



# City of San Diego Long-Term Resource Management Options Strategic Plan (LRMOSP)



## Resource Management Advisory Committee

Fourth Meeting

April 30, 2008





# Agenda

- I. Welcome/Introductions  
Approval of Feb 20<sup>th</sup> Meeting  
Summary
- II. Recap of Solid Waste Facilities Tour-  
March 26, 2008
- III. Review Screening Matrices
- IV. Next Meeting (June 18, 2008)





# Solid Waste Facilities Tour

## Allan Company Material Recovery Facility





# Solid Waste Facilities Tour

## Miramar Nursery





# Solid Waste Facilities Tour



*Miramar  
Greenery*



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# Solid Waste Facilities Tour

## Miramar Landfill





# Solid Waste Facilities Tour





# End Goal

- Planning Horizon -YEAR 2030
- City of San Diego Annual Landfill Disposal Needs:

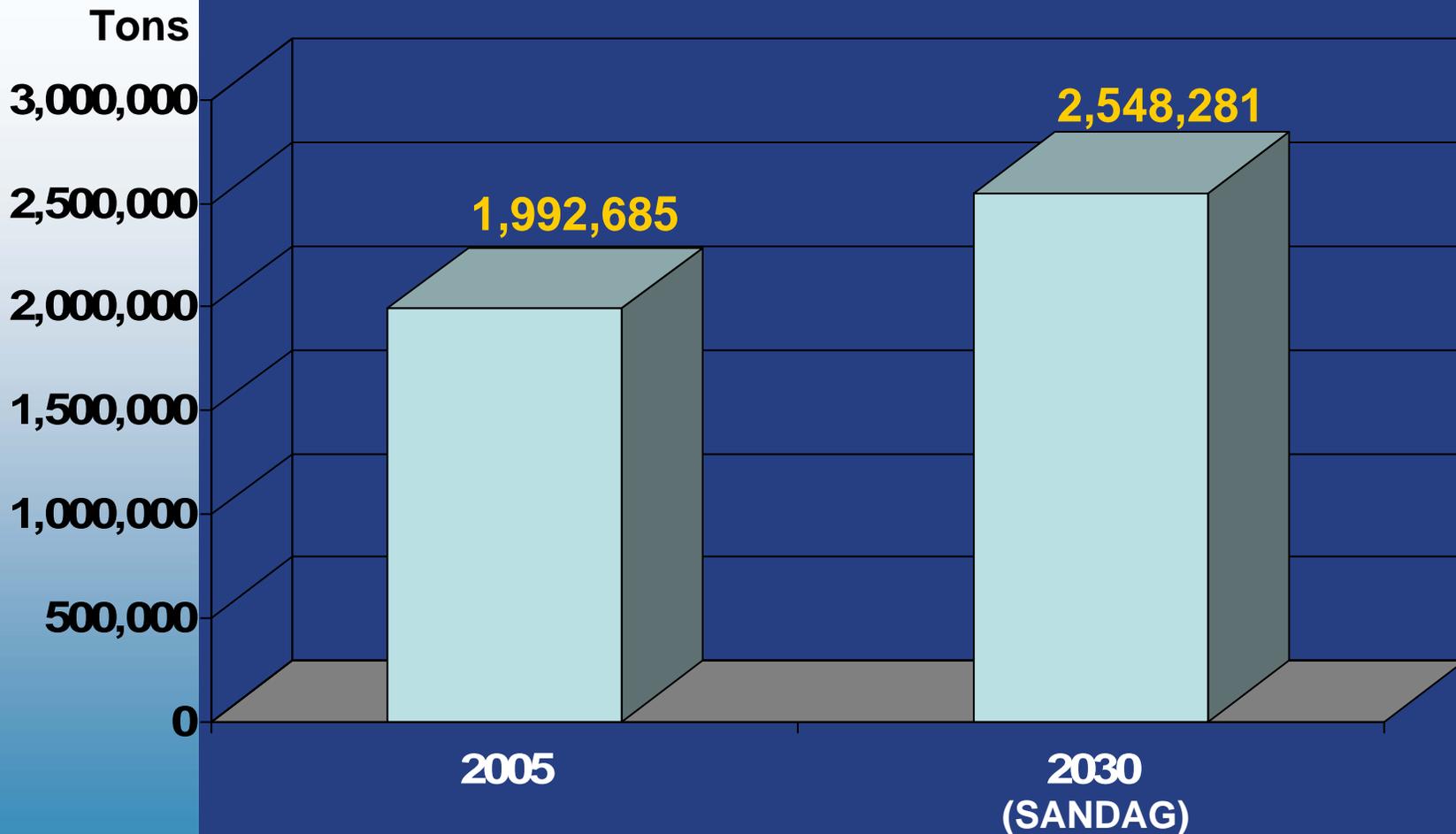
2005 - 2.0 million tons

2030 - 2.5 million tons



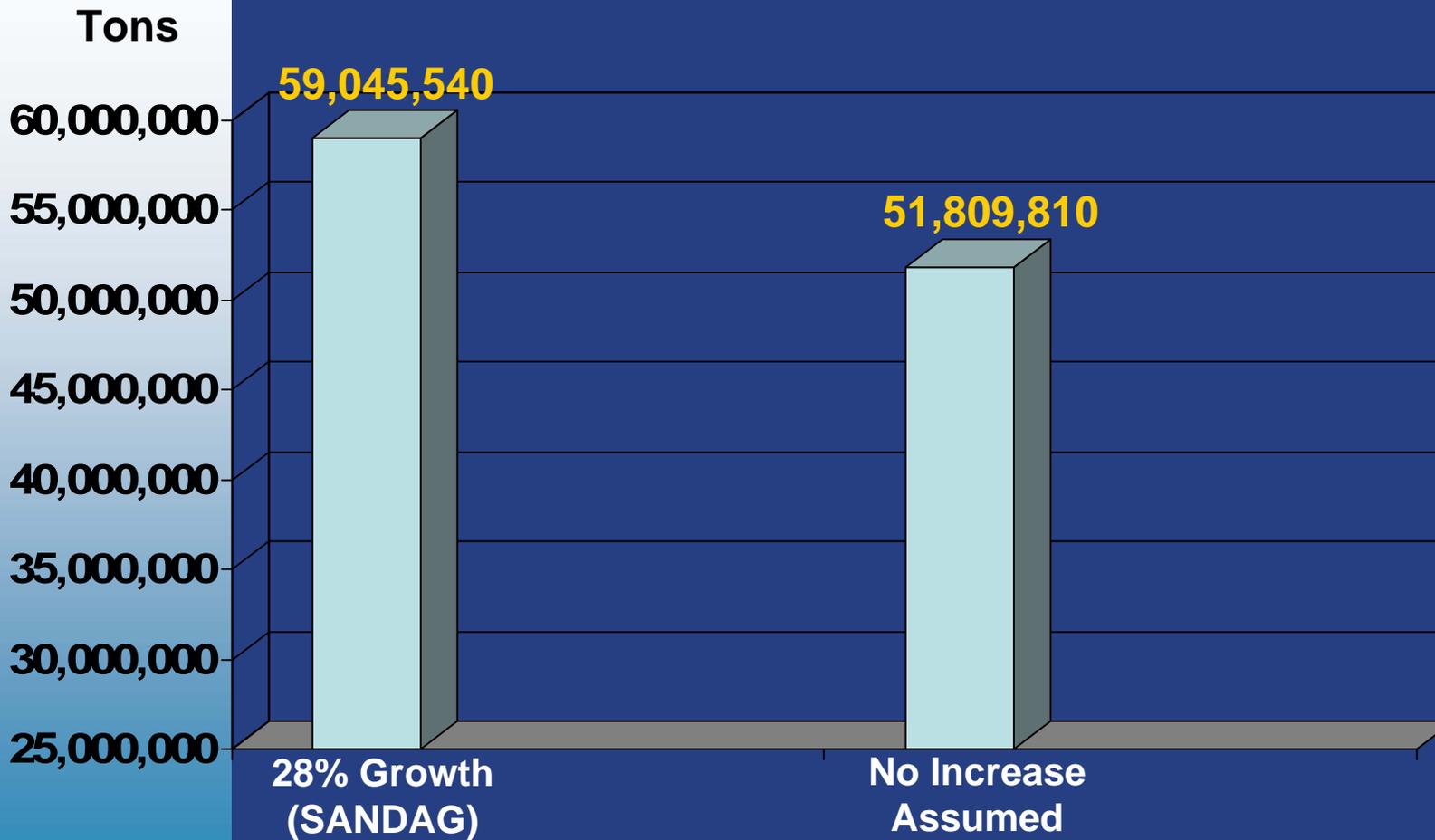


# Material Disposed by the City Annually is Substantial and is Projected to Increase



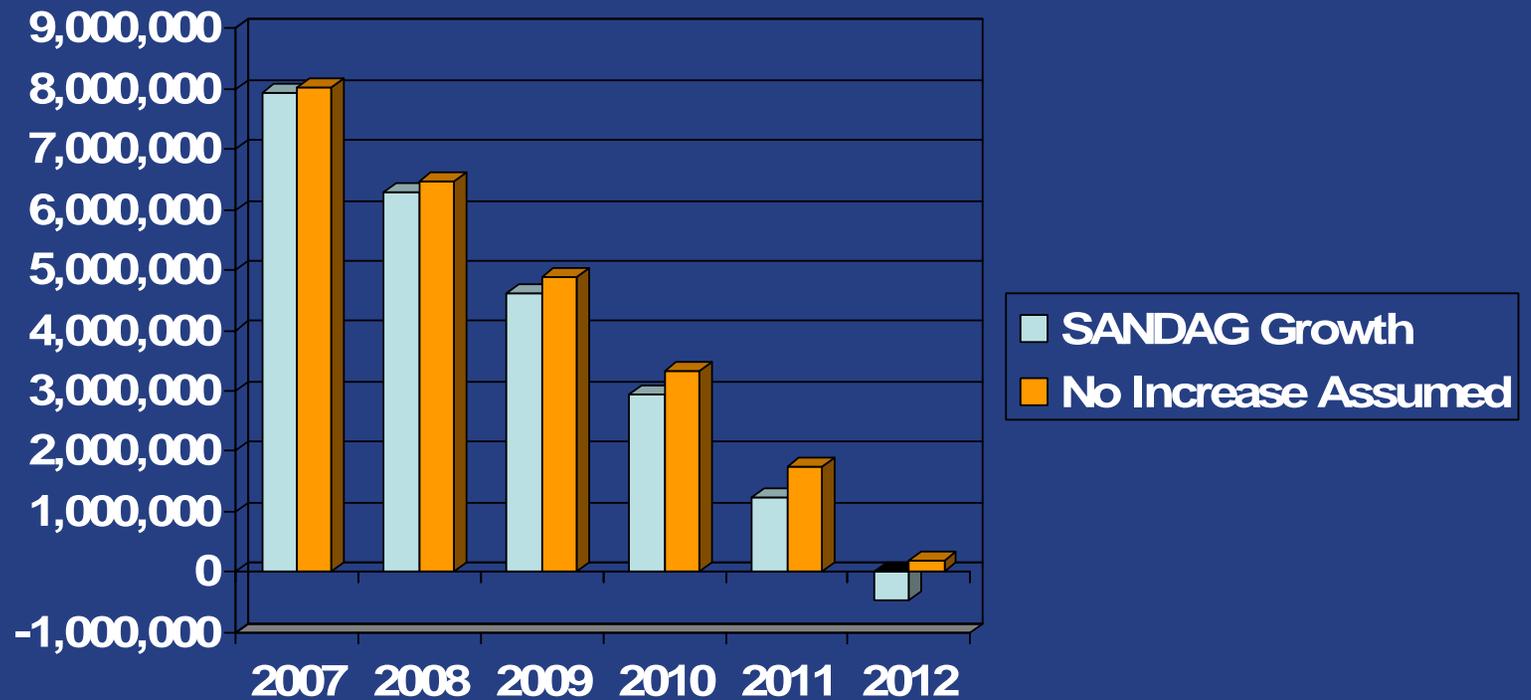


# Over Next 25 Years - Cumulative Volume Generated by the City Creates a Tremendous Demand





# City's Miramar Landfill Reaches Permitted Capacity in 2012





# Where will our trash go?





# Screening Matrices

- (6) Alternative Disposal
- (5) Landfill Optimization Techniques
- (4) Waste to Energy
- (3) Conversion Technologies
- (2) Zero Waste Infrastructure
- (1) Zero Waste Programs





# Refined Screening Criteria

## High – Medium – Low Feasibility

- Financial Viability
- Technical Viability
- Regional Viability
- Environmental Viability
- Capacity Optimization
- Sustainability





# (6) Alternative Landfill Disposal Options

## Paradigm Shift



**Christine Arbogast, PE – BAS**  
**Bob Hilton – HFH**  
**Lisa Woods – City of San Diego**





# Landfill Disposal Options

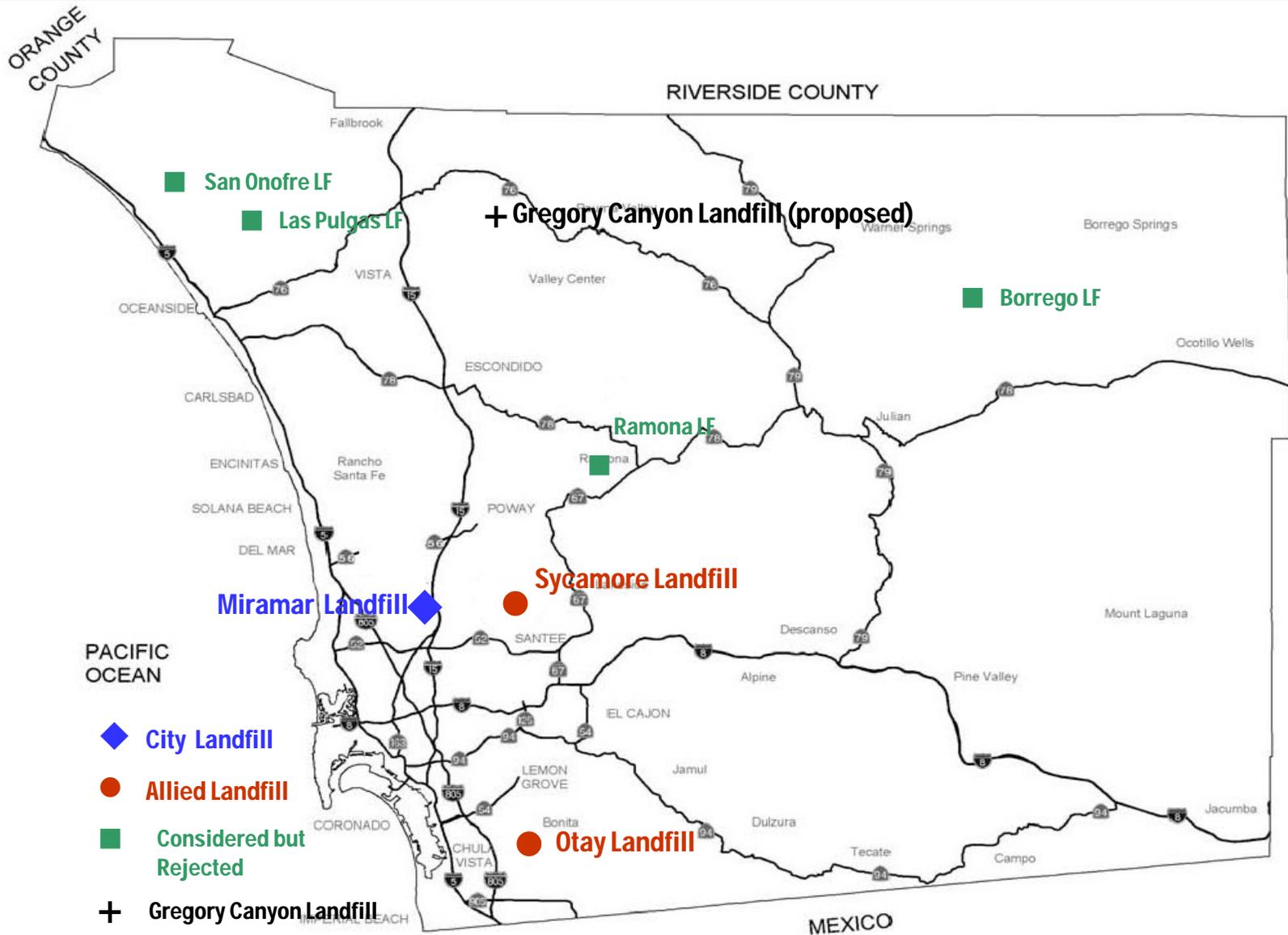
## 25 Landfills Evaluated

- 8 In-County
- 17 Out-of-County



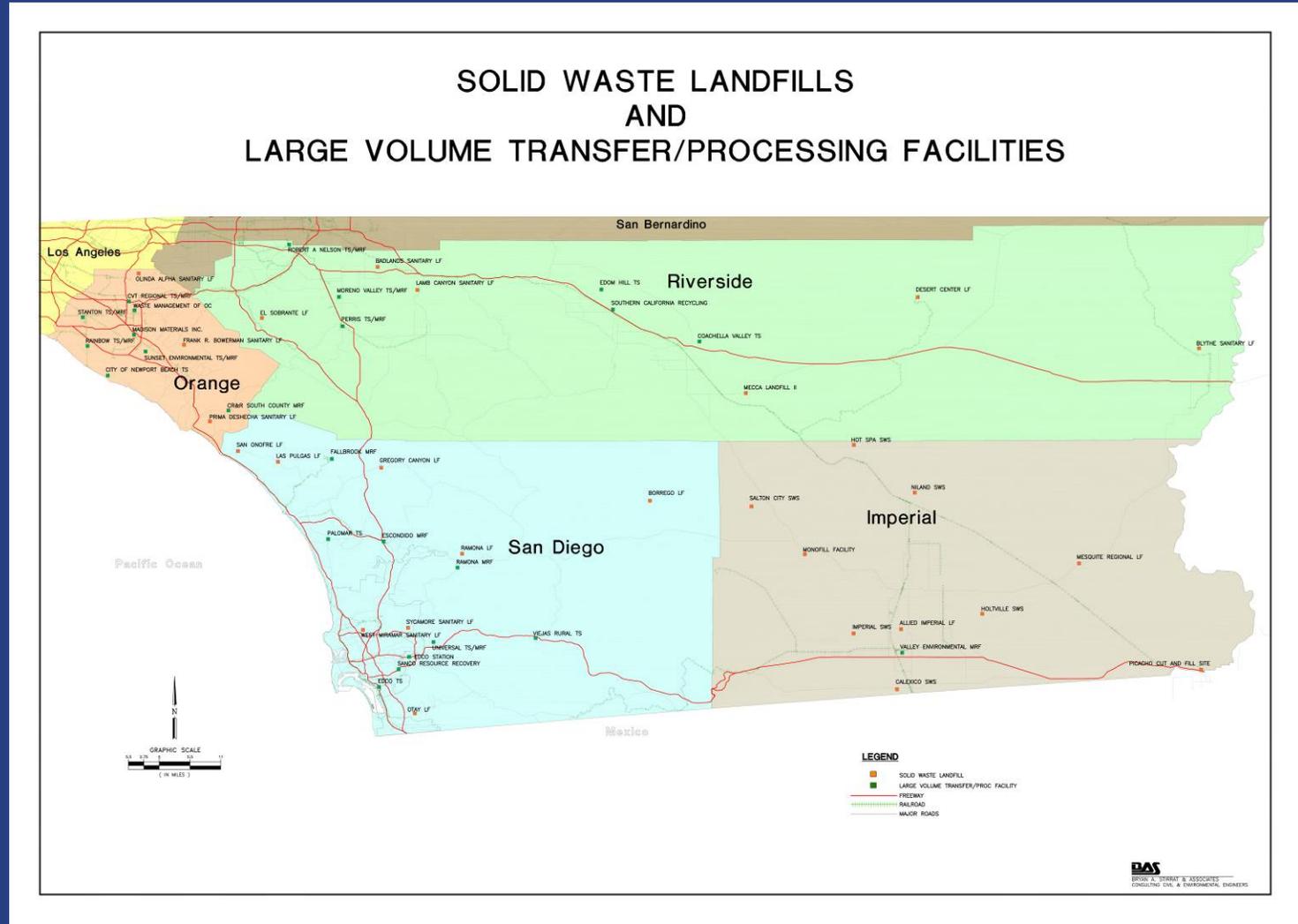


# In-County Disposal Sites



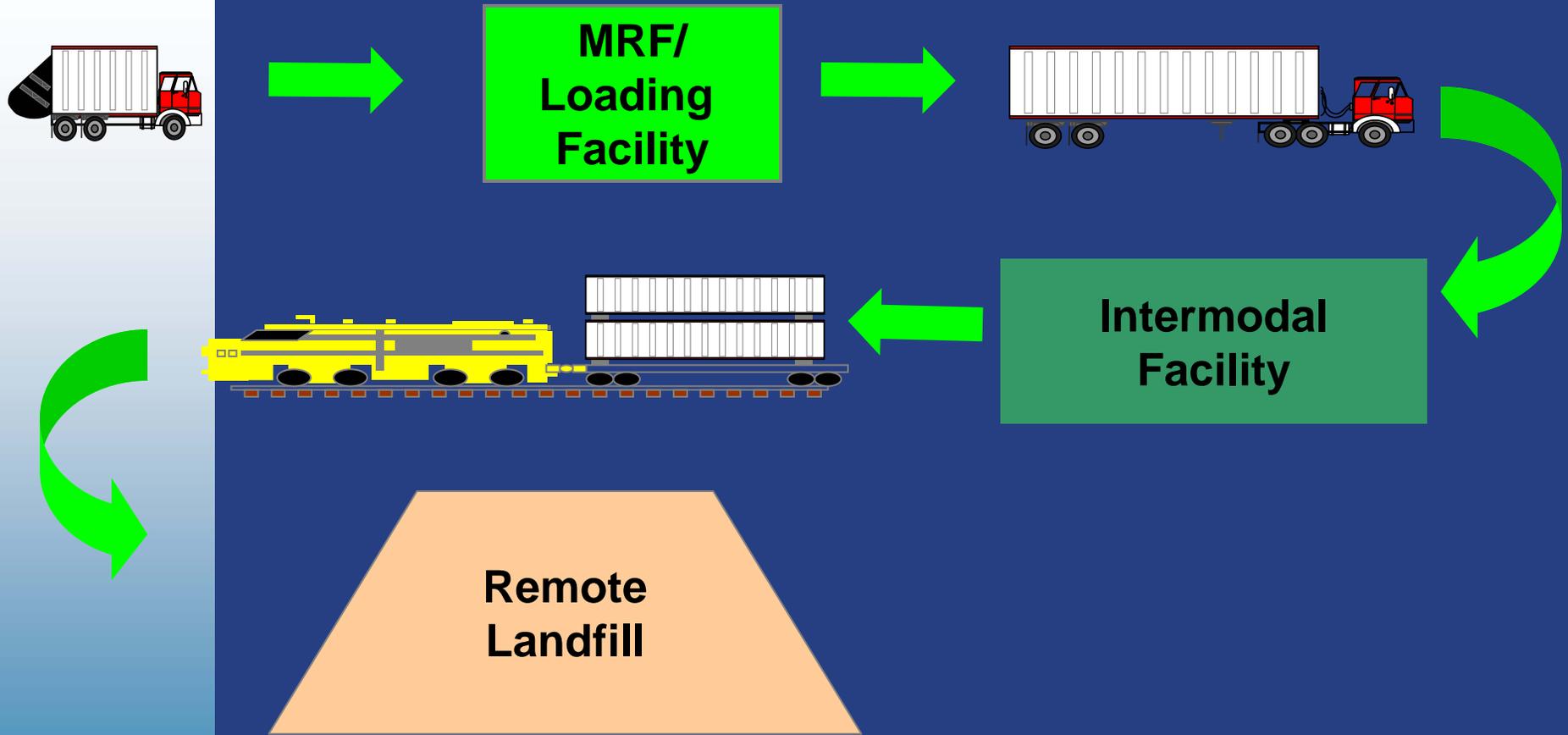


# Out-of-County Disposal Options





# Waste-by-Rail System Overview





# Puente Hills Intermodal Facility





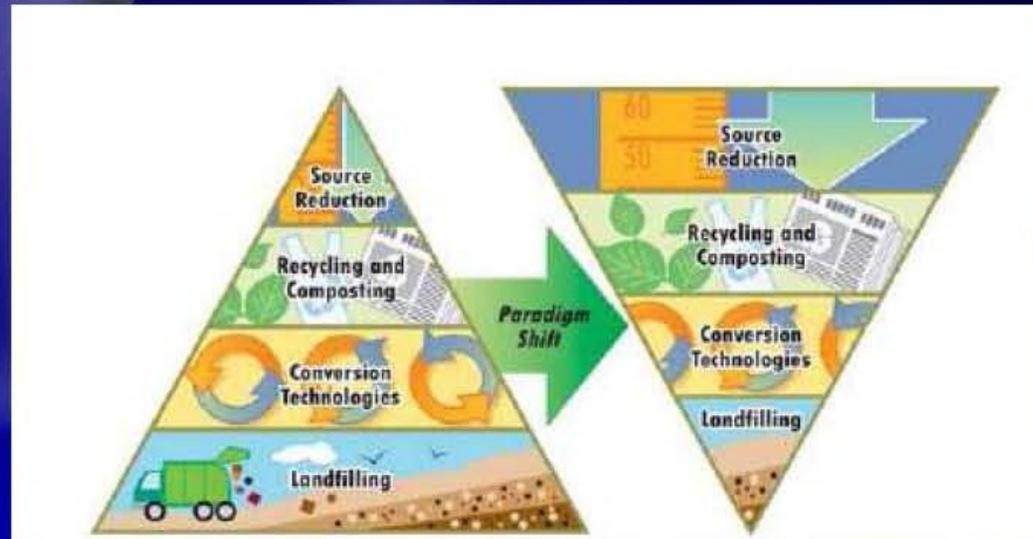
# Rail Haul





# (5) Landfill Optimization Techniques

## Paradigm Shift



**Sonia Nasser, PE , BAS**  
**Sylvia Castillo, PE, City of San Diego**





# 1. Compaction – Soil Surcharge

- Soil Surcharge
- Compact refuse cell, extend airspace





## 2. Alternative Daily Cover



Tarp-o-matic





# 3. Landfill Reclamation





## 4. Compaction – Computer Aided Earth Moving System (CAES)

- Cell Capacity Extended
- Less Cover Material
- Reduced fuel use- less guesswork on passes over trash





# 5. Leachate Recirculation





# 6. BioReactor



Yolo County Landfill – California





# 7. Steam Injection Miramar Landfill Pilot Study



*Photo: STI Engineering*





# (4) Waste to Energy

## Paradigm Shift



Chip Clements, PE,  
Clements Environmental





- Biomass Power Plant: Madera
- Anaerobic Digester: DRANCO  
(Belgium) and Valorga Facility (Germany)
- Gasification and  
Pyrolysis: Thermoselect (Chiba,  
Japan)
- Waste to Energy: SERRF (Long  
Beach, CA)
- Lee County,  
Florida
- 





# (3) Conversion Technologies

## Paradigm Shift



Chip Clements, PE,  
Clements Environmental





# 1. Gasification and Pyrolysis



**Thermoselect Facility,  
Chiba, Japan**



## 2. Anaerobic Digestion



DRANCO (Brecht, Belgium)



## 2. Anaerobic Digestion



**Valorga Facility  
Freiberg, Germany**



# 3. Hydrolysis





# 4. Mechanical Processing - Autoclave





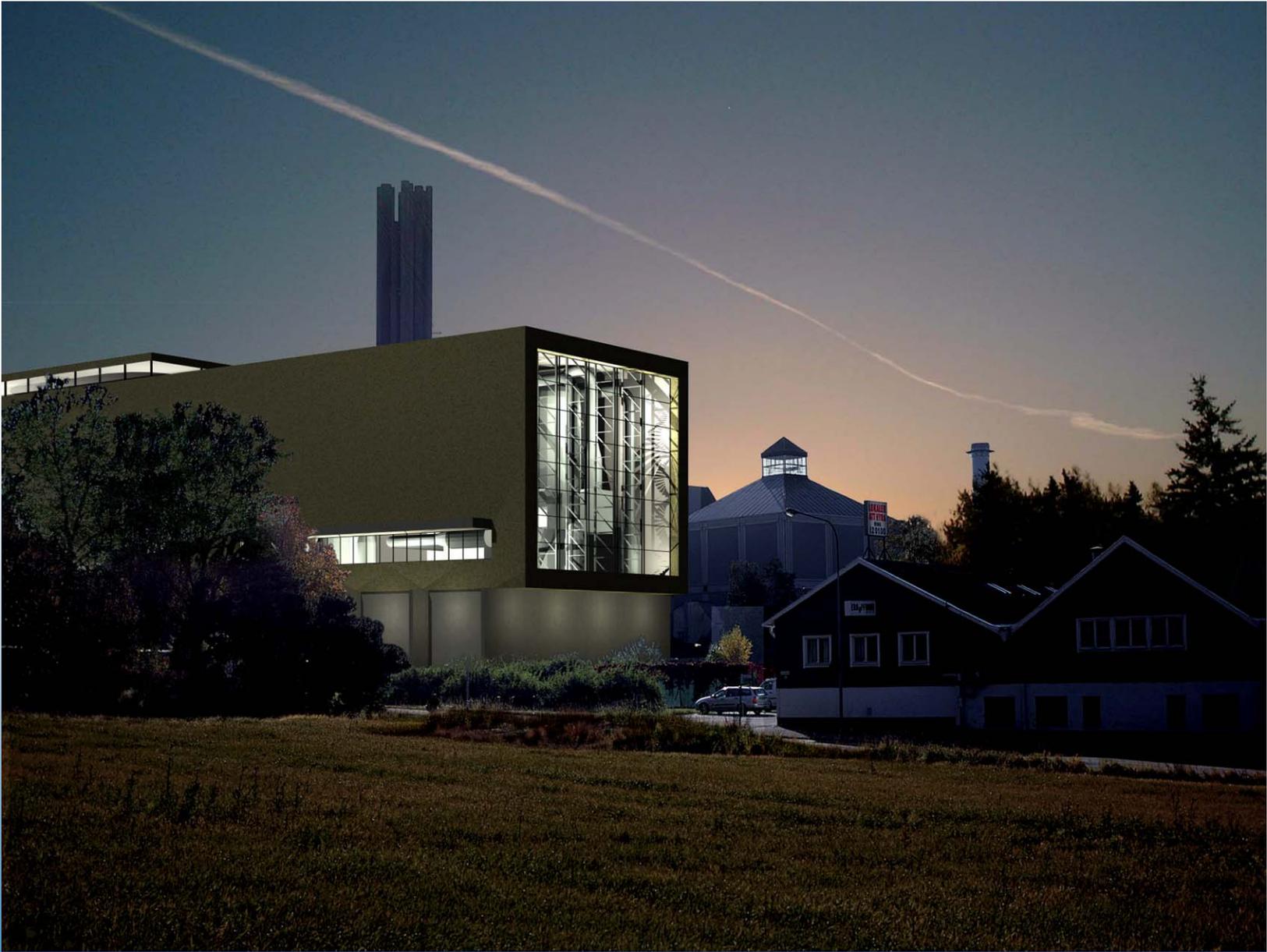
# 5. Chemical Processing





# 6. MSW Composting













# Biomass Power Plant (Madera)





**ENTRY AND WEIGH SCALES**



**GAS PRESSURE EQUALIZATION TANK, DIGESTER BEHIND**





**DIGESTER RESIDUE FROM DEWATERING**



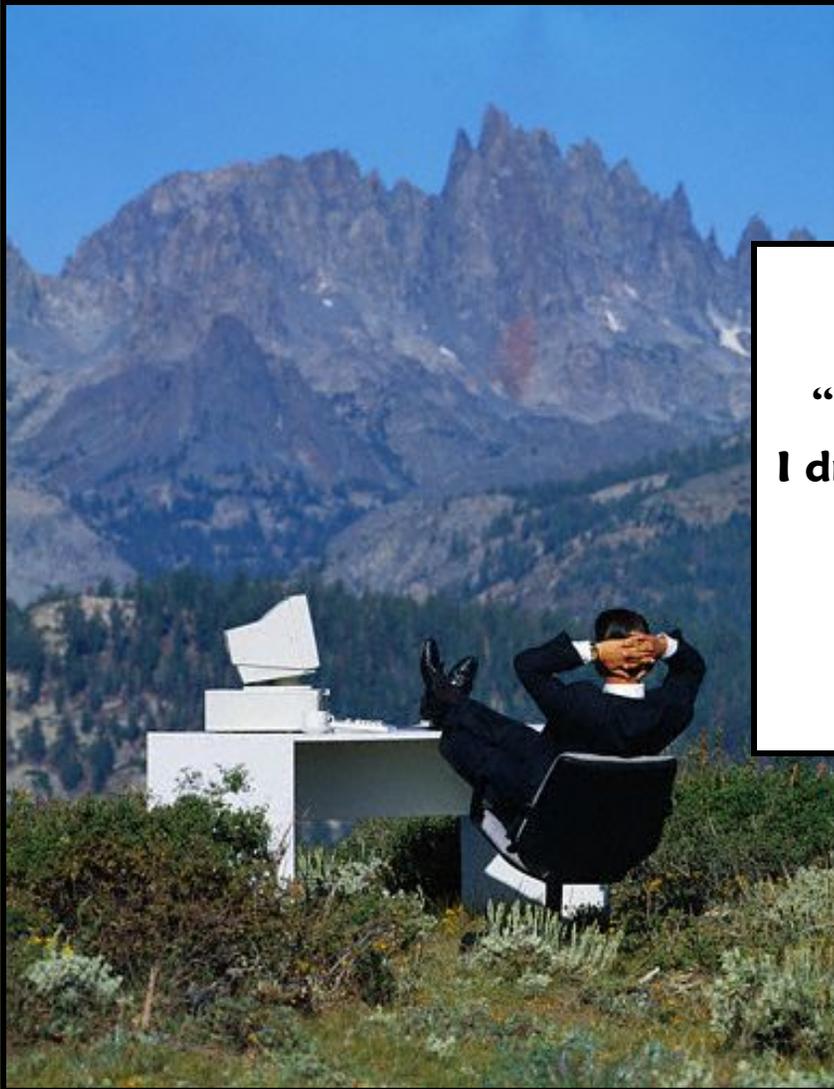
**FORCED AIR SYSTEM – AEROBIC MATURATION**





# Changing World Technologies Carthage, MO





**“Some people see things as they are and say why?  
I dream of things that never were and say why not?”**  
*- Robert Kennedy*



## (2) Zero Waste Infrastructure



Chip Clements, PE,  
Clements Environmental

Christine Arbogast, PE,  
Bryan A. Stirrat & Associates





# Zero Waste Infrastructure Examples





# SAFE Center (Solvents, Automotives, Flammables & Electronics)





# Loading Transfer Truck



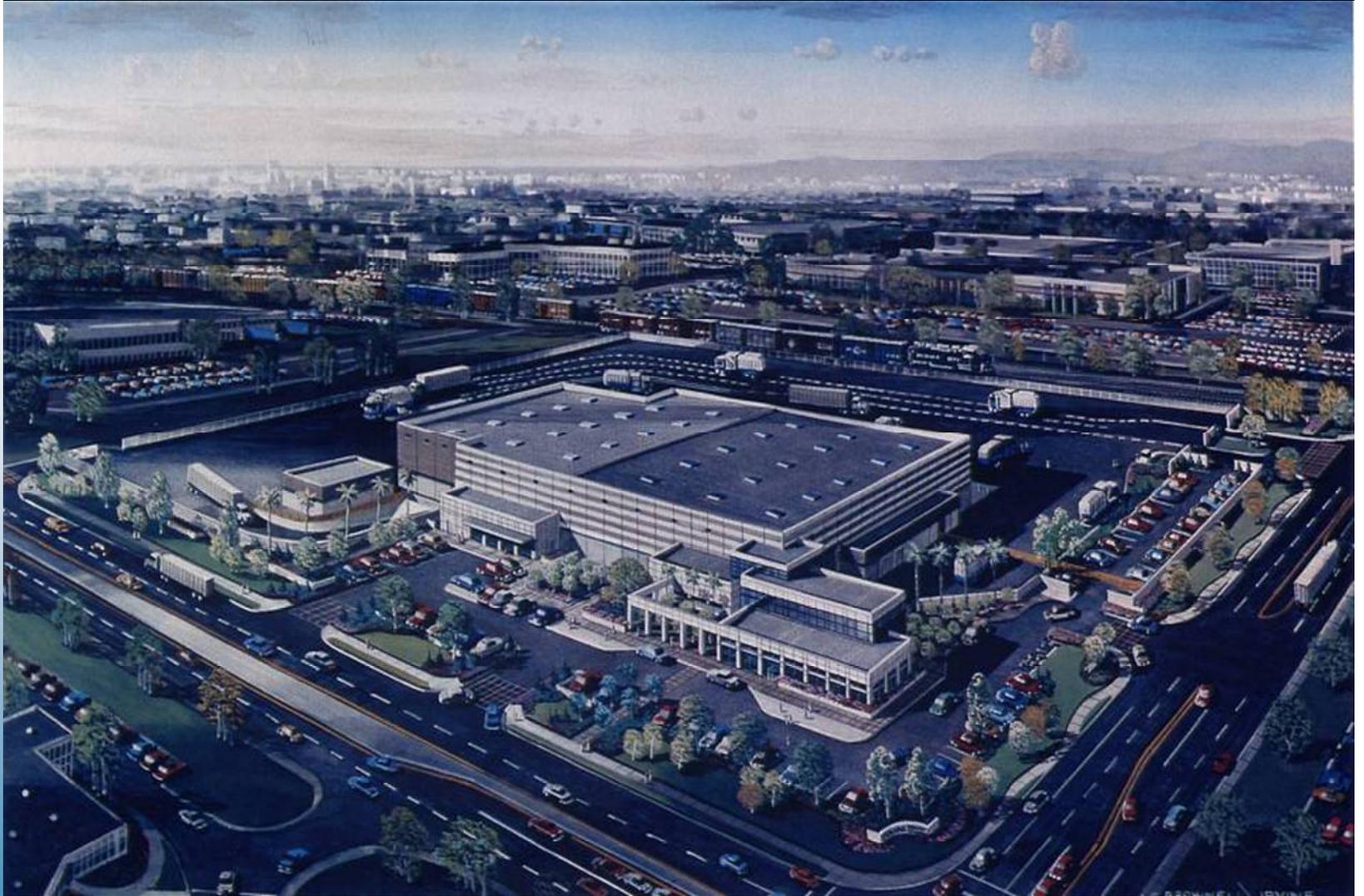


# Commercial MRF





# Transfer Station II (Oxnard)





# Curbside MRF





# Recovery Parks

- **Industrial:** Provide campus for symbiotic zero waste facilities (recycling, power, manufacturing)
- **Public Service:** Provide convenient drop off for local residents (usually free), ReUse Store





# San Luis Obispo RR Park



**EAS**





# Monterey Resource Recovery Park





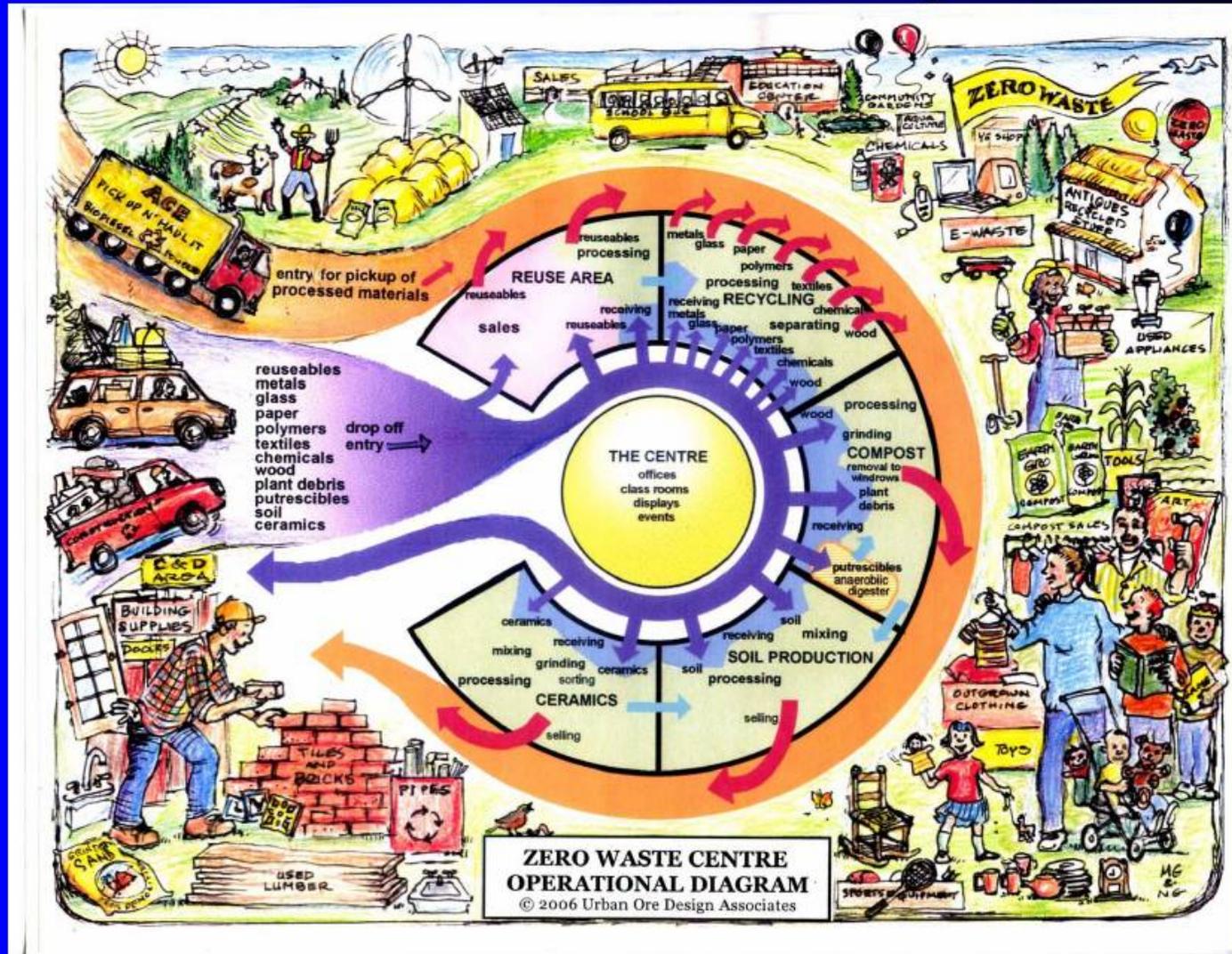


# Urban Ore RR Park, Berkeley CA





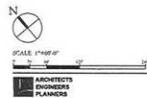
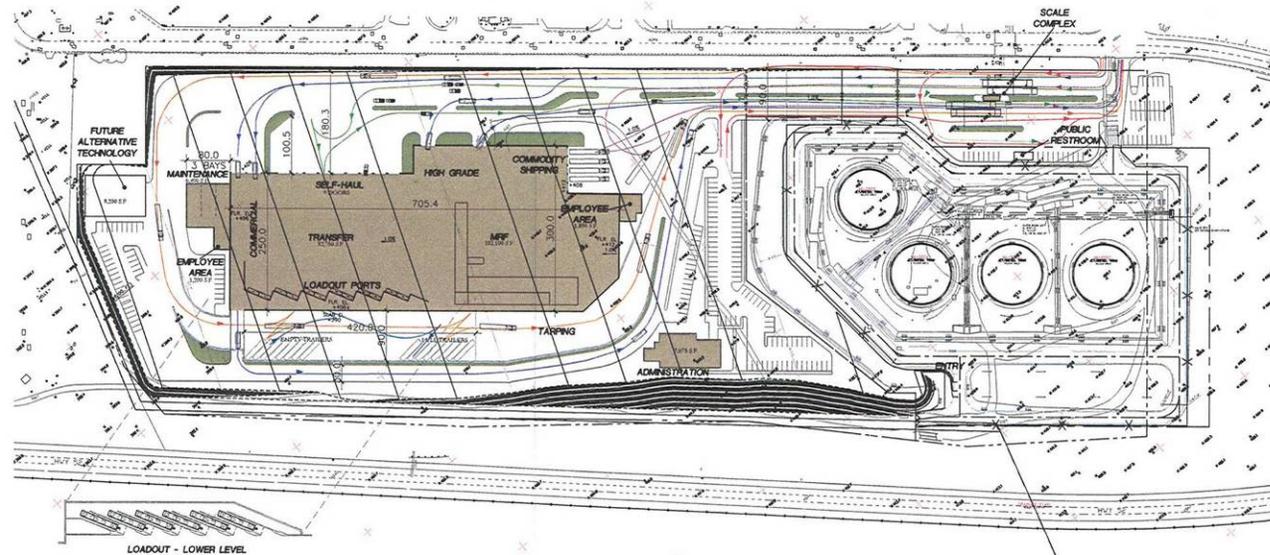
# Resource Recovery Park







# Miramar Recycling & Transfer Station Feasibility Study



## RECYCLING CENTER AND TRANSFER STATION

###X XXX STREET  
MIRAMAR, CALIFORNIA

CIRCULATION LEGEND

<span style="color: green;">—</span> SELF HAUL	<span style="color: red;">—</span> VISITORS/EMPLOYEES
<span style="color: orange;">—</span> TRANSFER TRUCK	<span style="color: purple;">—</span> RECYCLABLE SHIPPING
<span style="color: blue;">—</span> COMMERCIAL	<span style="color: pink;">—</span> YARD MOVES

PRELIMINARY  
SITE PLAN - ALTERNATE B-1  
JTB & M&M 11 SEPTEMBER 2007





# C&D Processing





# Sorting C&D





# C&D Products





# Greenwaste Chip & Grind





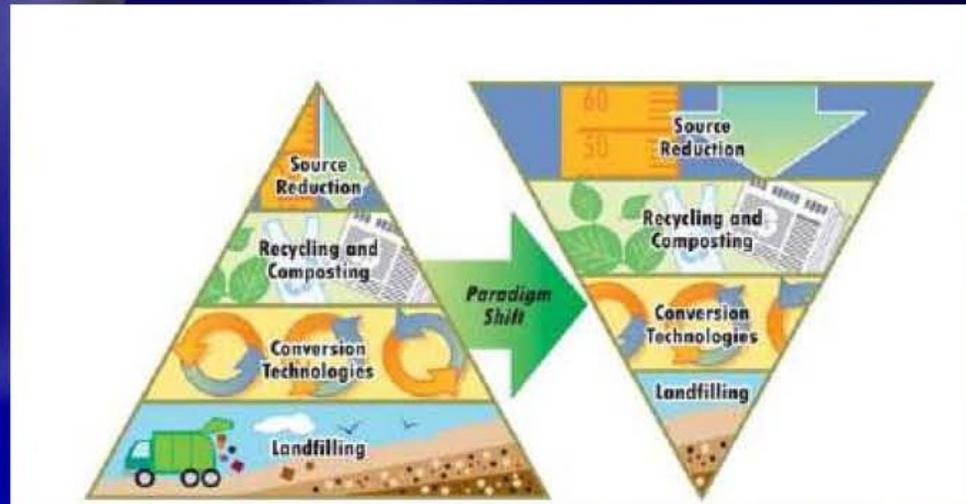
# Composting





# (1) Zero Waste Programs

## Paradigm Shift



Chip Clements, P. E. - Clements Environmental  
Stephen Grealy – City of San Diego/ESD



