



January 15, 2015

Ms. Wendy Wyels, Supervisor  
Compliance and Enforcement Section  
California Regional Water Quality Control Board  
Central Valley Region  
11020 Sun Center Drive, #200  
Rancho Cordova, CA 95670-6114

RE: Feather River Organics – Update on City of Marysville Wastewater Discharge Permit;  
Updated Water Balance Study

Dear Ms. Wyels:

This is the requested progress report on wastewater permitting with the City of Marysville and a transmittal of an updated water balance study prepared by Golder Associates. As we've discussed, Recology met with the City of Marysville in December 2014 and January 2015 regarding the process and requirements to secure an Industrial Wastewater Discharge Permit for disposal of compost runoff from the Feather River Organics (FRO) composting facility in Marysville to the local publicly owned treatment works (POTW).

Attached is a copy of the City of Marysville Industrial Waste Discharge Permit Application that was submitted to the City on January 14, 2015. We anticipate the final Permit will be issued by the City next week. The City has agreed to accept disposal of 200,000 peak daily gallons and 750,000 peak weekly gallons from the FRO facility into its POTW; these values have been incorporated into the water balance as noted below. The City and Recology are also working on the best way for FRO personnel to be in close contact with POTW staff during larger storm events, with the aim of possibly increasing the peak discharge on a case-by-case basis where the circumstances at the POTW would safely allow such a short term peak increase.

The attached revised Water Balance report was prepared by Golder Associates for the FRO site. It incorporates the above noted peak daily and weekly disposal limits to the POTW. The report concludes that the site's storage and disposal system is sufficient to contain compost stormwater run-off for a single precipitation event or consecutive events that correspond to a 25-year return period in accordance to the Department of Water Resources' stormwater database.

Further, we are moving ahead with an idea advanced during meetings with the Regional Board last summer and we are actively reviewing operations in an effort to reduce the footprint of the composting activities at the FRO site. Reducing the composting footprint will help reduce the amount of compost runoff that would be generated and managed during storm events.

Ms. Wendy Wyels  
Page 2  
January 15, 2015

We have also met local agencies to verify the permitting leads and environmental review requirements should we seek to put in some type of water storage in the former "Hog Farm" area of the facility.

Should you have any questions regarding this submittal, please contact either of us at your convenience. Thank you for your time and consideration as we work through this process.

Sincerely,

 *Phil Graham*  
by ms

Phil Graham  
General Manager

 *Drew Lehman*

Drew Lehman  
Director, Environment and Planning

**Attachments**

cc: T. DelFrate, H. Hold, A. Altevogt, Regional Water Quality Control Board  
M. Okamoto, State Water Resources Control Board  
P. Yamamoto, D. Vaughn, S. Kendall, Recology  
P. Donoho, Yuba County LEA  
M. Bruner, Perkins Coie



January 14, 2014

Project No. 1301525

Mr. Phil Graham  
Recology Yuba Sutter  
3001 North Levee Road  
Marysville, CA 95901

**RE: UPDATE TO THE WATER BALANCE CALCULATIONS FOR THE FEATHER RIVER ORGANICS COMPOSTING OPERATION, RECOLOGY YUBA SUTTER FACILITY, MARYSVILLE, CALIFORNIA**

Dear Mr. Graham:

Golder Associates (Golder) Inc. is submitting this report to update the water balance in response to the December 9, 2014 Water Code 13267 Order issued by Central Valley Regional Water Quality Control Board (CVRWQCB) staff for the Feather River Organics Compost Facility in Marysville, California. On December 18, 2014, Golder prepared a Supplemental Technical Report to address Item f of the December 9 Order, which requires: *"A revised water balance calculation and run-off model calibrated from the 3 December 2014 event. The water balance shall be prepared by, or under the supervision of, a California Registered Engineer, and signed/stamped by the registered engineer. The water balance shall include a run-off model based on the 25-year, 24-hour precipitation event of 3.14 inches. Recalculated run-off volumes shall be compared to on-site storage capability on 3 December 2014, and to on-site storage capacity as of 9 December 2014."*

Golder's December 18, 2014 Supplemental Technical Report focused on water storage volumes in comparison to the anticipated water run-off from a single, 25-year, 24-hour event of 3.16 inches. This report demonstrated that the current on-site storage capacity of 819,000 gallons, represented by 39, 21,000-gallon storage tanks, exceeds the revised run-off volume of 747,000 gallons expected for the 3.16-inch event.

Subsequent to Golder's December 18, 2014 Supplemental Technical Report, Feather River Organics (FRO) has worked with the City of Marysville to define the maximum volume of water that can be discharged to the City's Publically-Owned Treatment Works (POTW) facility. Accordingly, the City has determined that FRO can discharge up to a maximum of 200,000 gallons per day with a maximum of 750,000 gallons per week (verbal communication from the City to Recology on January 14, 2015). For a single, 25-year, 24-hour precipitation event, it would take approximately 3.75 days to empty the tanks by pumping solely to the POTW. This analysis does not account for compost make up water that may be used following this design precipitation event.

Golder has expanded the water balance to evaluate consecutive days of precipitation as discussed below.

## **1.0 UPDATED WATER BALANCE CALCULATIONS**

Golder's December 18, 2014 Supplemental Technical Report presented a revised water balance based on calibrating the storm water runoff model to previous precipitation events. The calibrated model determined that weighted average Soil Conservation Service storm water runoff curve numbers (CNs) of 92 and 95 should be applied to the north and south sides of the compost areas, respectively.

In addition to the single 25-year, 24-hour event as presented in Golder's December 18, 2014 Supplemental Technical Report, Golder evaluated the FRO water balance for the current 11.5-acre compost area by considering several consecutive days of precipitation as discussed below.

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Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

## 1.1 Consecutive Precipitation Events

In 2014, the CVRWQCB recommended that FRO use the Department of Water Resources historical precipitation database for Marysville to determine the 25-year, 24-hour design storm event. In addition to identifying the single day design storm event of 3.16 inches (25-year return period), this database also provides cumulative rain totals for consecutive days as a function of return period. Table 1 below summarizes this data for a return period of 25 years for up to 14 consecutive days of rain.

**Table 1. DWR Precipitation Database Summary**

Return Period	Consecutive Days of Rain							
	1	2	3	4	5	6	7	14
25 Years	3.16	4.63	5.53	6.21	6.79	7.16	7.60 <sup>1</sup>	9.83 <sup>2</sup>

Notes: 1. Interpolated between 6 and 8 day totals  
 2. Interpolated between 10 and 15 day totals

Using TR-55 run-off estimates based on the calibrated CN values, Golder evaluated up to 7 consecutive days of rain, of which each day represents the maximum precipitation possible with cumulative totals that correspond to a 25-year return period. Accordingly, the assumed daily precipitation over this 7-day period is summarized below in Table 2.

**Table 2. 25 Year Return – Maximum Daily Precipitation for Consecutive Days of Precipitation**

Days	Daily Precipitation (Inches)	Cumulative Precipitation (Inches)
Day 1	3.16	3.16 inches for 1 day
Day 2	1.47	4.63 inches for 2 days
Day 3	0.9	5.53 inches for 3 days
Day 4	0.68	6.21 inches for 4 days
Day 5	0.58	6.79 inches for 5 days
Day 6	0.37	7.16 inches for 6 days
Day 7	0.44	7.60 inches for 7 days

Conservatively assuming no compost make-up water is applied during this period, the water balance for the above 7 consecutive days is summarized below in Table 3.

**Table 3. Summary Water Balance Calculations For Consecutive Days of Precipitation**

Days	Run-Off Volume (gals) <sup>1</sup>	Daily Discharge to POTW (gals)	Remaining Storage Capacity (gals)
Day 1	747,000	200,000	272,000
Day 2	307,066	200,000	164,934
Day 3	153,547	200,000	211,387
Day 4	102,365	150,000	259,022
Day 5	75,647	0	183,376
Day 6	35,570	0	147,806
Day 7	51,182	0	96,624

Note 1. Volumes are based on runoff volumes from the 11.5-acre Feather River Organics facility

As shown in Table 3, the existing storage system has sufficient capacity to store the run-off for consecutive days of precipitation corresponding to a 25-year return period in accordance to the DWR database. Furthermore, compost make-up water can be applied during days with lower precipitation totals, which will result in a greater capacity than indicated in Table 3. Attachment 1 includes the supporting calculations.

Golder also considered a scenario in which the daily rainfall occurred uniformly over the assumed number of consecutive days. For example, the cumulative two day precipitation total of 4.63 inches (25-year return period) was assumed to occur over two days with each day contributing 2.32 inches of precipitation. Similarly, the three day precipitation total of 5.53 inches (25-year return period) was assumed to occur over three days with each day contributing 1.84 inches of precipitation. This uniform distribution evaluation was carried out to 14 consecutive days. Conservatively assuming no compost make-up water was applied during these periods, these alternative precipitation distributions resulted in a minimum remaining capacity of 175,000 gallons at the end the 3<sup>rd</sup> consecutive day of precipitation. Prior to and following the 3<sup>rd</sup> consecutive day, the remaining storage capacity is estimated to be greater than 175,000 gallons. For the 14-day scenario, the maximum combined 2-week POTW discharge rate of 1,500,000 gallons exceeds the total estimated 14-day run-off volume 1,433,100 gallons from the compost area. These calculations are presented in Attachment 2.

## 1.2 Conclusions

These water balance calculations in conjunction with the Golder December 18, 2014 Report demonstrate that the existing storage system is sufficient to contain storm water run-off for a single precipitation event or consecutive events that correspond to a 25-year return period in accordance to the DWR database recommended by the CVRWQCB.

## 2.0 CLOSURE

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

If you have any questions, please contact us.

Sincerely,

**GOLDER ASSOCIATES INC.**



Joel Kelsey  
Project Engineer



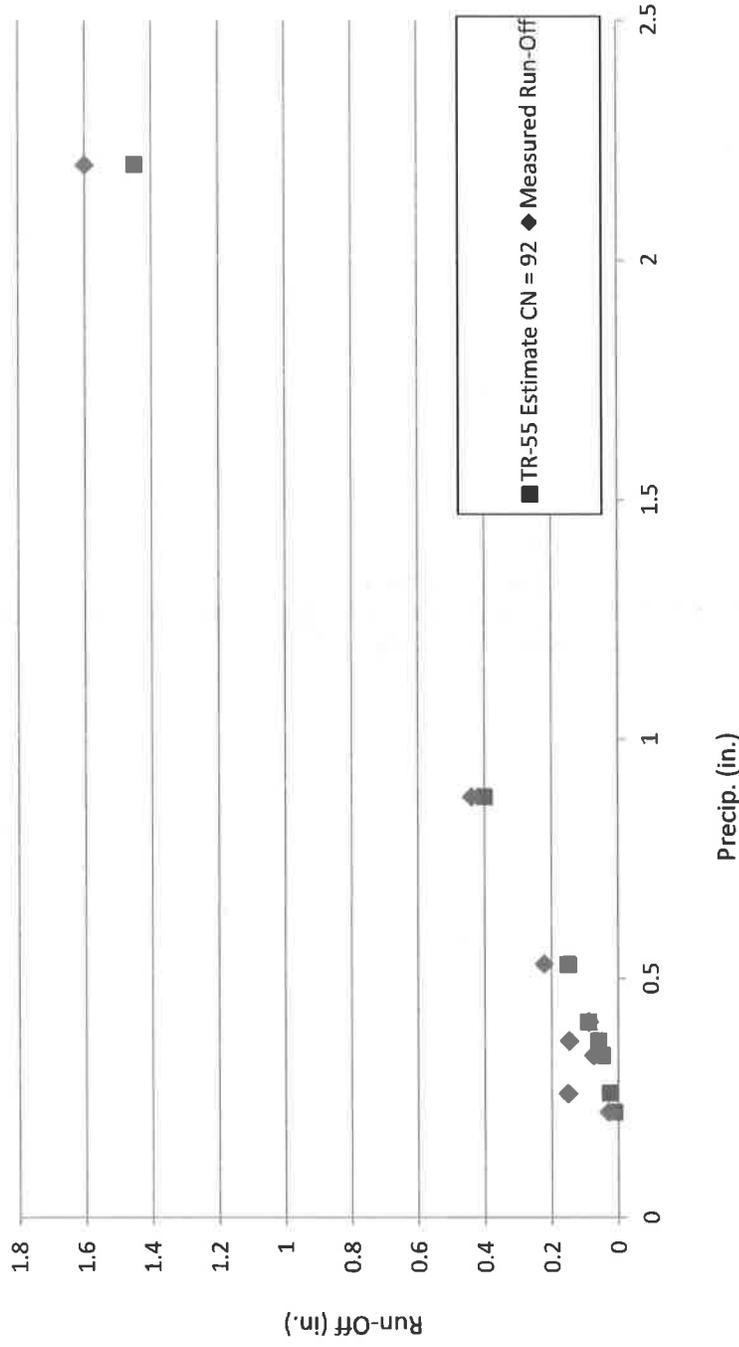
Kenneth G. Haskell, P.E.  
Principal/ Sr. Practice Leader



Attachment 1 – Water Balance for Consecutive Days at Maximum Daily Precipitation, 25-yr Return Period  
Attachment 2 – Water Balance Assuming Uniform Distribution of Precipitation, 25-yr Return Period

**ATTACHMENT 1**  
**WATER BALANCE FOR CONSECUTIVE DAYS AT MAXIMUM DAILY PRECIPITATION**  
**25-YR RETURN PERIOD**

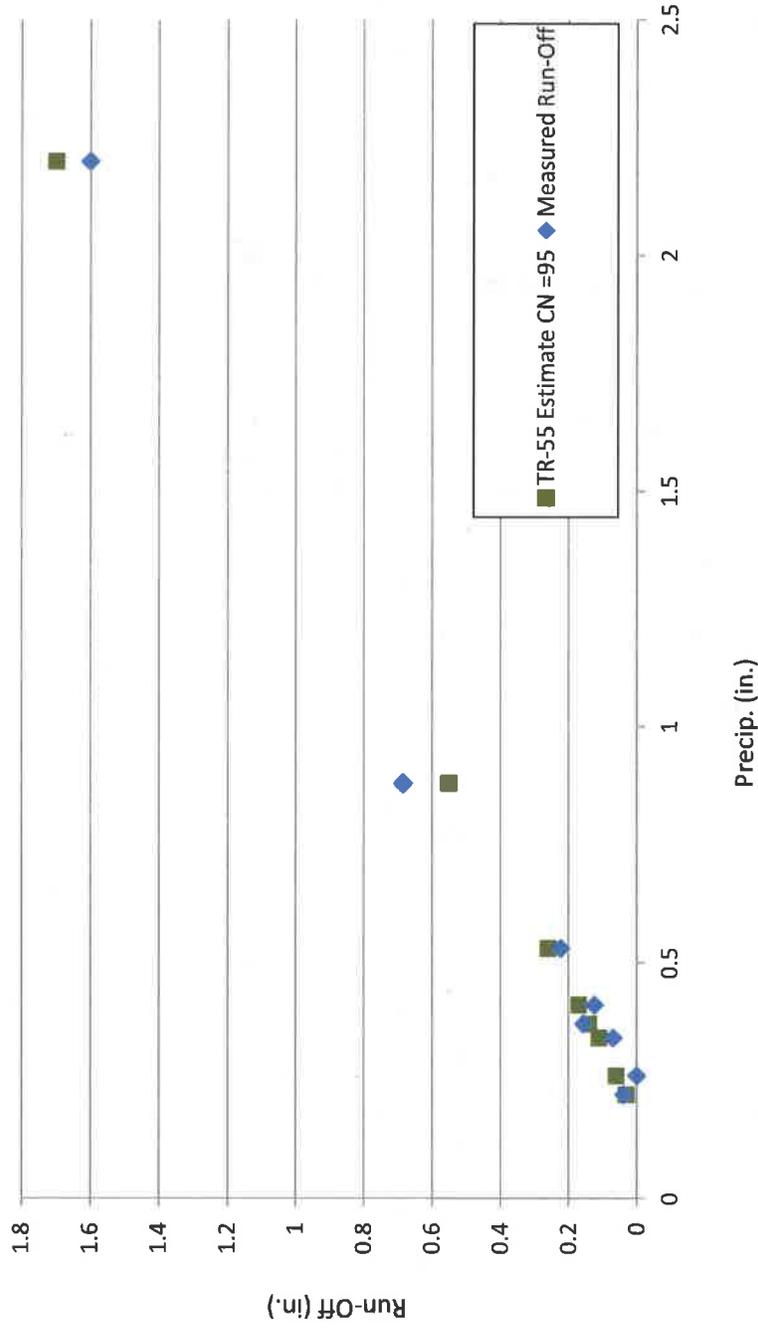
**Figure A1 - Comparison of North Area Run-Off Estimated by TR-55 to Measured Run-Off**



**Notes:**

1. TR-55 estimate based on Figure 2-1, "Urban Hydrology for Small Water Sheds, Technical Release 55 (TR-55)
2. Precipitation total and run-off totals are based on measured precipitation of 1.83-inches on 12/3, 0.37 inches on 12/4, and total pumping volumes to POTW and J-Stands from 12/3 through 12/5

Figure A2 - Comparison of South Area Run-Off Estimated by TR-55 to Measured Run-Off



Notes:

1. TR-55 estimate based on Figure 2-1, " Urban Hydrology for Small Water Sheds, Technical Release 55 (TR-55)
2. Precipitation total and run-off totals are based on measured precipitation of 1.83-inches on 12/3, 0.37 inches on 12/4, and total pumping volumes to POTW and J-Stands from 12/3 through 12/5

## Updated FRO Water Balance

### Input Parameters

Pad Area =	11.5 Acres	
North Side Area =	8.3 Acres =	72.17% of pad area
South Side Area =	3.2 Acres =	27.83% of pad area
No. Tanks =	39 tanks	
Storage per Tank =	21,000 tanks	
Daily POTW Discharge Limit	200,000 gals	
Weekly POTW Discharge Limit	750,000 gals	
Compost Make-Up Water	- gpd	Conservatively assume no make-up water applied

### CALCULATIONS

**Methodology:** Use Figures A1 and A2 (Golder December 18, 2014 Technical Report) to estimate the TR-55 run-off estimates for various 1-day precipitation events.

Model 4 days of rain distributed as follows:		Run-off		Total Run-off (gals)
		North Area (gals)	South Area (gals)	
1st Day Rain =	3.16 in	539,139	207,861	747,000
2nd Day Rain =	1.47 in	214,097	92,970	307,066
3rd Day Rain =	0.9 in.	101,414	52,133	153,547
4th Day Rain =	0.68 in.	67,609	34,755	102,365
5th Day Rain =	0.58 in.	49,580	26,066	75,647
6th Day Rain =	0.37 in.	22,536	13,033	35,570
7th Day Rain =	0.44 in.	33,805	17,378	51,182

<b>1st Day</b>	Daily Volume
Run-off	747,000 gals
Daily POTW Discharge rate =	200,000 gals
Compost Make-Up Water =	- gals
Remaining Storage volume end of Day 1	272,000 gals
<b>2nd Day</b>	
Run-off	307,066 gals
Daily POTW Discharge rate =	200,000 gals
Compost Make-Up Water =	- gals
Remaining Storage volume end of Day 2	164,934 gals
<b>3rd Day</b>	
Run-off	153,547 gals
Daily POTW Discharge rate =	200,000 gals
Compost Make-Up Water =	- gals
Remaining Storage volume end of Day 3	211,387 gals
<b>4th Day</b>	
Run-off	102,365 gals
Daily POTW Discharge rate =	150,000 gals
Compost Make-Up Water =	- gals
Remaining Storage volume end of Day 4	259,022 gals
<b>5th Day</b>	
Run-off	75,647 gals
Daily POTW Discharge rate =	- gals
Compost Make-Up Water =	- gals
Remaining Storage volume end of Day 5	183,376 gals
<b>6th Day</b>	
Run-off	35,570 gals
Daily POTW Discharge rate =	- gals
Compost Make-Up Water =	- gals
Remaining Storage volume end of Day 6	147,806 gals
<b>7th Day</b>	
Run-off	51,182 gals
Daily POTW Discharge rate =	- gals
Compost Make-Up Water =	- gals
Remaining Storage volume end of Day 7	96,624 gals

**ATTACHMENT 2**  
**WATER BALANCE ASSUMING UNIFORM DISTRIBUTION OF PRECIPITATION**  
**25-YR RETURN PERIOD**

## Updated FRO Water Balance

### Input Parameters

Pad Area =	11.5 Acres		
North Side Area =	8.3 Acres =	72.17% of pad area	
South Side Area =	3.2 Acres =	27.83% of pad area	
No. Tanks =	39 tanks		
Storage per Tank =	21,000 tanks		
Daily POTW Discharge Limit	200,000 gals		
Weekly POTW Discharge Limit	750,000 gals		
Compost Make-Up Water	- gpd	Conservatively assume no make-up water applied	

### CALCULATION ANALYSES

**Methodology:** Use Figures A1 and A2 (Golder December 18, 2014 Technical Report) to estimate the TR-55 run-off estimates for various 1-day precipitation events.

Model Consecutive days of rain distributed uniformly		Daily Precip (Inches)	Run-off		Total Run-off
			North Area (gals)	South Area (gals)	(gals)
2 Day Cumulative Total =	4.63 in	2.32	360,584	157,267	517,851
3 day Cumulative Total =	5.53 in	1.84	292,974	121,643	414,617
4 day Cumulative Total =	6.21 in	1.55	225,365	95,576	320,941
5 day Cumulative Total =	6.79 in	1.36	184,799	86,888	271,687
6 day Cumulative Total =	7.16 in	1.19	150,994	69,510	220,505
7 day Cumulative Total =	7.60 in	1.09	123,951	60,821	184,772
14 day Cumulative Total =	9.83 in	0.70	67,609	34,755	102,365

No. of Days	Consecutive Days	Cumulative Run-Off (gals)	Discharge to POTW Gallons	Compost Make-Up Water (gals)	Remaining Storage (gals)
2	2 Day Cumulative Total	1,035,701	400,000	0	183,299
3	3 day Cumulative Total	1,243,851	600,000	0	175,149
4	4 day Cumulative Total	1,283,765	750,000	0	285,235
5	5 day Cumulative Total	1,358,435	750,000	0	210,565
6	6 day Cumulative Total	1,323,028	750,000	0	245,972
7	7 day Cumulative Total	1,293,405	750,000	0	275,595
14	14 day Cumulative Total	1,433,104	1,500,000	0	819,000

CITY OF MARYSVILLE  
INDUSTRIAL WASTE DISCHARGE PERMIT  
APPLICATION

Please complete this application and return to:

Wastewater Superintendent  
City of Marysville  
P.O. Box 150  
Marysville, CA 95901

Section 1 – Contact

- A. Applicant Business Name (same as water and utility bill):  
**Recology Yuba Sutter  
Feather River Organics**
- B. Address of premises discharging wastewater:  
**3001 N. Levee Road  
Marysville, CA 95901**
- C. Business Address (if different than above):  
**Same**
- D. Person to be contacted about application:
1. Name: **Phil Graham**
  2. Title: **General Manager, Feather River Organics**
  3. Phone: **(530) 682-6086**
- E. Person to contact in case of emergency:
1. Name: **Jordan Norris**
  2. Title: **Site Supervisor, Feather River Organics**
  3. Phone: **(707)249-1821**

Section 2 – Business Description

- A. Describe process and make up of discharge:  
**Compost stormwater/contact water**

- B. Describe working schedule in terms of discharge:  
**24 hours/day, 7 days/week**

Section 3 – Wastewater Discharge

- A. Estimate amount of Discharge in gallons (Compost Stormwater):

Peak Daily Discharge	<u>200,000</u>
Peak Weekly Discharge	<u>750,000</u>

Section 4 – Certification

I certify that the information submitted in this application is true and correct to the best of my knowledge. I further certify that I have reviewed the Marysville Municipal Code Title 6 and reported all information that could be in violation with the intent of the Title to the best of my knowledge.

PHIL GRANATA  
Name  
  
Signature

GENERAL MANAGER  
Title  
1/14/15  
Date