

Lessons Learned for Siting Composting Facilities on a Landfill

Miramar Landfill,
San Diego, CA

Otay Landfill
Chua Vista, CA



CA SWANA Chapter Workshop
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SCS ENGINEERS

Regulatory Background

- Management of Organics - October 2014, and September 2016
- AB 1826 - Organics Diversion
 - Mandatory commercial organics diversion legislation
 - Most commercial businesses and some multi-family complexes
- SB 1383 - Diversion Goals
 - From landfills
 - 50% by 2020 and 75% by 2025.
- CA entities evaluating new/expanded facility needs

California Must Manage Organics!



Courtesy: www.picturesso.com

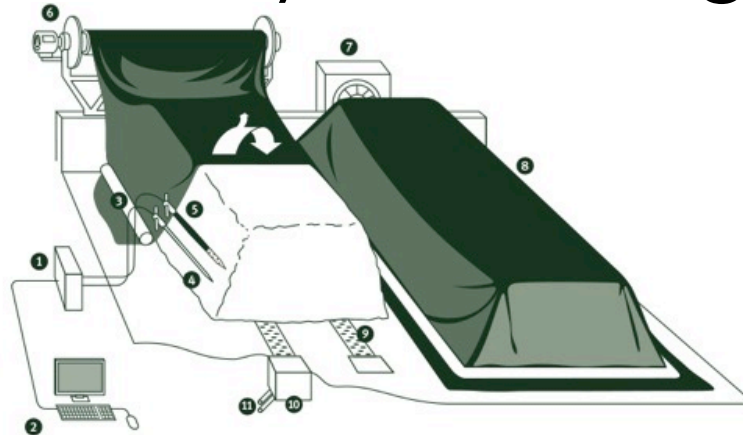
Two Projects.....Both With Similar Objectives...Similar Challenges

- Historical Operations – Traditional windrow composting system
 - Long processing times (varies, 3-9 months)
 - Potential odor concerns
 - Potential impacts to stormwater
- Divert more food waste
- Top of Landfill
 - No permanent structures
 - Non harden working surface
 - No access to clean power
- California Climate Composting
 - Moisture control
 - Drought and Arid Climate
- Compost CASP Technology requires
 - Mobility (easy to locate/relocate)
 - Low energy consumption
 - Simple to operate
 - Proven technology for food waste processing times (8 weeks)
 - Improved odor control
 - Clear Separation of management
- GORE® Cover with Oxygen Control System
 - Air emissions & Odor control
 - Water/Moisture Management
 - Regulatory Compliance

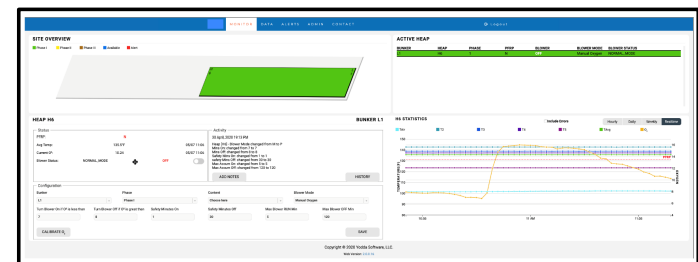
CASP System Selected SG Mobile® System using GORE® Cover



- 1 Control system
- 2 PC
- 3 Rim weight
- 4 Temperature sensor
- 5 Oxygen sensor
- 6 Cover handling device
- 7 Aeration fan
- 8 GORE® Cover
- 9 Aeration and leachate system
- 10 Water trap
- 11 Leachate pipe



SG Compost Control System



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SG Heap® System



SG Bunker® System



SG Mobile® System



Typical CASP System Layout



Validating the Assumptions by Piloting the Process

• **Miramar Landfill**

City of San Diego

- 2009-2010
- Introduction of Food Waste
- Off Grid Power Supply (generator)
- Odor Control
- Process Water Management
 - Production of Leachate
- Compost Quality comparison to existing windrow operation

• **Otay Landfill**

Republic Services

- 2018-2020
- Introduction of Food Waste
- Off Grid Power Supply (solar)
- Odor Control
- Process Water Management
 - Production of Leachate
- Compost Quality comparison to existing windrow operation

Miramar Landfill Food Waste Pilot Study 2009-2010



Otay Landfill Food Waste Pilot Study 2018-2020



Otay Landfill Food Waste Pilot Study 2018-2020



Receiving food waste in the “donut”



Miramar Landfill Project Bid Phase

(Public Procurement Process)

- CalRecycle Organics Diversion Grant- \$3M
- Request for Proposals – October/November 2017
- Key Team Members
 - SCS (Prime)
 - Sustainable Generation (Compost Technology Subcontractor)
 - Frank’s Industrial Services (Electrical Subcontractor)
 - IO Environmental (Construction Sub)
- Requirements for Self-Performance & Small Local Business Enterprise
- Design-build Project Award – January 2018
- Project Cost - \$4.49M
 - Base Bid – \$3.65M
 - Alternate 1 (Dedicated Electrical Feed) – \$0.82M
 - Alternate 3 (Repairs) – \$16K



Courtesy: www.innovationforsocialchange.org

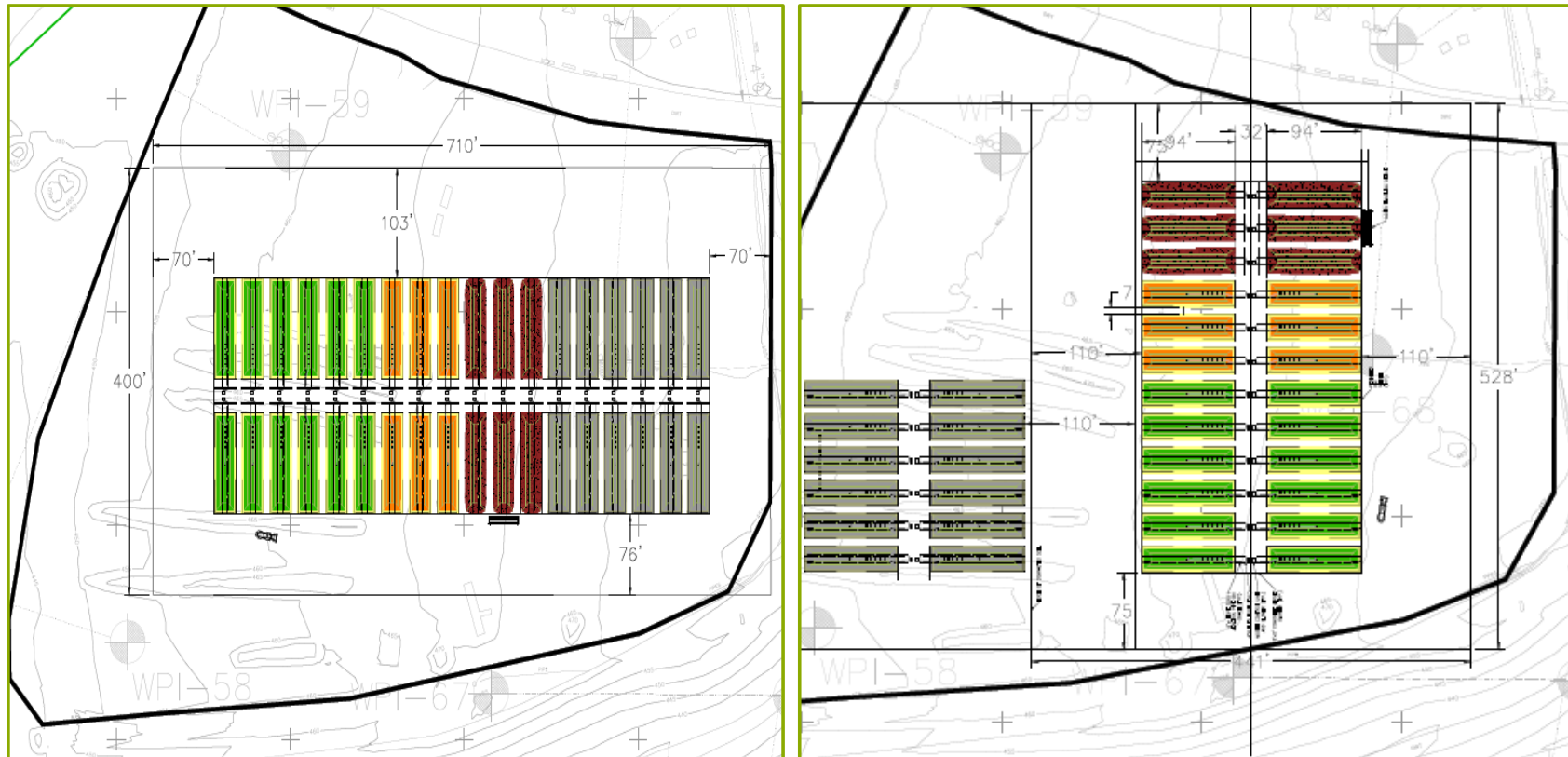
Design Phase

- Mixed waste: Food waste and green waste
- Capacity: 40,000 tons per year
w/option to add 20,000 tons per year
- Feedstock: Preparation by Client
- ASP System: 24-heap system
w/option to add another 12-heaps
- Cover System: Fabric Cover System (Specified by Client)
- Mobile Winder: Electric (Diesel in RFP)
- Power Source: Generator for 12-month
Subsequently, utility power

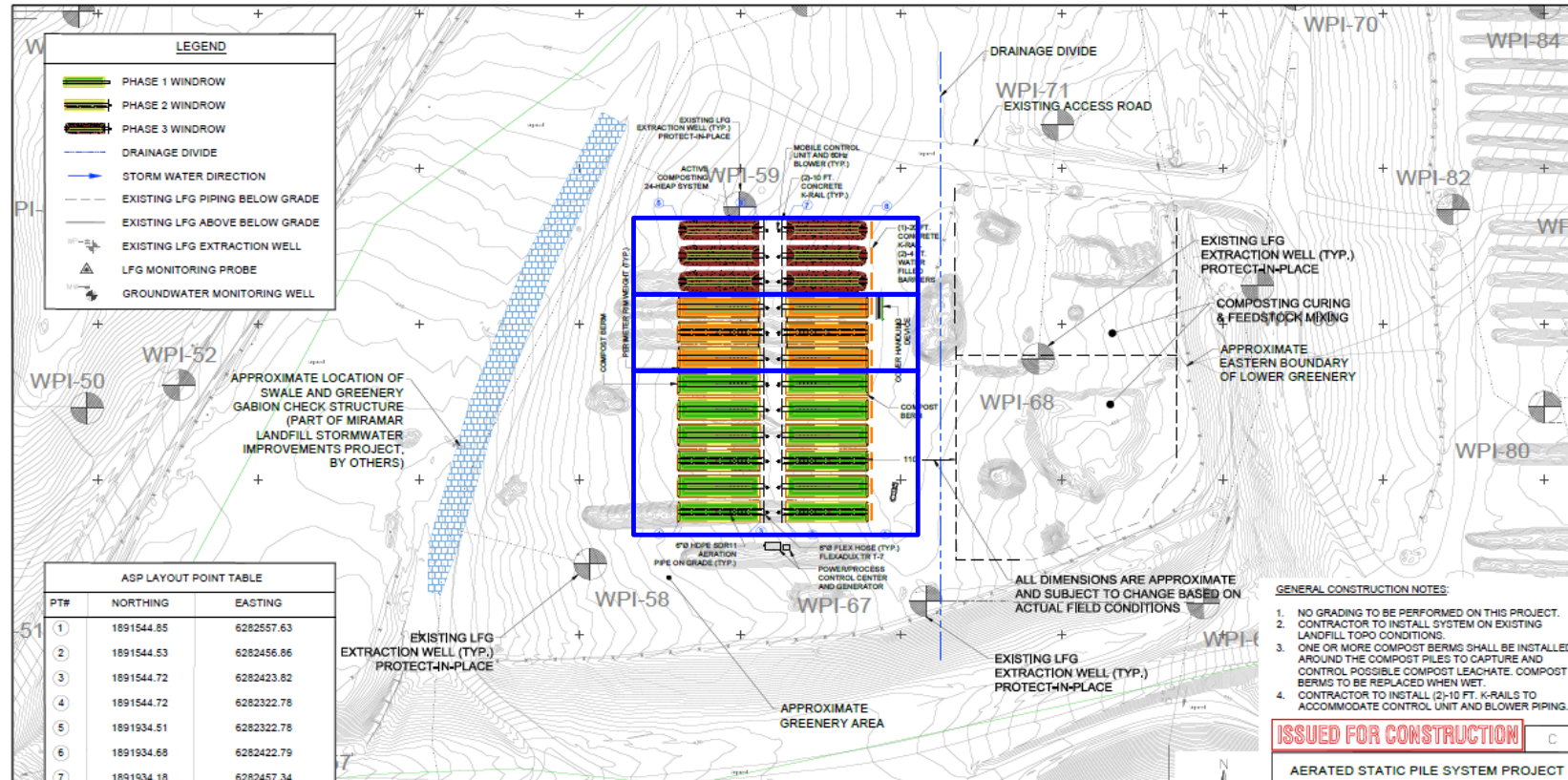
Project Location



Coordination with Client/Site



Final Layout



Permit Phase

- Development Services Department (DSD)
 - Mechanical
 - Electrical
 - Stormwater
- Air Pollution Control District (APCD)
 - Mobile Winder
 - Generator

City of San Diego and APCD



Courtesy: www.picturesso.com

Mobile Winder

- Self-propelled machine
- Handle the cover during heap construction and deconstruction
- CA emission control standards
- RFP – diesel winder, recommended electric-powered winder
- Lower cost and eliminated permitting with APCD



Courtesy: Sustainable Generation

Miramar Project Pictures



Otay Project Pictures

(similar layout w/solar)

Private Company Procurement Process



<https://www.youtube.com/watch?v=oKNqaydvIA8>



SG Solar™ Power Unit



for 7x24 Off-the-Grid Composting Operation

- First Application: 2018 USCC Conference- Atlanta



Earth Matter Governor's Island, NYC 2018



Otay Landfill: Chula Vista- 2018



Otay Landfill: Full Scale 2021



Ready for Shipping: Q2 2022 Community Composter: CA location



Things to Note – Pilot Project Objectives

- **Both Projects ran a pilot to Validate Assumptions:**
 - Confirm the Mix recipe with addition of food waste
 - Confirm Process Control and Operating Performance
 - Demonstrate Control of odors (and VOC emissions as rules develop)
 - Demonstrate Process Water Management
 - Understand the Equipment Operations and Material Flow
 - Produce a High-Quality Stable Finished Compost
- **Data Usage**
 - Final System Sizing and Layout Configuration
 - CalRecycle Organics Grant Application
 - Permitting and Compliance
 - Financing and Procurement
- **TODAY:**
 - Miramar Greenery: 40K TPY Expanding to Full Infrastructure 2023-24
 - Otay Compost: 30k TPY Expanding to 60K TPY: April 2022

Things to Note – Final Technical Considerations

- Location and Layout of the CASP system
 - Temporary or Permanent
- Liquids and Stormwater Management
- Electrical power
 - Generator(diesel)
 - Solar
 - Dedicated clean power
- Information Technology
- Bird control
- Local permitting requirements

Questions/Comments

