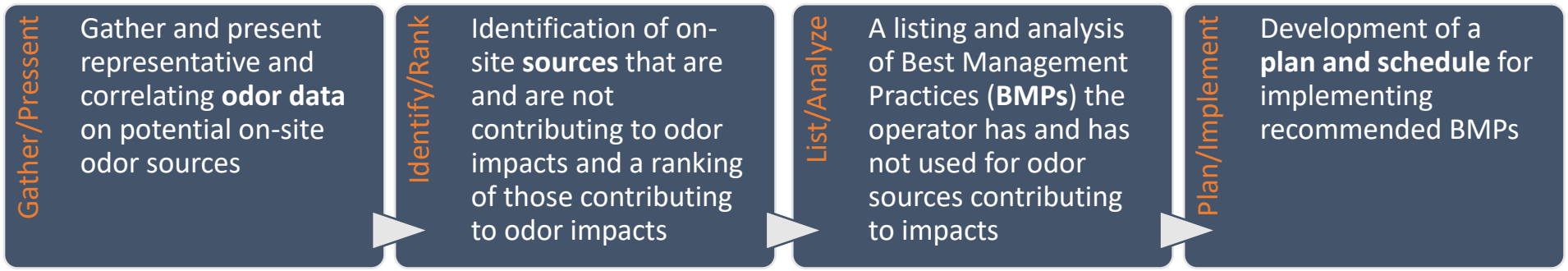
INSTRUCTIONS FOR COMPLETING THE ODOR BEST MANAGEMENT PRACTICE FEASIBILITY REPORT TEMPLATE

Purpose

This document is intended to provide guidance and serve as a sample for the preparation of an odor best management practice feasibility report in accordance with Title 14, California Code of Regulations ("CCR") Section 17863.4.1 and Section 17896.30. It covers the basic components of an odor best management feasibility report, including:



By completing the template, you will be able to provide information that is required to comply with the requirement for preparing an odor best management practice feasibility report. **Please note that use of this template and some of the methods of collecting data offered herein are not specific requirements of 14 CCR Sections 17863.4.1 or 17896.30 but are provided as one possible method for regulated entities to use to provide what is required to comply with those sections**. For the purposes of this evaluation, odor impacts are complaints, off-site odors observed by a site operator and/or Local Enforcement Agency and odors generated at a site being evaluated.

A. GATHER/PRESENT | (14 CCR, Section 17863.4.1[b][1] and Section 17896.30[b][1])

Present representative and correlated odor data for each potential on-site odor source area including but not limited to: odor impacts, time, weather, odor characteristics, odor severity, and a description of operations associated with the potential source area. **All resources, analysis, calculations, and assumptions used to complete the template should be attached as part of the final Report.**

1. Odor Impacts: Provide a list of odor impacts. If a standardized format is used, identify and attach a form.

2. Time (when data was collected): The time should be as accurate as possible, especially when noting the duration of observed odors. Each observation should use a standardized measure of the time (e.g. National Institute of Standards and Technology [NIST]) http://www.time.gov/.

3. Weather (when data was collected): You may wish to use meteorological data from the National Oceanic and Atmospheric Administration (http://www.noaa.gov/) or provide print-outs from the on-site weather station to document weather conditions for the duration that data was collected.

4. Odor Characteristics: You may **wish to** use the Compostable Materials Odor Characteristics webpage, the ATSDR Community Member Assessment of Environment Odor, or other reliable source to characterize the odor(s).

5. Odor Severity: Investigate odor to determine severity. You may use ASTM Method E-544-10 (see the Compostable Material Odor Characteristics webpage), the Comprehensive Compost Odor Response Project (CCROP), or any other reliable method to determine odor severity. You should include name/model number of any instrument(s) used during the on-site investigation.

If no instrumentation was utilized, consider using FIDO, which stands for Frequency, Intensity, Duration and Offensiveness (see ATSDR Community Member Assessment of Environment Odor). The steps in the "FIDO" process include:

1. Characterize the odor to determine which offensiveness-ranking table to use (Not Unpleasant to Highly Offensive).
2. Assess the Intensity of odor (Very Light to Very Strong).
3. Determine the total Duration of the odor(s) (1 minute to 24 hours).
4. Evaluate the Frequency of odor occurrence (Single Occurrence to Daily).

6. Description of Operations Associated with the Potential Source: Describe what activity was occurring when the operator, local enforcement agency, or the public (via complaint) detected the odor (e.g., incoming loads of food material feedstock were being delivered, biofilter down for repair, mixing of material, screening of materials, removing material from piles, etc.).

7. Potential Sources: Identify potential areas of sources of the odor (e.g., off-loading area, loading area, active composting area, etc.)

Example:

Date	Representative and Correlating Data Associated with Odor Impact(s)						
	(1) Odor Impact	**(2) Time (when data collected)**	**(3) Weather**	**(4) Odor Characteristics**	**(5) Odor Severity**	**(6) Operations Description**	**(7) Potential Sources**
05/22/2017	*On May 22, 2017, at 3:00PM, the operator received a phone-call complaint.*	*The complainant stated the odor began at 1:45PM and ended around 3:15PM.*	*The operator collected the following historical meteorological data at/around the time of the complaint:* *At 1:53PM:* *Temp – 92F* *Dew pt. – 51F* *Relative humidity – 25%* *Wind Direction – West*	*The complainant stated that the odor was, "so strong that they could not go outdoors."*	*Based on the complainant's description, the operator used frequency, intensity, duration, and offensiveness (FIDO) steps to determine odor severity. FIDO steps determined the severity of the odor to be "strong." See*	*At the time of the complaint, several haulers dropped off several loads of material at the off-loading area. The material originates from a local food waste collection program and consists of food scraps, vegetables, and fruits. Once off-loaded, the material*	*The operator identified the follow areas as potential sources:* *1. Off-loading area* *2. Material mixing area* *3. Windrow area*

Date	Representative and Correlating Data Associated with Odor Impact(s)						
	(1) Odor Impact	(2) Time (when data collected)	(3) Weather	(4) Odor Characteristics	(5) Odor Severity	(6) Operations Description	(7) Potential Sources
			Wind Speed – 7 MPH *Visibility – 10 miles* *Clouds – Clear* *Station Pressure – 29.87 inches* *Sea Level Pressure – 1012.0 mb* *At 2:53PM:* *Temp – 94F* *Dew pt. – 50F* *Relative humidity – 23%* *Wind Direction – West* *Wind Speed – 7 MPH* *Visibility – 10 miles* *Clouds – Clear* *Station Pressure – 29.85 inches* *Sea Level Pressure – 1011.6 mb* *(according to www.noaa.gov)*		*attached for more information.*	*was sent to the material to the grinding/mixing area within 30 minutes, where it was then mixed with green material within 1 hour. The blend was then placed into windrow piles within 10 minutes from mixing and a 6-inch layer of finished compost was added on top of the windrow.*	
5/25/2017	*On May 25, 2017, at 3:45PM, the operator was notified of a public complaint that was received by the Local Enforcement Agency.*	*The complainant stated the odor began at 2:30PM and ended around 3:00PM.*	*The operator collected the following historical meteorological data at/around the time of the complaint:* *At 2:53PM:* *Temp – 90F* *Dew pt. – 59F* *Relative humidity – 36%* *Wind Direction – Southwest* *Wind Speed – 13 MPH*	*The complainant characterized the odor as an "intense earthy smell."*	*Based on the complainant's description, the operator used frequency, intensity, duration, and offensiveness (FIDO) steps to determine odor severity. FIDO steps determined the severity of the odor to be "strong." See attached for more information.*	*At the time of the complaint, green and food material from the material mixing area was placed into windrow piles and a 6-inch layer of finished compost was added on top of the windrows within 10 minutes of creating the pile. During that time, other windrow piles were turned and sprayed with*	*The operator identified the follow areas as potential sources:* *1. Windrow area*

Date	Representative and Correlating Data Associated with Odor Impact(s)						
	(1) Odor Impact	(2) Time (when data collected)	(3) Weather	(4) Odor Characteristics	(5) Odor Severity	(6) Operations Description	(7) Potential Sources
			Visibility – 10 miles *Clouds – Clear* *Station Pressure – 29.85 inches* *Sea Level Pressure – 1011.3 mb* *At 3:53PM:* *Temp – 91F* *Dew pt. – 58F* *Relative humidity – 33%* *Wind Direction – Southwest* *Wind Speed – 12 MPH* *Visibility – 10 miles* *Clouds – Clear* *Station Pressure – 29.83 inches* *Sea Level Pressure – 1010.7 mb* *(according to www.noaa.gov)*			*water to increase oxygen concentration and to limit dust and odors. Turning of the piles can take up to 45 minutes to complete.* *The material originates from a local food waste collection program and consists of food scraps, vegetables, and fruits. Winds speeds were greater than 10 mph at the time of material handling (refer to weather column).*	

B. Identify/Rank | (14 CCR, Section 17863.4.1[b][2] and 17896.30[b][2])

1. Potential Sources Contributing to Odor Impacts

Identify which areas of on-site sources are contributing to odor impacts and rank those in order of impact. Possible areas of sources include feedstock piles areas, active composting piles and windrows areas, curing piles areas, finished compost piles areas, grinding areas, stormwater run-off areas, leachate pond areas, and ponded water on the pad.

Example:

Rank	Potential Sources Contributing to Odor Impacts		
	Area of On-site Source	Operations Description	Material Type Handled
1	*Feedstock receiving/off-loading area*	*Food material and green materials are received through the scale house and then sent to the off-loading area where it is stockpiled for approximately*	*Unprocessed feedstock with green material – wood wastes, yard trimmings, residential food.*

Rank	Potential Sources Contributing to Odor Impacts		
	Area of On-site Source	Operations Description	Material Type Handled
		30 minutes time prior to being sent to the grinding/mixing area.	
2	*Material grinding/mixing area*	*Green material and food material are ground and mixed together to create a blend that achieves a high C:N ratio. The blend is then sent to windrow area within 10 minutes time from mixing.*	*Mixed green material – wood wastes, yard trimmings, and residential food.*
3	*Active compost windrow area*	*Placement of green material and food material mixture in a windrow pile. Once material is placed into a windrow pile, a 6-inch layer of finished compost is added on top of the windrow. Other activities turning the windrow piles to improve oxygen concentrations and adding water to limit dust and odors.*	*Composting green material – wood wastes, yard trimmings, and residential food.*

2. Potential Sources Not Contributing to Odor Impacts
Identify which areas of on-site sources are not contributing to odor impacts.

Example:

No.	Potential Sources Not Contributing to Odor Impacts	Rationale
1	*Finished compost screening area*	*No activity was taking place in this during the duration of the odor impact.*
2	*Finished compost stockpile area*	*No activity was taking place in this during the duration of the odor impact.*

C. Listing and Analysis | (14 CCR, Section 17863.4.1[b][3][A] and 17896.30[b][3][A])

Existing Best Management Practices (BMPs) Used to Minimize Odor
You may use the **CCORP** or other industry practice(s) as a guideline to list and analyze the existing BMPs the operator is using to minimize odor impacts. **All resources, analysis, calculations, and assumptions used to complete the table should be attached to the Report.**

1. Effectiveness in Reducing Odors: Grade each BMP on effectiveness. You may use a scale such as: Ineffective, Minimally Effective, Moderately Effective, Largely Effective, and Completely Effective.

2. Potential for More Extensive Use: What is the potential that more extensive use of one or more BMP would result in further minimization of odor impacts?

3. Operationally Practical: Determine if each BMP has or has not been operationally practical and if more extensive use of the BMP would or would not be operationally practical.

4. Approximate Cost to Implement: Estimate the cost to implement more extensive use of BMPs. Consider these costs: loss of revenue associated with less site capacity, decrease in hours of operation, additional or replacement equipment, additional onsite personnel, etc. Include the calculations and assumption as an attachment to the Report.

5. New Permit(s) or Permit Changes: Will you need a new permit or need to revise an existing permit in order to use the BMP more extensively? Example 1: If more extensive use would require a new piece of equipment, will that equipment need a new Permit to Construct or Permit to Operate from the Air Pollution Control District/Air Quality Management District? Example 2: If more extensive use would conflict with the terms and conditions of the current Solid Waste Facilities Permit, then a permit modification or permit revision would be required.

6. Overall Recommendation: Include an overall recommendation for whether each BMP should be continued and if it should be used more extensively.

7. Effectiveness of BMP: Identify if BMPs are or are not effective (include supporting data).

Example:

Existing BMP(s) Used to Minimize Odors							
BMP No.	**Description**	**(1) Effectiveness in Reducing Odors?**	**(2) Potential for More Extensive Use**	**(3) Operationally Practical?**	**(4) Approx. Cost to Implement***	**(5) New Permit(s) or Permit Changes?**	**(6) Overall Recommendation**
1	*Adding 6-inch layer of finished compost over windrow piles.*	*Largely effective*	*No*	*Yes*	*$ XXXX*	*No*	*Continue BMP as described/No Change*
2	*A reduction in windrow height from 10 feet to 8 feet to increase natural aeration process, reduce the formation and persistence of anaerobic areas in the windrow.*	*Moderately effective*	*Yes*	*No*	*$ XXXX*	*No*	*Continue BMP as described/ No Change*
3	*More timely material mixing to avoid long stockpile storage time.*	*Moderately effective*	*Yes*	*Yes*	*$ XXXX*	*No*	*Change mixing time from XX to YY.*

*All calculations and assumptions used to approximate the costs to implement the BMPs should be included in the Report.

List all existing BMP(s) found to be ineffective.

BMP No.	(7) Existing BMP(s) Found to be Ineffective	Rationale
1	***Relocation of grinding/mixing area.*** *The grinding/mixing of materials can result in an immediate release of odors. The intent of the BMP is to relocate the grinding/mixing area so that the activities were as far as possible from the sensitive receptors.*	*The relocation of the grinding/mixing area is not practical as the grinding/mixing area should be as close as possible to the windrow area to prevent the spread of odors.*

D. LIST/ANALYZE | 14 CCR, Section 17863.4.1[b][3][B] and 17896.30[b][3][B])

Analysis of Potential New BMPs Not Used to Minimize Odor
Use the **CCORP** or other industry practice(s) as a guideline to list and analyze potential BMPs the operator has not used to minimize odor impacts. **All resources, analysis, calculations, and assumptions used to complete the table should be attached to the Report.**

1. Potential to Reduce Odors: What is the potential for the BMP to reduce odor impacts?

2. Operationally Practical: Determine if each BMP would be operationally practical.

3. Approximate Cost to Implement: Estimate the cost to implement the BMP.

4. New Permit(s) or Permit Changes: Will you need a new permit or need to revise an existing permit in order to use the BMP more extensively? Example 1: If more extensive use would require a new piece of equipment, will that equipment need a new Permit to Construct or Permit to Operate from the Air Pollution Control District/Air Quality Management District? Example 2: If more extensive use would conflict with the terms and conditions of the current Solid Waste Facilities Permit, then a permit modification or permit revision would be required.

5. Overall Recommendation: Include an overall recommendation and ranking for each additional BMP.

Example:

BMP No.	Potential BMP(s) Not Used to Minimize Odor					
	Description	**(1) Potential to Reduce Odor Impacts**	**(2) Operationally Practical?**	**(3) Approx. Cost to Implement****	**(4) New Permit(s) or Permit Changes?**	**(5) Overall Recommendation and Ranking**
1	*Create a partially enclosed building for off-loading and grinding/mixing material*	*High*	*Yes*	*$ XXXX*	*Potential Permit Revision to Solid Waste Facilities Permit. May also include local approvals/permits*	*Rank 1: Recommend implementation*
2	*Reduce turning/material handling when wind is in direction of nearby neighbors*	*High*	*Yes*	*$ XXXX*	*No permit changes*	*Rank 2: Recommend implementation*

**All calculations and assumptions used to approximate the costs to implement the BMPs should be included in the Report.

E. PLAN/IMPLEMENT | 14 CCR, Section 17863.4.1 [b][3][C] and 17896.30 [b][3][C]

Based on the analysis conducted in C and D above, develop a plan and schedule for implementing the potential BMP(s) that are recommended.

Plan and Schedule for Implementing Potential BMPs			
Existing BMP(s) and Potential BMP(s) To Be Implementation	**Action**	**Start Date**	**End Date**
Create a partially enclosed building for off-loading and mixing area.	*1. Obtain Locals Approvals/CEQA*	*June 20XX*	*July 20XX*
	2. Application for RFI Amendment to LEA	*July 20XX*	*August 20XX*
	3. If the LEA determines a modified or revision to the SWF permit is required, Application for Revision to Solid Waste Facility Permit to LEA	*October 20XX*	*January 20XY*
Reduce turning/material handling when wind is in direction of nearby neighbors	*No permit action. Implement immediately.*	*June 20XX*	*N/A*