin  
• Secretary/Treasurer  
Dale Welch  
• Director  
David Stassen  
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