Water Treatment Residuals & Mulch Blend for Alternative Daily Cover

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Relevant Site Locations
Project Circumstances & Considerations

- O.N. Stevens Water Treatment Plant - Excess Accumulation of WTR
  - 2017: 17,000 Dry Tons Water Treatment Residuals
  - 2018: 17,000 Dry Tons Water Treatment Residuals
  - 2019: 6,500 Dry Tons/year . . .

- Cefe Valenzuela Landfill
  - Airspace Conservation
  - Cover Soil Deficit

J. C. Elliot Transfer Station:
  - Future Area Land Use Plans
  - Surplus Mulch Volume
Project Objectives

- Removal of excess accumulations of Water Treatment Residuals at the O.N. Stevens Water Treatment Plant.
- Utilization of surplus mulch accumulations at the J. C. Elliot Transfer Station.
- Dispose of WTR at CVL - Conserve airspace and cover soil – Obtain TA from TCEQ for use of WTR/Mulch blend as alternative daily cover source.
Project Actions

- A contractor for O.N. Stevens will remove excess accumulation of Water Treatment Residuals, dewater solids and transport to Cefe Valenzuela Landfill for disposal OR staging, storage and blending with J.C. Elliot Mulch to be used as and Alternative Daily Cover.

- Cefe Valenzuela Landfill will submit an application for a Temporary Authorization to TCEQ allow mulch to be staged, blended, and stored, and to be used as Alternative Daily Cover (ADC).

- Surplus mulch accumulations at the J. C. Elliot Transfer Station will be transported to the CVL at a schedule coordinated with the blending needs and site conditions.
WTR Source Factors

• O.N. Stevens Water Treatment Plant
  ▪ 80 MGD average potable water production
    ◦ 2017: 17,000 Dry Tons Water Treatment Residuals
    ◦ 2018: 17,000 Dry Tons Water Treatment Residuals
    ◦ 2019 → 6,000 Dry Tons /WTR per year
WTR Characteristics & Management

- Chemical Analysis
  - Heavy Metals / Inorganic Solids / pH
- Physical Characteristics
  - Moisture Content / Particle Size
- Common Management Methods
  - Accumulate – Defer Expenses!
  - Land Application/Land Disposal
# WTR Chemical Analyses

- **Total Nitrogen**: 3,325 – 10,000 mg
- **Total P**: 710 – 2,518 mg/kg
- **Soluble Reactive P**: 17 – 29 kg
- **Total K**: 2,965 – 4,129 kg
- **pH**: 6.2 – 8.3 Std. Units

*Drinking Water Treatment Residuals: A Review of Recent Uses - J. A. Ippolito, K. A. Barbarick, and H. A. Elliott*  
USDA ARS – Journal of Environmental Quality
Soil Textural Triangle → Loamy Sand

Particle Size - %

Sand  61 – 87
Silt  12 – 23
Clay  1 - 11

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TCEQ Required Disposal Analysis Results

- Paint Filter Test = Pass
- TCLP = Non-Hazardous
- Total Petroleum Hydrocarbons < 50 mg/kg
SWANA Technical Policy

ALTERNATIVE DAILY COVER MATERIALS FOR SANITARY LANDFILLS

I. POLICY

SWANA supports the appropriate use of field proven alternative daily cover materials (ADCs) for sanitary landfills. Such usage should be based on site-specific characteristics of each disposal site and applicable provincial, state or local government rules and regulations. The use of ADCs, as a substitute for compacted soil . . .

Note: The SWANA policy goes on to mention the benefits of ADC with regard to airspace conservation and the expense of obtaining soil cover materials.
TCEQ → Daily Cover Must Control:

- Disease Vectors
  --> Minimum Thickness = 6"

- Fires
  --> Moisture Content/Inorganics

- Odors
  --> Biofilter

- Windblown Litter or Waste
  --> Density/Particle Size

- Scavenging
  --> Thickness – Odor Control
Daily, Intermediate & Final Cover Needs

- Fire Control
- Intermediate Cover
- Final Cover

Current daily cover needs are ~ 2,200 cy per week.
Mulch Utilization Considerations

- Particle Size
- Moisture Content
- Biofilter/Odor Control

Mulch Types
- Fresh Ground
- Ground & Windrowed
- Ground, Windrowed & Screened

Note: Generally, brush grinding is completed quarterly by an outside contractor.
CVL Units 1 & 2
Cefe Valenzuela Landfill Alternative Daily Cover

BLENDING RATIOS TO BE DETERMINED DURING TA.

Mulch: J.C. Elliot Transfer Station

WTR: O.N. Stevens Water Treatment Plant
No additional equipment is required at CVL for the blending process.

Materials will be blended in a dynamic layering method wherein alternating layers are deployed and mixed by a deep plow.
Existing equipment will be utilized for staging, blending and storage of the WTR, mulch, and any soil that may be incorporated into the mix. No new equipment purchases are planned at this time. Proposed equipment includes:

- Rome Plow or Disc
- Bulldozer (Komatsu D65)
- Tractor
- Motor Grader (Dresser)
Operational Considerations

• All materials and processing within footprint.

• Location provides:
  - Stormwater Protection
  - Groundwater Monitoring

• Soil Deficit (Unit I and Unit II).
Cefe Valenzuela Landfill – Unit 1

Sector 3C

Sector 3C is the last sector scheduled for construction in Unit 1.
TCEQ Considerations @ CVL

- TCEQ Temporary Authorization is required.

- One year of monitoring during the Temporary Authorization is required for permanent approval.

- Following a successful monitored demonstration, construction plans and specifications will be developed and a permit modification will be submitted to TCEQ with appropriate changes made to the Site Operating Plan.
Regulatory Issues

- TCEQ: Solid Waste
  - Activities within permit boundary are regulated by the 330 rules.
  - Temporary Authorization is required to stage, blend, store and utilize the WTR/Mulch blend for ADC.

- WTR may be staged ≤ two years at Beneficial Land Use sites.
Current Project Challenges

- Removal and disposal of O.N. Stevens Water Treatment Plant WTR may begin in less than 30 days!

- An application for a Temporary Authorization has been submitted to TCEQ requesting approval to stage, blend, store and utilize the WTR/Mulch blend as an ADC.
More next year . . .

Thank You!

Questions?