



Dirt Hugger[®]

ORGANIC COMPOST CO. - OR / WA

Dirt Hugger V3

1. Background & Overview
2. Air Quality Permitting
3. Contamination & Compostables



Dirt Hugger Site



Dirt Hugger

Air Permitting - first one

Dirt Hugger Air Quality Permitting Timeline			
Date	Event	Costs	Payee
10/17/2016	AQ permit modificaton received by Ecology	\$875	
6/26/2017	Follow up- Ecology suggests not processing the 50k TPY permit so that a 100k TPY permit may be submitted		
9/12/2018	2nd Air Quality Permit Application Received	\$625	CRO AQ
1/29/2019	AERSCREEN modeling is requested	\$1,500	laude Williams PE
2/5/2019	AERMOD modeling is requested	\$5,000	Ramboll
3/19/2019	Tier 2 review is required by AQ.	\$1,000	DOE
5/9/2019	Draft NOC approval order delivered (review costs to date DOE)	\$11,027	CRO AQ
5/31/2019	AERMOD modeling is complete	\$22,212	Ramboll
6/13/2019	ORIA assistance. Internal review by DOE		
9/17/2019	Final Permit Issued (DOE AQ 232 hours)	\$22,665	CRO AQ
Budgeted Costs		\$875	CRO AQ
Actual Costs	(DH 330 hours on permit)	\$48,877	



Air Permit round 3

- 62K TPY to 90K TPY
- Up front alignment w/ regulator
- Used existing math (didn't question EF)
- Collaborative



Dirt Hugger Site



Feedstock Throughput

Category	Annual	Units
Existing	62,700	tpy
Increase	30,000	tpy
Total	92,700	tpy

Stockpile - Maximum Onsite Capacity

Category	Capacity ¹	Units
Existing	3,344	ton
Increase	1,672	ton
Stockpile	5,016	ton

¹ Stockpile exists: 153 day/yr

Existing Allowable Emissions

Release Point	VOC	Ammonia	Units
Stockpile	17.2	6.19	tpy
Active Phase	2.9	0.51	tpy
Biofilter	35.1	6.21	tpy
Curing Phase	35.8	6.33	tpy
Engines	1.1	-	tpy
Total	92.1	19.23	tpy
		38,467	lb/yr

Total Allowable Emissions

Release Point	VOC	Ammonia	Units
Stockpile	25.8	9.28	tpy
Active Phase	4.2	0.75	tpy
Biofilter	51.9	9.18	tpy
Curing Phase	13.2	2.34	tpy
Engines	1.7	-	tpy
Total	96.8	21.55	tpy
		43,095	lb/yr

Increase in Allowable Emissions

Release Point	VOC	Ammonia	Units
Site-wide	4.7	2.31	tpy
		4,628	lb/yr
		12.7	lb/day

Emission Factors

Pollutant	Value	Units
NH ₃ - stockpile	0.0968	lb / wet ton / day
NH ₃ - windrow	1.01	lb / wet ton
VOC - stockpile	0.269	lb / wet ton / day
VOC - windrow	5.71	lb / wet ton

Negative Aeration Capture Efficiency

Pollutant ¹	Value	Units
any	98%	-

¹ Assumed, per aeration system consultant.

Emissions Distribution

Phase	Emissions (%)	Duration
Active (primary)	80%	Initial 18 days ¹
Curing (secondary)	20%	Remaining time

¹ Interpolated from CIWMB's 2007 *Emissions Testing of VOC from Greenwaste Composting at the Modesto Compost Facility in San Joaquin Valley* report (greenwaste with foodwaste sample data).

Control/Destruction Efficiencies

Pollutant ¹	Value	Units
NH ₃	75%	lb / ton throughput
VOC	75%	lb / ton throughput

¹ See 'Control Efficiency' sheet for identified value for VOC control.

Greenwaste with 15% food waste pile data was chosen. The same control efficiency is assumed to apply to NH₃.



Timeline & Costs

Dirt Hugger Air Quality Permitting Timeline		
Date	Event	Costs
spring 23	Air Modeling	\$20,860
4/15/2023	AQ permit modificaton received by Ecology	\$875
summer 23	Permitting paused by Generate Upcycle	
10/1/2023	Permitting picked back up	
11/15/2023	Anticipated finished permit - final costs	\$5,000
Budgeted Costs		\$35,000
Actual Costs		\$21,735



Contamination & Compostables

- New owners - new energy
- Daily reports and fees
- Volume based feedback





Dirt Hugger

First (Ground Pick) Contamination	
Gallons/Can	65
Average Cans	5.05
Average Volume	328
Yards/Load	70
Gallons/Load	14,000
% Volume Contamination	2.35%
Labor	\$42.5
Loader	\$125.0
Total	\$167.5
Yards/ton	3.1
Tons/hr	22.8
\$/Ton Removal	\$7.3



Second (Sorting Station) Contamination	
Pre-screener/Hr	\$150.0
Pick Station/Hr	\$64.9
Labor/Hr (3 people)	\$63.8
Loader/Hr	\$125.0
Total	\$403.6
Yards/Hr	85.0
Yards/ton	3.1
Tons/hr	27.7
\$/Ton Removal	\$14.6

Plus Disposal!!!



Dirt Hugger

Contamination by the numbers

- 5 FTE removing contamination
 - \$220K in payroll/benefits
- 3 sorting stations on site
 - \$150k new each
- 2 full air lift removals systems
 - \$350K new each
- 90k in overs disposal in 2023 for $\frac{1}{4}$ of what needs to go.
- \$10k/mo in overs accruals

Contamination Conclusions

- We are manufacturing a product for our customers (parents, farmers, growers)
- We can't tell the difference
- compostable or not
- Our 11 year contract excludes compostables
- Our OMRI listing disallows compostables

