SWANA 51st Annual Western Regional Symposium

Overview of SB 1383 Organics Waste Characterization Studies and Alternative Measurement Protocols

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Overview of SB 1383 Waste Characterization

- Overview of SB 1383
- Understanding Statutory Overlap of AB 939, AB 341, AB 1826, and SB 1383
- What are Facility Responsibilities under SB 1383?
- Discussion Examples: Facility Waste Characterization Sampling
  - Input / Output Characterization Sampling
  - SB 1383 Characterization Sampling (Organics, Incompatibles, Remnants)
- Waste Characterization “Protocols”
- Waste Characterization “Verification” Procedures
- Case Study of Alternative Waste Characterization Method and Alternative SB 1383 Recovery Rate Calculation

Targeted Wastestream Materials by Statute (Statutory Overlap of Targeted Materials)

Material Type	Name of California Statute			
	AB 939	AB 341	AB 1836	SB 1383
PAPER				
Uncoated Corrugated Cardboard	X	X		X
Paper Bags	X	X		X
Newspaper	X	X		X
White Ledger Paper	X	X		X
Other Office Paper	X	X		X
Magazines and Catalogs	X	X		X
Phone Books and Directories	X	X		X
Other Miscellaneous Paper - Compostable	X	X	X	X
Other Miscellaneous Paper - Other	X	X		X
Remainder / Composite Paper - Compostable	X	X	X	X
Remainder / Composite Paper - Other	X			
GLASS				
Clear Glass Bottles and Containers	X	X		
Green Glass Bottles and Containers	X	X		
Brown Glass Bottles and Containers	X	X		
Other Glass Colored Bottles and Containers	X	X		
Flat Glass	X	X		
Remainder / Composite Glass	X			
METAL				
Tin/Steel Cans	X	X		
Major Appliances	X	X		
Used Oil Filters	X	X		
Other Ferrous	X	X		
Aluminum Cans	X	X		
Other Non-Ferrous	X	X		
Remainder / Composite Metal	X	X		
ELECTRONICS				
Brown Goods	X			
Computer-related Electronics	X			
Other Small Consumer Electronics	X			
Video Display Devices	X			
PLASTIC				
PETE Plastic Containers	X	X		
HDPE Plastic Containers	X	X		
Miscellaneous Plastic Containers	X	X		
Plastic Trash Bags	X	X		
Plastic Grocery and Other Merchandise Bags	X	X		
Non-Bag Commercial and Industrial Packaging Film	X	X		
Film Products	X	X		
Other Film - Other	X	X		
Durable Plastic Items - #2 and #5 Bulky Rigids	X	X		
Durable Plastic Items - Other	X	X		
Remainder / Composite Plastic	X			

Material Type	Name of California Statute			
	AB 939	AB 341	AB 1836	SB 1383
OTHER ORGANIC				
Food	X	X	X	X
Leaves and Grass	X	X	X	X
Prunings and Trimmings	X	X	X	X
Branches and Stumps	X	X	X	X
Manures	X	X		X
Textiles	X	X		X
Carpet	X	X		X
Remainder / Composite Organic	X			X
INERTS OTHER				
Concrete	X	X		
Asphalt Paving	X	X		
Asphalt Roofing	X	X		
Clean Dimensional Lumber	X	X	X	X
Clean Engineered Wood	X	X		X
Clean Pallets & Crates	X	X	X	X
Other Wood Waste	X	X		X
Gypsum Board	X	X		
Rock, Soil and Fines	X	X		
Remainder / Composite Inerts and Other	X	X		
HHW				
Paint	X			
Vehicle and Equipment Fluids	X			
Used Oil	X			
Batteries	X			
Remainder / Composite Household Hazardous	X			
SPECIAL WASTE				
Ash	X			
Treated Medical Waste	X			
Bulky Items	X	X		
Tires	X	X		
Remainder / Composite Special Waste	X			
Mixed Residue	X			

Note: Statutory overlap refers to how different statutes have targeted the various materials for diversion and or disposal reduction. The "X" indicates that the specific material type when diverted by a designated program, programmatic credit can be taken under the multiple statutes identified.

Factors to Consider

- Facility Process Flow Diagram and Sampling
  - Processing Lines that Recovery Organics
  - What Organics are Recovered and Disposed
- Prescriptive SB 1383 Methodology or “Alternative”
  - LEA Review / Approval and or CalRecycle Concurrence for Alternative Methods
  - Sampling Plan (Prescriptive and or Alternative)
  - Sampling Frequency
- Characterization Method
  - Material Types
    - SB 1383: “Organic”, “Incompatibles”, “Remnant”
    - Traditional Material Categories / Types (Paper, OCC, Mixed Paper, Plastic, Glass, etc.)
  - Physical / Visual (CalRecycle Uniform Waste Characterization Method)
    - Traditional: Direct identification / classification techniques
    - Visual: Utilize Volume Estimation / Density Conversion Table
      - Typically utilized where materials not significantly altered physically and or chemically, direct identification relatively easy
    - Alternative Characterization Method (e.g., Laboratory, Mass Balance, Traditional, Combination, etc.)

Potential LEA SB 1383 Roles:

- Section 17409.5.2. Measuring Organic Waste Recovered from Mixed Waste Organic Collection Stream
- Section 17409.5.3. Measuring Organic Waste in Material Removed from Mixed Waste Organic Collection Stream for Disposal
- Section 17409.5.4. Measuring Organic Waste Recovered from Source Separated Organic Waste Collection Stream
- Section 17409.5.5. Measuring Organic Waste in Materials Removed from Source Separated Organic Waste Collection Stream For Disposal
- Section 17409.5.7. Gray Container Waste Evaluations
- Section 17409.5.8. Incompatible Materials Limit in Recovered Organic Waste

(c) The operator shall conduct a measurement in the presence of the EA when requested.

(d) If it is determined by the EA that the measurements do not accurately reflect the records, the EA may require the operator to increase the frequency of measurements, revise the measurement protocol, or both to improve accuracy.

LEA Responsibilities in Reviewing & Approving Alternative Waste Characterization Protocols

- **Section 17409.5.9. Alternatives to Measurement Protocols.**

  (a) The EA may approve, with concurrence by the Department, alternative measurement protocols to the requirements of Sections 17409.5.2, 17409.5.3, 17409.5.4, 17409.5.5, 17409.5.7, and 17409.5.8, as long as they will still ensure that the measurements will be as accurate.

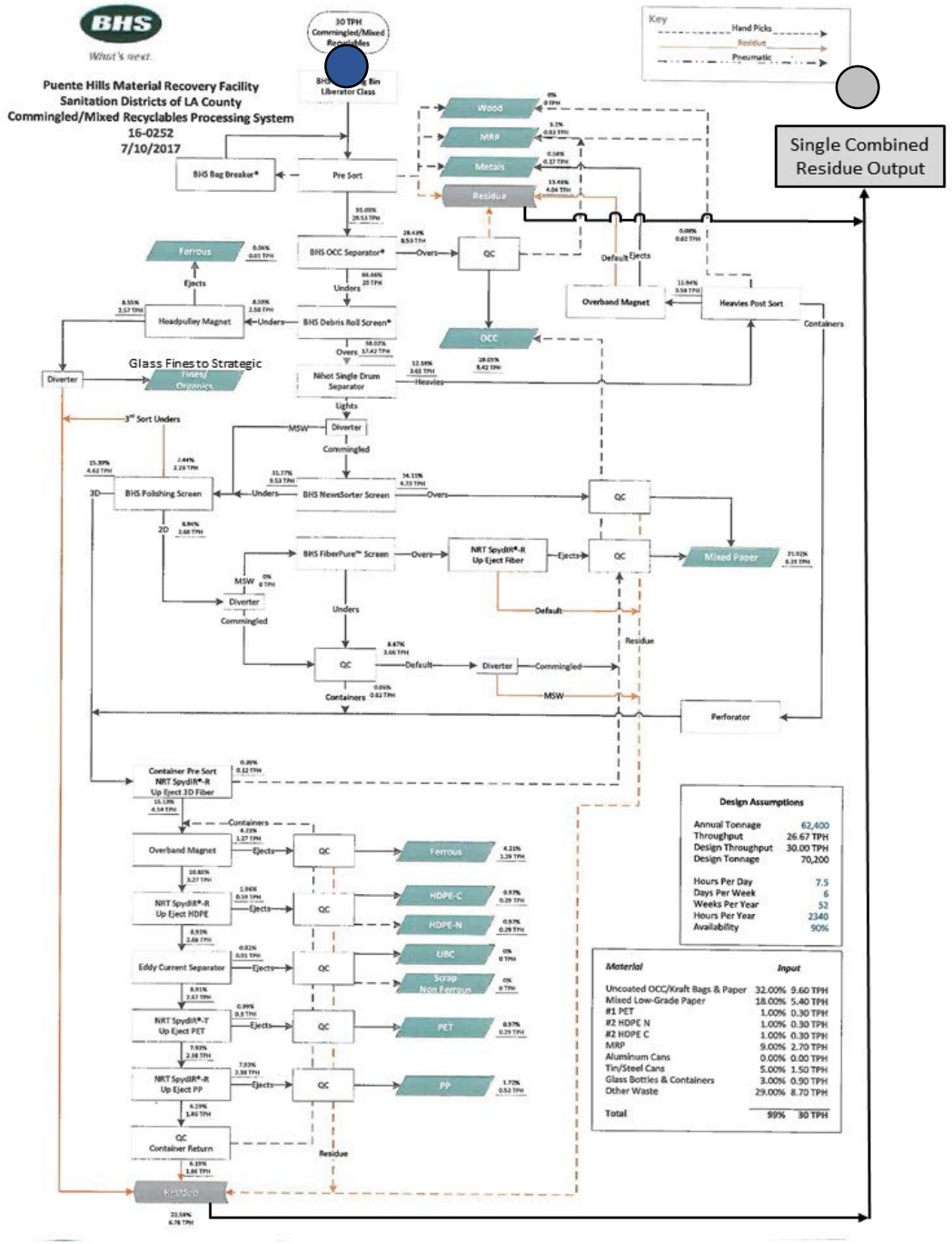
  (b) When required by this article, the operator shall report tonnages using a scale. If scales are not accessible, the EA may approve, with written notification to the Department, the operator to report the tonnages using a method described in Section 18815.9(g).

  (c) The EA may approve, with written concurrence by the Department, a substitute to certain requirements to sample and measure specific types of organic waste that are designated for an organic waste recovery activity with a quality standard imposed on the operator by the person, entity, or solid waste facility or operation accepting that organic waste type as specified in this subdivision. The Department shall concur with the EA approval if it verifies that there is a quality standard imposed on the operator by the person, entity, or solid waste facility or operation accepting that organic waste type as specified in this subdivision and that the standard meets the requirements in Subdivision (c)(1)(A) through (G), below.

Assessing Process Flow Diagrams

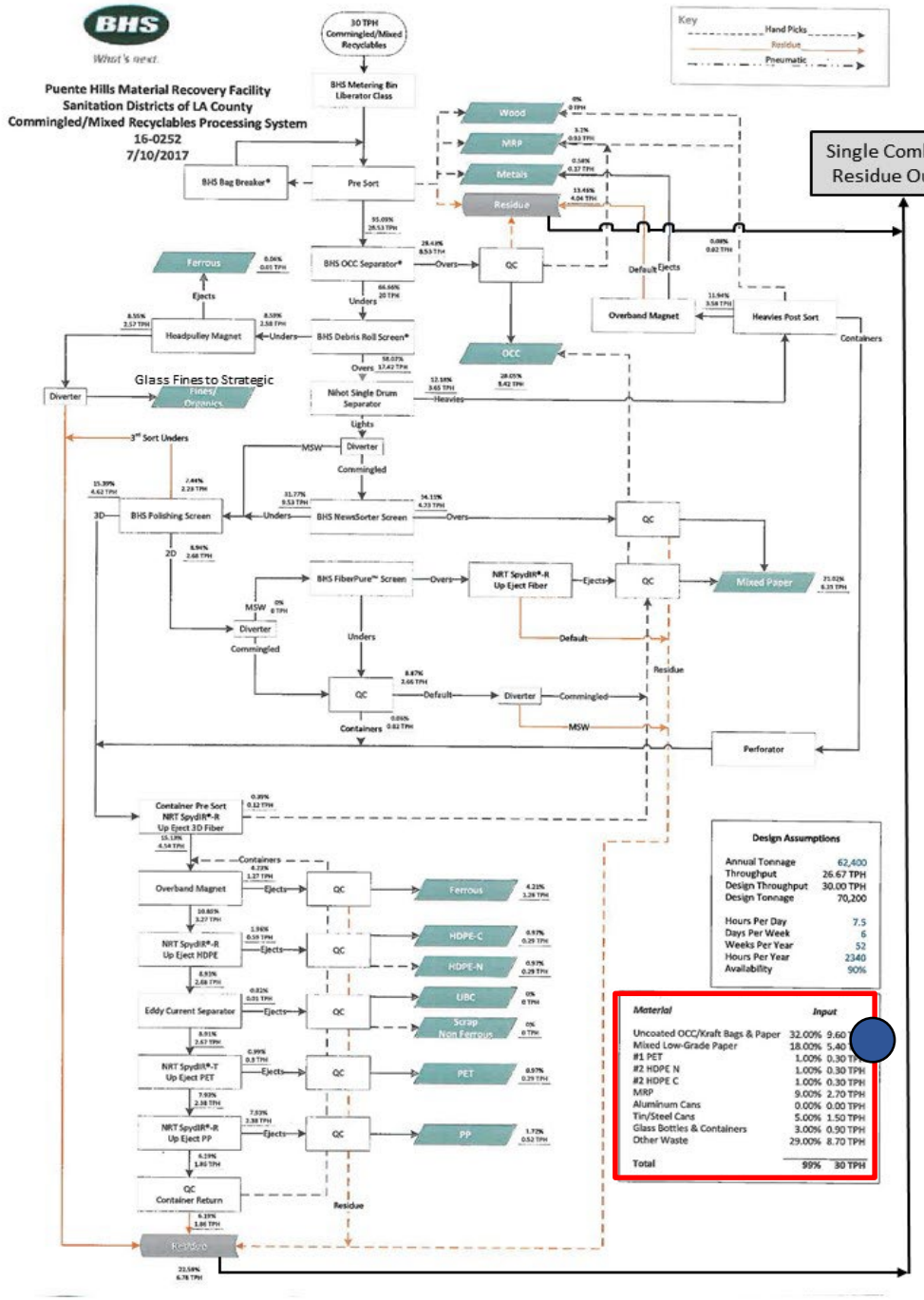
- Purpose of Facility Process Assessment
  - Verify Process Flow Diagram
  - Understand processing line logic and “Unit Processes”
    - Principle of “progressive/sequential fractionation”
  - Determine representative operations
  - Determine “variability” of operational factors
  - Determine appropriate representative sampling points
  - Enables determination of “significant” change
  - Provides information for operational optimization

LASAN Process Flow Diagram for Purposes of Processing Line Certification



- Blue Bin Input (Non-Jurisdiction Specific)
- Mixed Waste Input (Non-Jurisdiction Specific)
- SSO (Yellow Bin) Input (Non-Jurisdiction Specific)
- Wet Commercial Waste Input (Non-Jurisdiction Specific)
- Blue Bin Disposal
- Mixed Waste Disposal
- SSO (Yellow Bin) Disposal
- Wet Commercial Waste Disposal

SB 1383 Waste Composition Study



SB 1383 Disposal:

- Percent Organics

SB 1383 Recovery:

- Percent Organics
- Percent “Incompatibles”

SSO Processing Recovery (Organics)

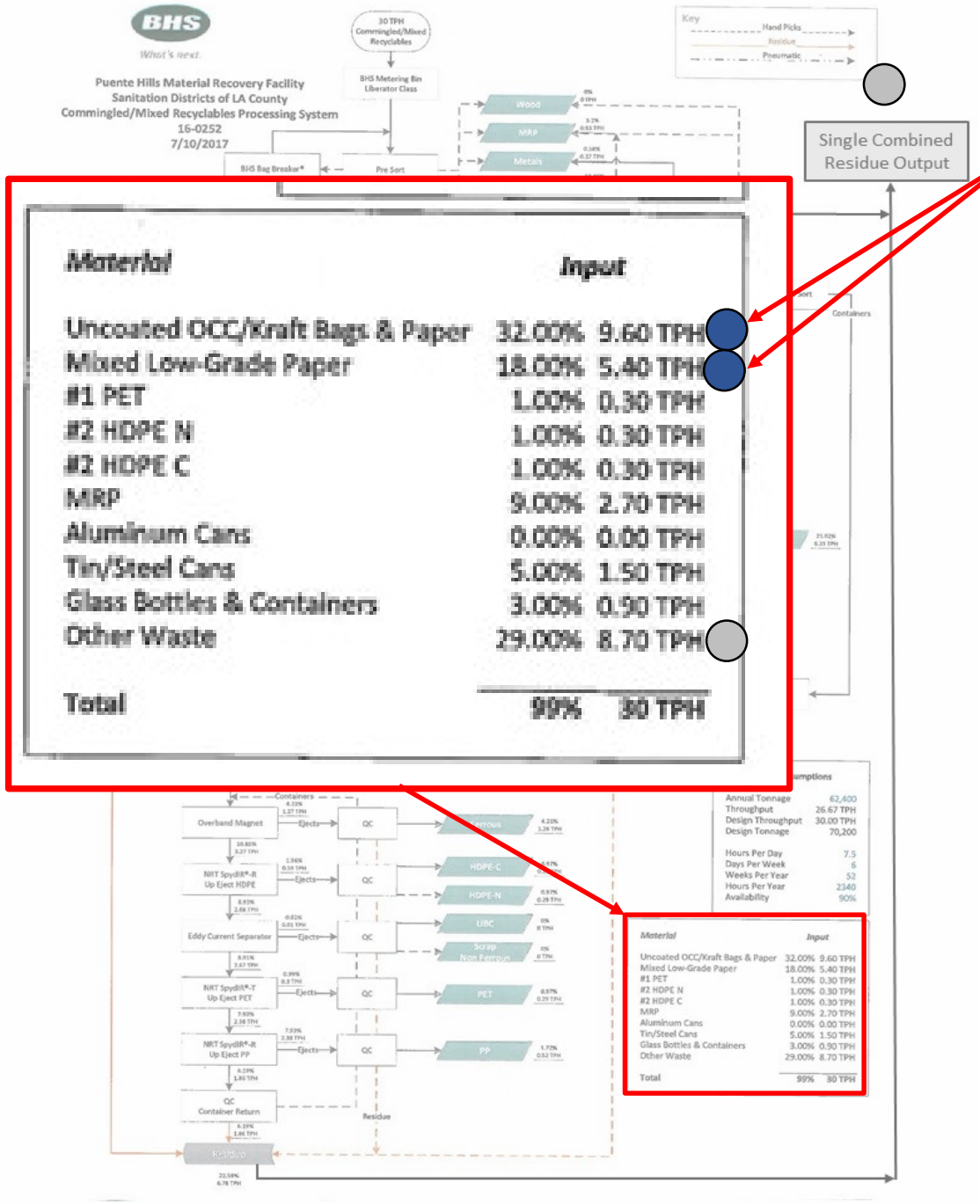
MWO Processing Recovery (Organics)

SSO Processing Disposal

MWO Processing Disposal

Gray/Black Bin Collection (By Jurisdiction)

SB 1383 Waste Composition Study



Section 17409.5.8. Incompatible Materials Limit in Recovered Organic Waste.

(a) A transfer/processing facility or operation shall only send offsite that organic waste recovered after processing from the source separated organic waste stream and from the mixed waste organic collection stream that meets the following requirements:

(1) On and after January 1, 2022 with no more than 20 percent of incompatible material by weight; and

(2) On and after January 1, 2024 with no more than 10 percent of incompatible material by weight.

……

(c) The recovered organic waste stream shall not be subject to Section 17409.5.8(a) if the recovered organic waste is sent to one or more of the following types of facilities that will further process that waste:

(1) A transfer/processing facility or operation that complies with Section 17409.5.8(a).

(2) A compostable material handling facility or operation that, pursuant to Section 17867(a)(16), demonstrates that the percentage of organic waste in the materials sent to disposal is:

(A) On and after January 1, 2022, less than 20 percent.

(B) On and after January 1, 2024, less than 10 percent.

(3) An in-vessel digestion facility or operation that, pursuant to Section 17896.44.1, demonstrates that the percentage of organic waste in the materials sent to disposal is:

(A) On and after January 1, 2022, less than 20 percent.

(B) On and after January 1, 2024, less than 10 percent.

(4) An activity that meets the definition of a recycling center as described in Section 17402.5(d).

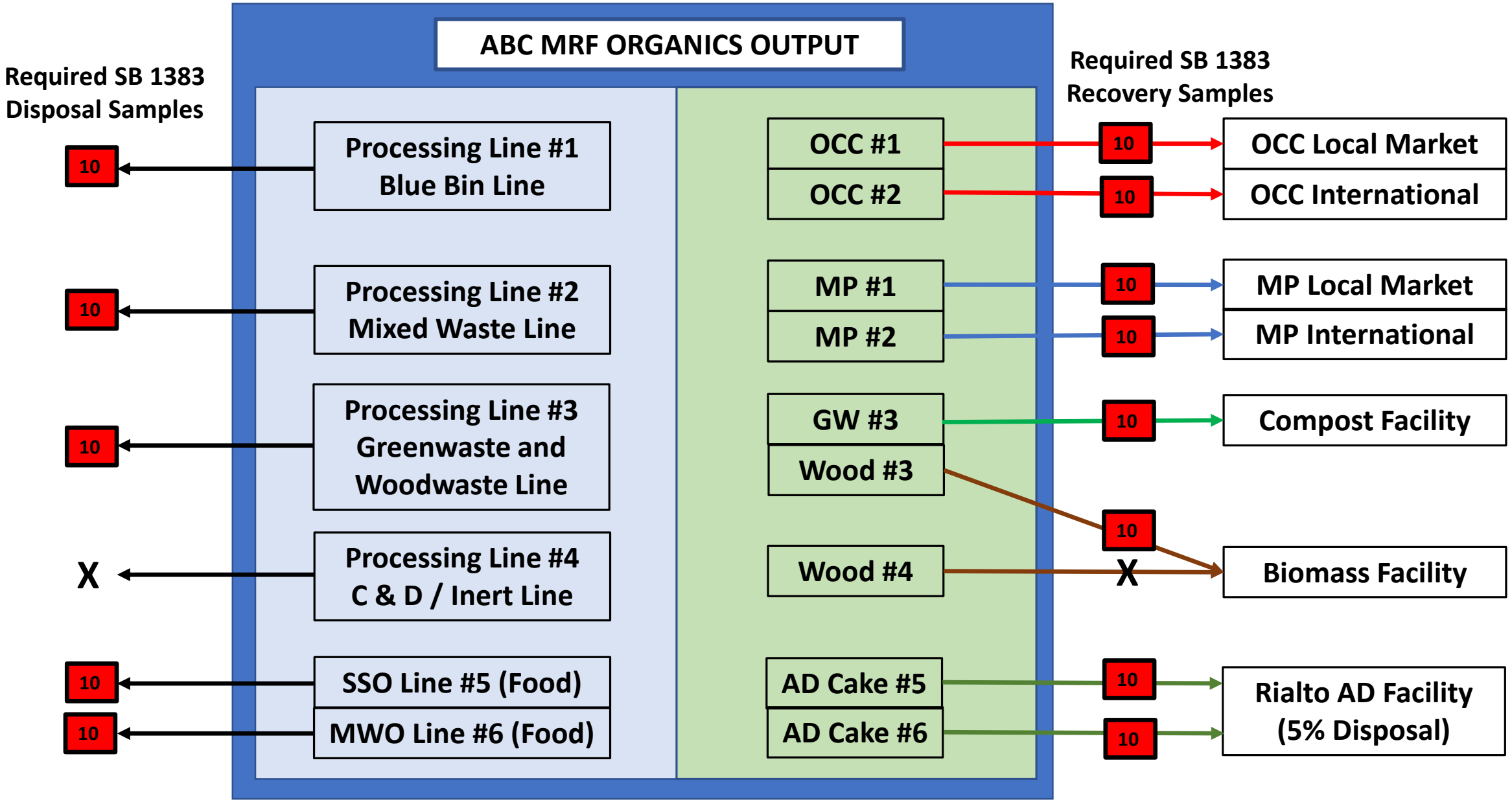
Section 17402. Definitions. "Incompatible Material" or "Incompatibles," means human-made inert material, including, but not limited to, glass, metal, plastic, and also includes organic waste for which the receiving end-user, facility, operation, property, or activity is not designed, permitted, or authorized to perform organic waste recovery activities as defined in Section 18983.1(b) of Article 2, Chapter 12.

- **SSO Processing Recovery (Organics)**
- **MWO Processing Recovery (Organics)**
- **SSO Processing Disposal**
- **MWO Processing Disposal**
- **Gray/Black Bin Collection (By Jurisdiction)**

Section 17402. Definitions: Incompatibles

(7.5) “Incompatible Material” or “Incompatibles,“means human-made inert material, including, but not limited to, glass, metal, plastic, and also includes organic waste for which the receiving end-user, facility, operation, property, **or activity is not designed**, permitted, or authorized to perform organic waste recovery activities as defined in Section 18983.1(b) of Article 2, Chapter 12

Prescriptive SB 1383 Organics Quarterly Sampling Requirements

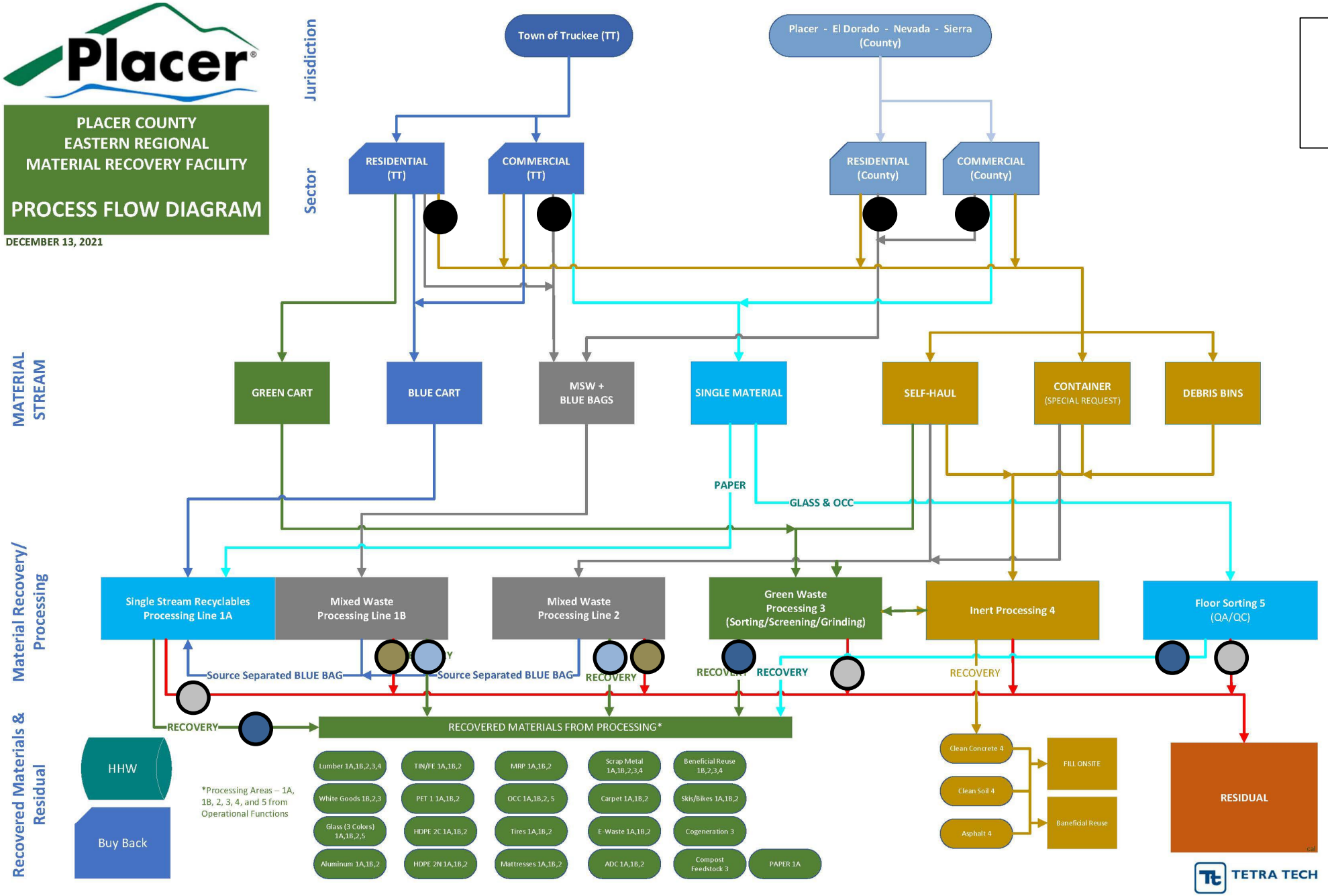


PLACER COUNTY EASTERN REGIONAL MATERIAL RECOVERY FACILITY

PROCESS FLOW DIAGRAM

DECEMBER 13, 2021

SB 1383 Waste Characterization Sampling Points



SSO Processing Recovery

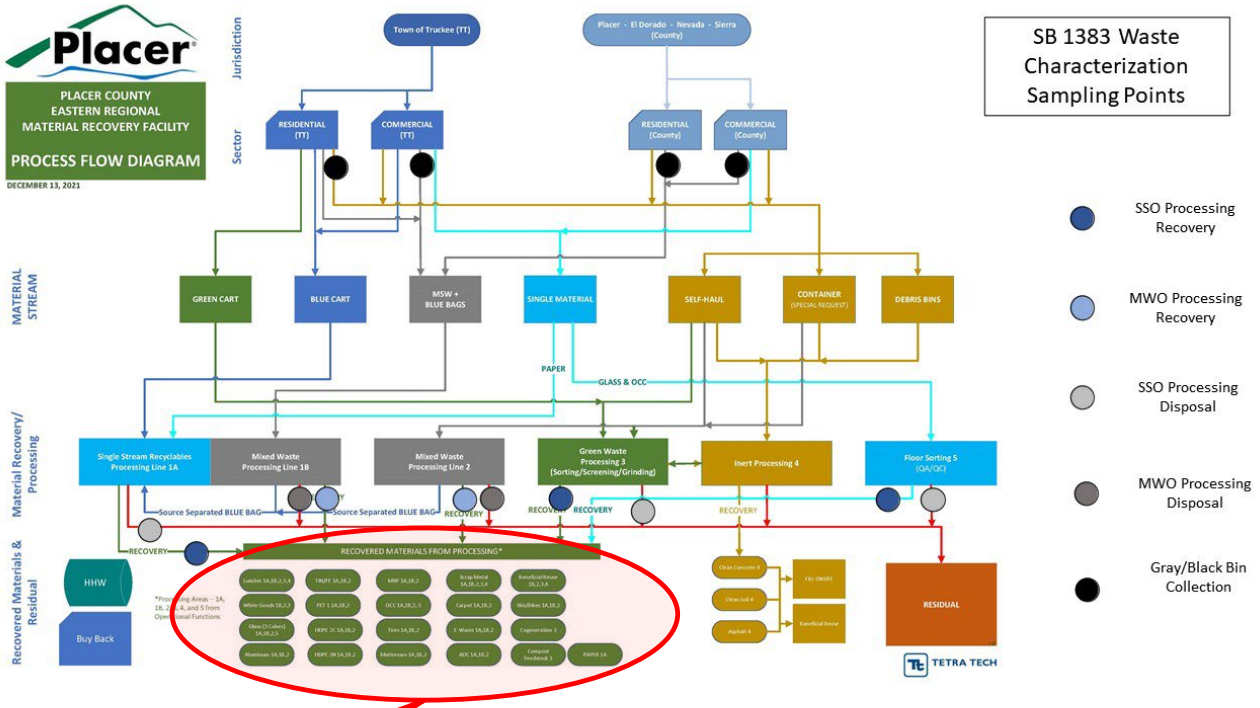
MWO Processing Recovery

SSO Processing Disposal

MWO Processing Disposal

Gray/Black Bin Collection

Destination-Based SB 1383 Waste Characterization Studies Requirement for "Recovery"



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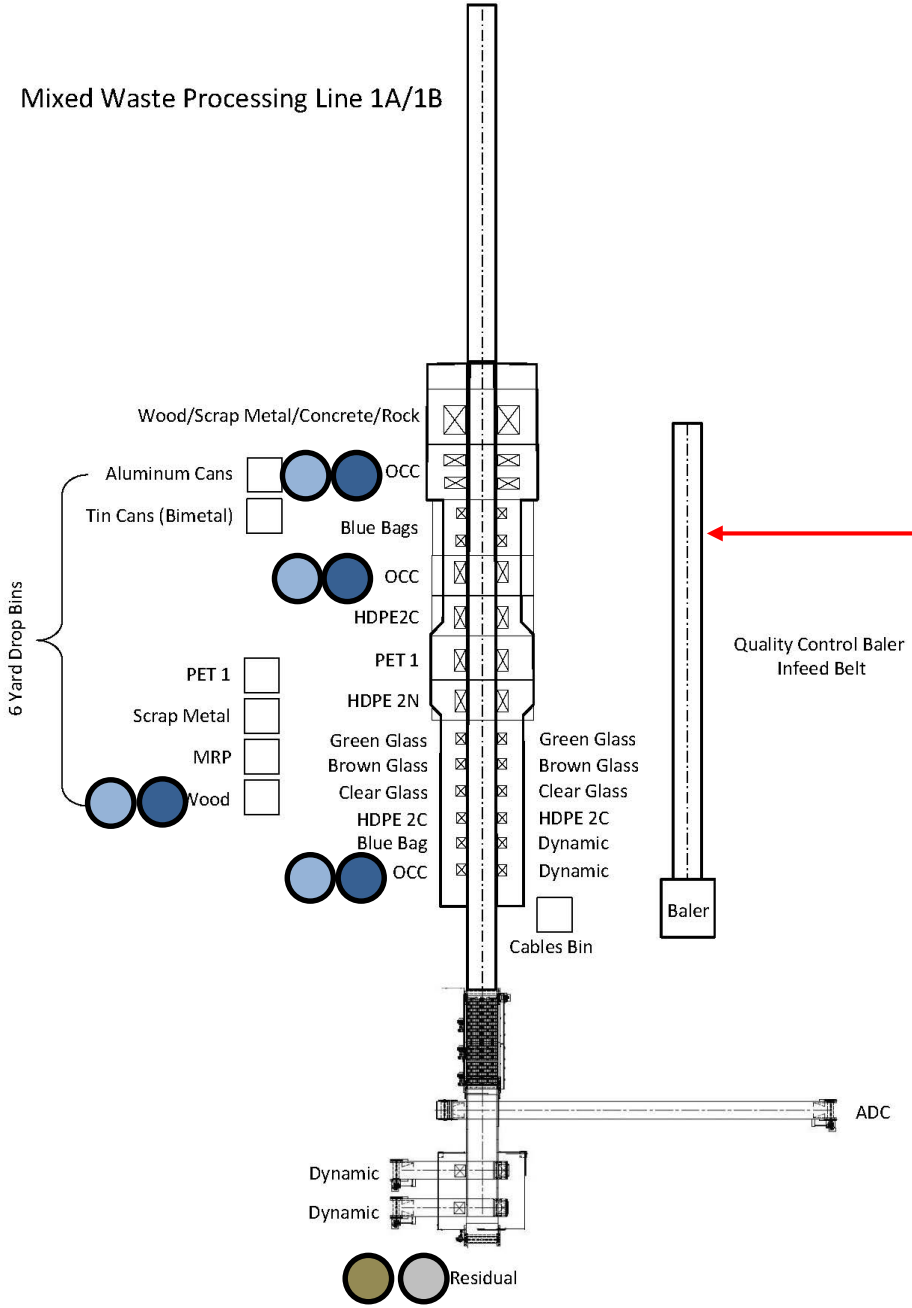
SB 1383 Waste Characterization Sampling Points for Processing Lines 1A / 1B Operational Modes

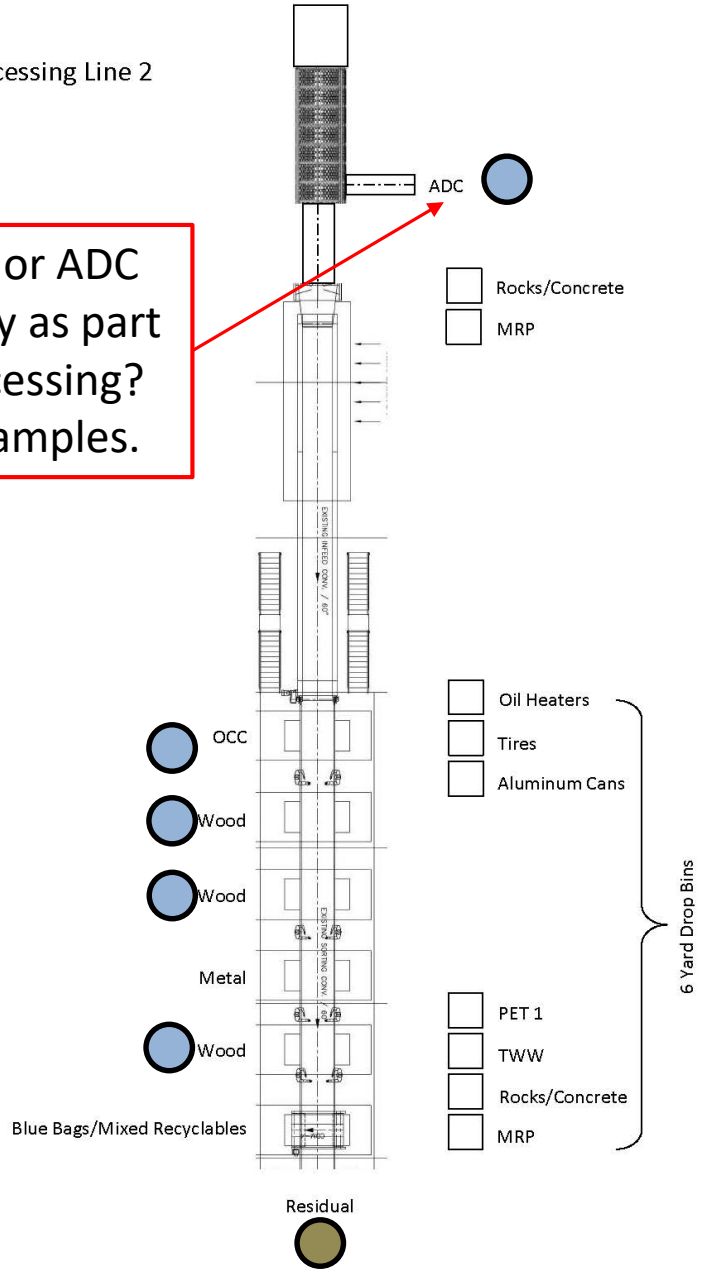


Recommend SB 1383 Recovery Samples after all same material type is mixed and on Quality Control Baler Infeed Belt (Visual or Physical Sorting Protocol)

- SSO Processing Recovery
- MWO Processing Recovery
- SSO Processing Disposal
- MWO Processing Disposal
- Gray/Black Bin Collection

SB 1383 Waste Characterization Sampling Points for Processing Line #2 Operational Mode

Mixed Waste Processing Line 2



Is MRF Fines or ADC recovered only as part of C & D Processing? If "Yes", no samples.

Recommend SB 1383 Recovery Samples after all same material type is mixed and on Quality Control Baler Infeed Belt (Visual or Physical Sorting Protocol)

- SSO Processing Recovery
- MWO Processing Recovery
- SSO Processing Disposal
- MWO Processing Disposal
- Gray/Black Bin Collection

PLACER COUNTY ERMRF SB 1383 WASTE CHARACTERIZATION STUDY AND FACILITY OPTIMIZATION WASTE CHARACTERIZATION STUDY
(Revision 1.3, February 18, 2022)

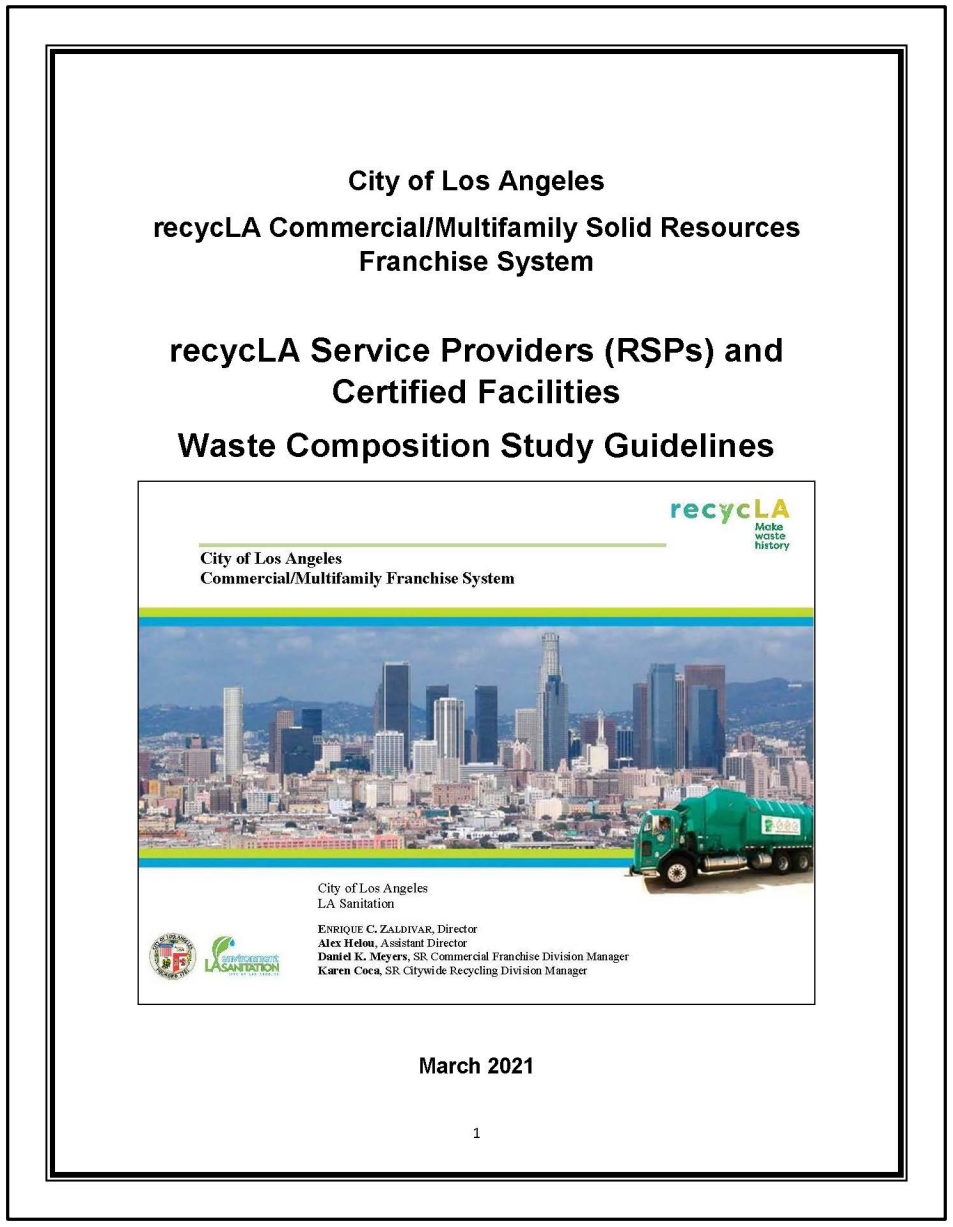
SB 1383 Organic Waste Characterization Number of Samples Per Quarter

SB 1383 Sampling Requirements		SB 1383 Organics Processing (Recovery and Disposal)								SB 1383 Gray/Black Bin
ID#	Description	Blue Bag Process Line #1A	Mixed Waste Process Line #1B (See Notes)	Mixed Waste Process Line #2 (See Notes)	Greenwaste Line #3 (See Notes)	Inert Process Line #4	Floor Sorting Line #5	Floor Sorting Line #5		Remnant Characterization
1	SB 1383 Recovery (Cardboard/OCC: ISRI #11 Specification)	10	10	10		Exempt	10			
2	SB 1383 Recovery (Mixed Paper)	10				Exempt		10		
3	SB 1383 Recovery (Wood / Lumber: Non-Cogeneration markets)					Exempt				
4	SB 1383 Recovery (Wood / Yardwaste/Lumber to Cogeneration)				30	Exempt				
5	SB 1383 Recovery (Organic Carpet)					Exempt				
6	SB 1383 Recovery (Compost Feedstock)				10	Exempt				
7	SB 1383 Recovery (Other Organcis as Beneficial Reuse)				10	Exempt				
8	SB 1383 Recovery (ADC/AIC) Counted as Disposal	10	10	10		Exempt				
9	SB 1383 Disposal	10	10	10	10	Exempt	10	10		
10	SB 1383 Black/Gray Bin (One per Quarter/Jurisdiction)	Truckee, Placer (Unincorporated), El Dorado, Nevada, Sierra								5
	Number of SB 1383 Samples per Quarter for ERMRF	40	30	30	60	0	20	20		5
	Total Number of SB 1383 Samples per Quarter					**205**				
	Total Number of SB 1383 Samples per Year					**820**				

Treating as a single processing line

Note: 1) There are two separate mixed waste processing line (#1B and #2), it may be proposed to the LEA (as an alternative) that these two "mixed waste lines" be combined as duplicate "mixed waste" processing in order to reduce the number of samples. Not recommended because Line #2 takes a signficant differnt input (due to mixed input with C & D, can consider if C &D processing on Line #2 is completely separated) and the level of cross-contamination and the level of incompatibles will be very different. 2) For Greenwaste Processing Line #3, the recovered output is 50% to cogeneration facilities, and 25% ADC/AIC (Disposal), and 25% compost feedstock. For the cogeneration end market, there are two separate cogeneration facilities with a total of three (3) distinct cogeneration specific products. "Other Organics as Beneficial Reuse" is the organics mix of wood and green waste processed to produce consumer products, e.g., colored mulch bark, etc.)

Waste Characterization Guide



City of Los Angeles

recycLA Commercial/Multifamily Solid Resources Franchise System

recycLA Service Providers (RSPs) and Certified Facilities

Waste Composition Study Guidelines

recycLA Make waste history

City of Los Angeles
Commercial/Multifamily Franchise System

City of Los Angeles
LA Sanitation

ENRIQUE C. ZALDIVAR, Director
Alex Helou, Assistant Director
Daniel K. Meyers, SR Commercial Franchise Division Manager
Karen Coca, SR Citywide Recycling Division Manager

March 2021

1

- Material Definitions
- Sampling Requirement (LASAN Certification)
- Key Characterization Protocols
  - Composite Rule
  - Uncertainty Rule
  - Free-Flow Liquids Procedure/Protocol
  - Contamination Protocol/Rules
  - Protocol for Classification Conflicts Between Material Type and Function
  - Protocol for Enhanced Sorting of “Mixed Residue”
  - Quality Assurance / Quality Control Procedures
- To Be Updated for SB 1383

https://www.dropbox.com/sh/822k7b9kwifqv1u/AACSiY5STwon8c-YyapomNCNa?dl=0

UPDATED MATERIAL CLASSIFICATION

NEW CLASSIFICATION ADDRESSING LASAN FUNCTIONAL CLASSIFICATION AND FULL SB 1383 CLASSIFICATION (RSP AND FACILITY PROCESSING LINE SORT)				
PAPER			**GREEN WASTE**	
1A	OCC (Recyclable)		6A	Green Waste
1B	Recyclable Paper		**WOOD**	
1C	Compostable Paper		7A	Clean Wood
1D	Non-Recyclable Paper and Remainder / Composite Paper		7B	Pallets
PLASTIC			7C	Other Wood and Remainder / Composite Wood
2A	#1 PETE Bottles / Containers		**ORGANICS**	
2B	#2 HDPE Bottles / Containers		8A	Food
2C	#5 PP (Polypropylene) Bottles / Containers		8B(OT)	Textiles (Organic)
2D	Other Bottles / Containers #3 #4 #6 #7		8B(NOT)	Textiles (Non-Organic, Blends)
2E	Plastic Film / Wrap		8C(OC)	Carpet (Organic)
2F	Durables		8C(NOC)	Carpet (Non-Organic)
2G	Other Plastic Products and Remainder / Composite Plastic		8D	Biosolids, Manure, Digestate, and Organic Sludges
METAL			8E	Other Organic and Remainder / Composite Organics
3A	Aluminum Cans		**HOUSEHOLD HAZARDOUS WASTE (HHW)**	
3B	Tin Cans		9A	Household Hazardous Waste
3C	Mixed Metals / Other Metal Materials		**MIXED RESIDUE**	
3D	Remainder / Composite Metals		10A	Mixed Residue
GLASS			**BULKY / SPECIAL WASTE**	
4A	Glass Bottles / Containers		11A	Bulky / Special Waste
4B	Other Glass and Remainder / Composite Glass		**LIQUIDS - (NOT ADDED IN TOTAL SAMPLE WEIGHT)**	
INORGANICS (NON-WOOD CONSTRUCTION & DEMOLITION)			12A	Liquids
5A	Inorganics - Includes C&D, Dirt, etc.			

PROPOSED SB 1383 CLASSIFICATIONS

ORGANICS PROCESSING LINE		
1	**PAPER**	SB 1383 Targeted Organic
2	**PLASTIC**	Non-SB 1383 Targeted Organic
3	**METAL**	Non-SB 1383 Targeted Organic
4	**GLASS**	Non-SB 1383 Targeted Organic
5	**INORGANICS (NON-WOOD CONSTRUCTION & DEMOLITION)**	Non-SB 1383 Targeted Organic
6	**GREEN WASTE**	SB 1383 Targeted Organic
7	**WOOD**	SB 1383 Targeted Organic
8	**ORGANICS**	SB 1383 Targeted Organic
8A	Food	SB 1383 Targeted Organic
8B(OT)	Textiles (Organic)	SB 1383 Targeted Organic
8B(NOT)	Textiles (Non-Organic, Blends)	Non-SB 1383 Targeted Organic
8C(OC)	Carpet (Organic)	SB 1383 Targeted Organic
8C(NOC)	Carpet (Non-Organic)	Non-SB 1383 Targeted Organic
8D	Biosolids, Manure, Digestate, and Organic Sludges	SB 1383 Targeted Organic
8E	Other Organic and Remainder / Composite Organics	Non-SB 1383 Targeted Organic
9	**HOUSEHOLD HAZARDOUS WASTE (HHW)**	Non-SB 1383 Targeted Organic
10	**MIXED RESIDUE**	Non-SB 1383 Targeted Organic
11	**BULKY / SPECIAL WASTE**	Non-SB 1383 Targeted Organic
12	**LIQUIDS - (NOT ADDED IN TOTAL SAMPLE WEIGHT)**	

Waste Classification Protocols

- Composite Rule
- Uncertainty Rule
- Free-Flow Liquids Procedure/Protocol
- Contamination Protocol/Rules
- Protocol for Classification Conflicts Between Material Type and Function
- Protocol for Enhanced Sorting of “Mixed Residue”
- Additional Quality Control Procedures
- Quality Assurance / Quality Control Procedures for Materials Classification

Waste Characterization QA/QC Checklist Example

LEA OVERSIGHT CHECKLIST OF FACILITY PROCESSING LINE WASTE CHARACTERIZATION STUDY

Facility Name:	Date:
Facility Address:	
Facility Contact(s):	
LEA Staff:	
Source of Facility Input:	
Processing Line: _____ Blue Bin _____Black Bin _____Green Bin _____Organics Other:	
_____Season #1 Sort _____Season #2 Sort _____Other:	

ID#	Description	Meeting Requirement?		Notes
1	Review Process Flow Diagram and Confirm Accuracy	Yes	No	
2	Confirm Sampling is Representative of Operations	Yes	No	
3	Sampling Plan Provided	Yes	No	
4	Sampling Plan Approved by LEA (and CalRecycle concurrence)	Yes	No	
5	Adequacy of Sorting Setup	Yes	No	
6	Correct Input Feedstock Pile Sampled	Yes	No	
7	Tonnage Data Available for Input / Output	Yes	No	
8	Follow Random Sampling Selection Procedure	Yes	No	
9	No Selection Bias Shown (e.g., preconceived notions, etc.)	Yes	No	
10	Sample Extracted (Selected Slice Cut) from Input	Yes	No	
11	Slice Cut Samples Taken from Top to Bottom	Yes	No	
12	Sampling of Residue (Multiple Outputs Sampled)	Yes	No	
13	Multiple Residue Tonnage Allocation Method Adequate	Yes	No	
14	Weight Data of Sample Before Sorting Recorded	Yes	No	
15	Tare Weight of Containers (Labeled)	Yes	No	
16	Utilization of Minimum LASAN Material Classifications	Yes	No	
17	Containers Checked for Material Accumulation Buildup	Yes	No	
18	Sort Manager Notification of Potential Hazards	Yes	No	
19	Use of Composite Rule	Yes	No	
20	Use of Uncertainty Rule	Yes	No	
21	Use of Free-Flow Liquids Procedures	Yes	No	
22	Use of Contamination Protocol/Rules in Sorting	Yes	No	
23	Use of Protocol for Classification Conflicts Between Material Type and Function	Yes	No	
24	Use of Protocol for Enhance Sorting of Mixed Residue Classification	Yes	No	
25	Use of Protocols for Materials in Treated Medical Waste Bags	Yes	No	
26	Use of Protocols for Hazardous (and other Regulated Waste)	Yes	No	
27	Adequacy of Health and Safety Protocols	Yes	No	
28	Photos Taken of Input Samples	Yes	No	
29	Photos Taken of Residue Samples	Yes	No	
30	QA/QC Checks at Table During Sorting	Yes	No	
31	QA/QC Checks of Material Containers During Sorting	Yes	No	
32	QA/QC Checks of Material Containers During Weighing	Yes	No	
33	Follow-up with Sorters from QA/QC Checks	Yes	No	
34	QA/QC Check of Weighing Procedure (e.g., on scale, etc.)	Yes	No	
35	QA/QC Data Recording Procedure (data transfer from scale)	Yes	No	
36	Status of Non-Process Line Residuals (e.g., floor sort or in-process removal non-acceptable /non-processible items	Yes	No	
37	Status of Glass Fines for Processing at Stategic Materials is Accounted For	Yes	No	
38	Status of Additional Materials for Secondary Processing	Yes	No	
39		Yes	No	
40		Yes	No	
41		Yes	No	
42		Yes	No	
43		Yes	No	

LEA Inspector Signature:

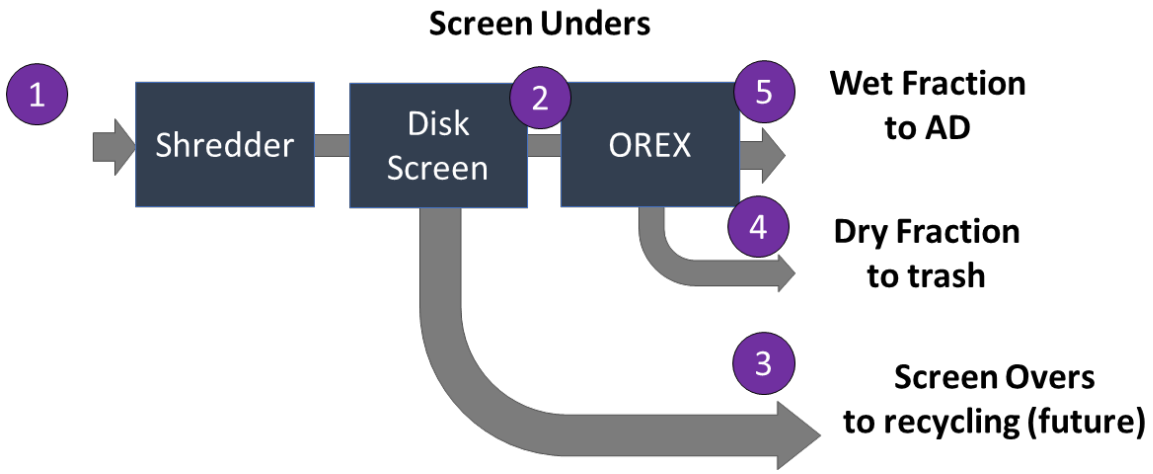
Facility Contact Signature:

Alternative Waste Measurement / Characterization

- Materials are Significantly Physically / Chemically Changed
  - Physical Entanglement
  - Size Reduction (Shredding, Shearing, etc.)
    - Result in change in materials classification (e.g., “Mixed Residue”)
  - Chemical Changes
    - Cross contamination (e.g., moisture transfer, absorption / adsorption, adhesion,
- Alternative Mass Balance Measurement / Characterization Approach:
  - **ONLY Characterize Input to Organics Processing Line**
  - **Lab Analysis on Recovery (AD Input)**

Sun Valley CA, Commercial SSO & MSW Processing Line

Overview of Organics Processing Line

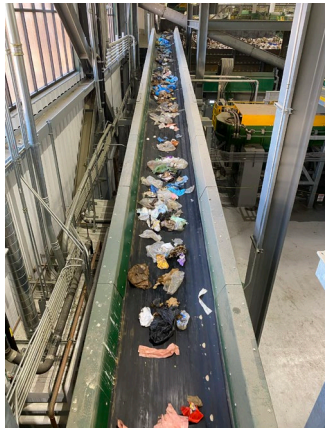


1

MWO

3

Screen Overs



4

Dry Fraction

5

Wet Fraction

Organics Cake Recovered from Source Separated Organics and Mixed Waste (Wet Commercial Loads) from Anaergia OREX Processing Technology

Source Separated Organics (SSO)

Food Waste Slurry (Puente Hills MRF)

Disposal (Dry Fraction) from Mixed Waste Organics

Difficulty in Sorting Residual

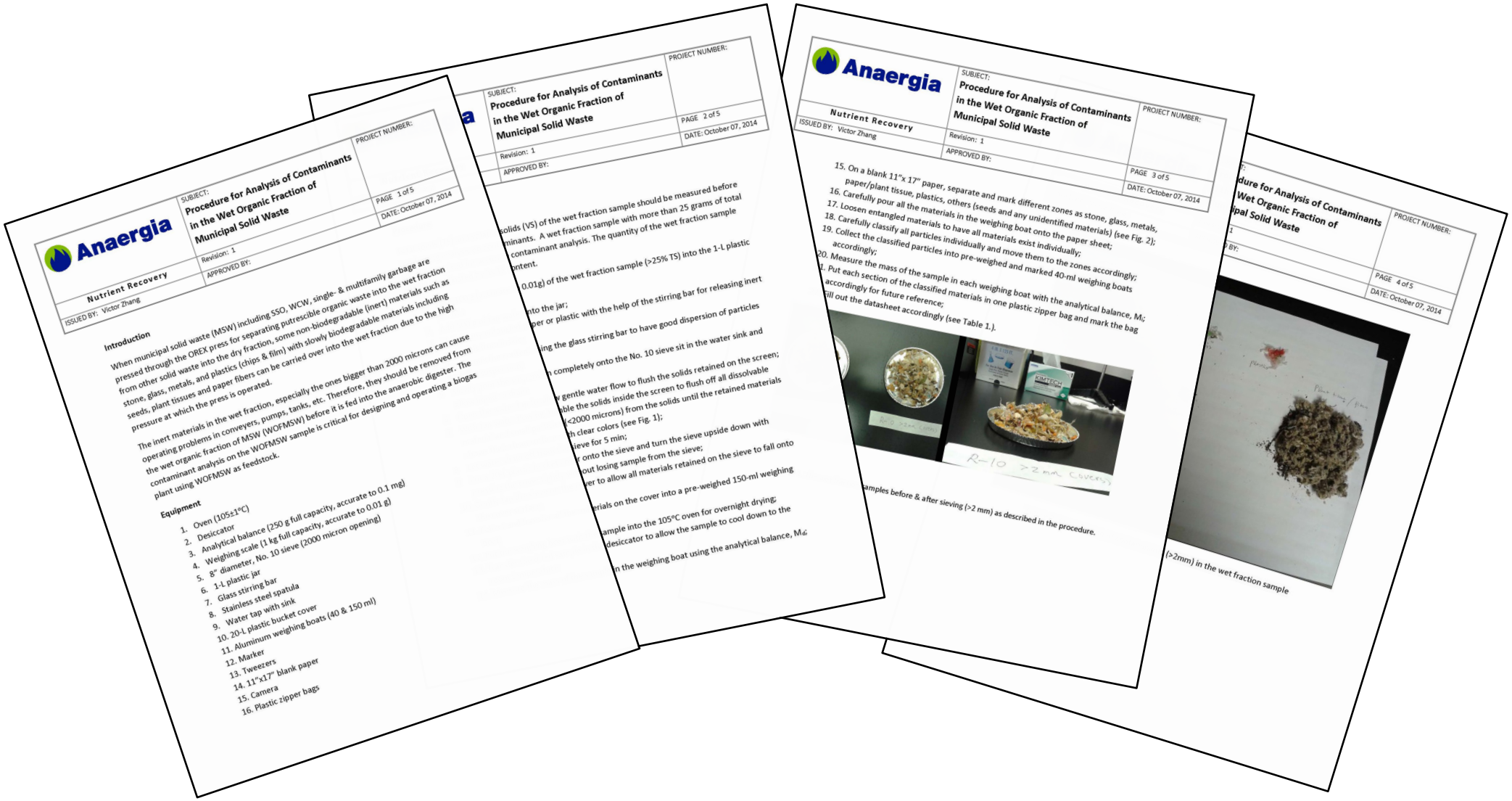
Disposal (Dry Fraction: >3” Mixed Residue Classification)

Food Waste in Input vs Residue (MWO)

Food Waste in Residue Samples Typically Dry, Fibrous, and or “Solid”

Source Separated Organics (SSO)

Waste Management / Anaergia Procedure for Analysis of Contaminants in the Wet Organic Fraction of Municipal Solid Waste (Modified US EPA /US Composting Council's TMECC Method 0306)



Anaergia

Nutrient Recovery

ISSUED BY: Victor Zhang

SUBJECT: Procedure for Analysis of Contaminants in the Wet Organic Fraction of Municipal Solid Waste

PROJECT NUMBER:

Revision: 1

APPROVED BY:

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DATE: October 07, 2014

Introduction

When municipal solid waste (MSW) including SSO, WCW, single- & multifamily garbage are pressed through the OREX press for separating putrescible organic waste into the wet fraction from other solid waste into the dry fraction, some non-biodegradable (inert) materials such as stone, glass, metals, and plastics (chips & film) with slowly biodegradable materials including seeds, plant tissues and paper fibers can be carried over into the wet fraction due to the high pressure at which the press is operated.

The inert materials in the wet fraction, especially the ones bigger than 2000 microns can cause operating problems in conveyers, pumps, tanks, etc. Therefore, they should be removed from the wet organic fraction of MSW (WOFMSW) before it is fed into the anaerobic digester. The contaminant analysis on the WOFMSW sample is critical for designing and operating a biogas plant using WOFMSW as feedstock.

Equipment

1. Oven (105±1°C)
2. Desiccator
3. Analytical balance (250 g full capacity, accurate to 0.1 mg)
4. Weighing scale (1 kg full capacity, accurate to 0.01 g)
5. 8" diameter, No. 10 sieve (2000 micron opening)
6. 1-L plastic jar
7. Glass stirring bar
8. Stainless steel spatula
9. Water tap with sink
10. 20-L plastic bucket cover
11. Aluminum weighing boats (40 & 150 ml)
12. Marker
13. Tweezers
14. 11"x17" blank paper
15. Camera
16. Plastic zipper bags

SUBJECT: Procedure for Analysis of Contaminants in the Wet Organic Fraction of Municipal Solid Waste

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olids (VS) of the wet fraction sample should be measured before minants. A wet fraction sample with more than 25 grams of total contaminant analysis. The quantity of the wet fraction sample ntent.

0.01g) of the wet fraction sample (>25% TS) into the 1-L plastic

nto the jar;

per or plastic with the help of the stirring bar for releasing inert

ing the glass stirring bar to have good dispersion of particles

n completely onto the No. 10 sieve sit in the water sink and

w gentle water flow to flush the solids retained on the screen; ble the solids inside the screen to flush off all dissolvable <2000 microns) from the solids until the retained materials h clear colors (see Fig. 1);

ieve for 5 min;

r onto the sieve and turn the sieve upside down with out losing sample from the sieve;

er to allow all materials retained on the sieve to fall onto

rials on the cover into a pre-weighed 150-ml weighing

ample into the 105°C oven for overnight drying;

desiccator to allow the sample to cool down to the

n the weighing boat using the analytical balance, M4;

Anaergia

Nutrient Recovery

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15. On a blank 11"x 17" paper, separate and mark different zones as stone, glass, metals, paper/plant tissue, plastics, others (seeds and any unidentified materials) (see Fig. 2);
16. Carefully pour all the materials in the weighing boat onto the paper sheet;
17. Loosen entangled materials to have all materials exist individually;
18. Carefully classify all particles individually and move them to the zones accordingly;
19. Collect the classified particles into pre-weighed and marked 40-ml weighing boats accordingly;
20. Measure the mass of the sample in each weighing boat with the analytical balance, M5;
21. Put each section of the classified materials in one plastic zipper bag and mark the bag accordingly for future reference;

ill out the datasheet accordingly (see Table 1.).

amples before & after sieving (>2 mm) as described in the procedure.

dure for Analysis of Contaminants Wet Organic Fraction of ipal Solid Waste

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(>2mm) in the wet fraction sample

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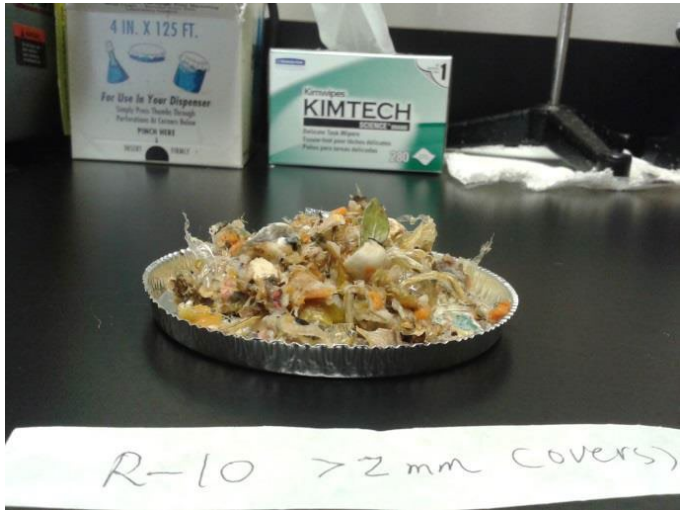

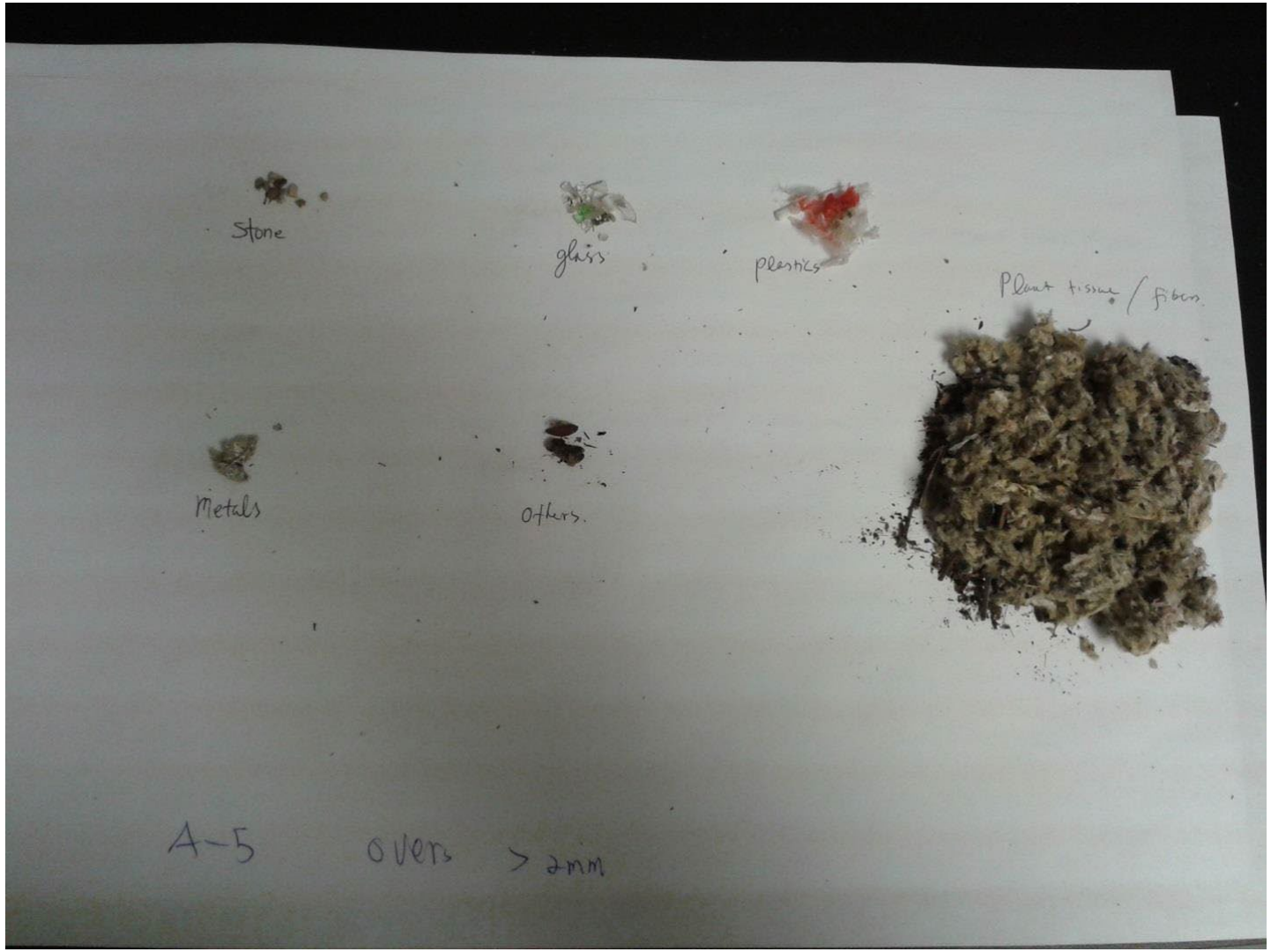

Rialto Anaerobic Digestion Facility Data

- Rialto Feedstock Input / Disposal Output
  - Total Tons of AD Feedstock Received (July – Dec. for 2021) = 16,835 tons
  - Total Tons of OPS Rejects (July – Dec. for 2021) = 785 tons (Disposed)
  - Fraction AD Feedstock Disposed (Rejects) = 785 / 16,835 = 4.7%
- Summary:
  - Contract Requires Less Than 10% Inerts in Feedstock and
  - Facility Average Inerts Composition is 4.7%
  - Facility Meets Section 17409.5.8. Incompatible Materials Limit in Recovered Organic Waste, (c) The recovered organic waste stream shall not be subject to Section 17409.5.8(a) if the recovered organic waste is sent to one or more of the following types of facilities that will further process that waste:
    - (1) A transfer/processing facility or operation that complies with Section 17409.5.8(a); or
    - (3) An in-vessel digestion facility or operation that, pursuant to Section 17896.44.1, demonstrates that the percentage of organic waste in the materials sent to disposal is:
      - (A) On and after January 1, 2022, less than 20 percent.
      - (B) On and after January 1, 2024, less than 10 percent.

LEA Recommended Alternative Organics Recovery Rate Calculation Methodologies

Alternative Recovery Rate Methodology #1: (Weight of Outbound Disposal is Available)

$$= \frac{\text{(Tons Diverted SB 1383 Targeted Organics)}}{\text{(Tons Diverted SB 1383 Targeted Organics) + (Tons Disposed SB 1383 Targeted Organics)}}$$

Tons Disposed SB 1383 Targeted Organics in the "outbound" disposal tonnage is equal to:

= ((Percent of SB 1383 Organics in Inbound Tons) X (Tons Diverted + Tons Disposed)) - Tons Diverted

LEA Recommended Alternative Organics Recovery Rate Calculation Methodologies

Alternative Recovery Rate Methodology #2: (Unknown Outbound Disposal Tonnage)

= (Tons Diverted/Tons Inbound) / (Percent of Targeted Organics in Inbound)

This method only requires a waste composition study on the inbound materials to determine the tonnage of SB 1383 targeted materials being processed by the mixed commercial waste organics processing line and the tonnage data of the diverted materials to the anaerobic digestion facility and the corresponding input or inbound tonnage that the diverted materials came from. The tonnage sent to an anaerobic digestion facility is entirely counted as diversion. This calculation assumes that there is no process loss (which would not be included in the other outbound disposal tonnage-based calculation).

Final Proposed SB 1383 Alternative Recovery Rate Calculation Using Mass Balance Methodology

Tons of Disposed SB 1383 Organics =

= ((Percent SB 1383 Organics in Inbound Tons) X (Tons Recovered + Tons Disposed)) - Tons Recovered

Consistent with the definition of recovery rate in SB 1383, the formula for calculating the organics recovery rate Alternative SB 1383 Methodology is:

$$= \frac{\text{(Net Tons Recovered SB 1383 Targeted Organics)}}{\text{(Net Tons Recovered SB 1383 Targeted Organics) + (Tons Disposed SB 1383 Targeted Organics)}}$$

City of Los Angeles Local Enforcement Agency
County of Los Angeles Local Enforcement Agency

Thank You

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