



11 June 2015

Ms. Rita Miller  
 City of Santa Rosa  
 Utilities Department  
 4300 Llano Road  
 Santa Rosa, CA 95407

Re: Annual Monitoring and Reporting for the Nunes – Ocean View Dairy Project

Dear Ms. Miller,

The following constitutes the annual monitoring and reporting for Nunes – Ocean View Dairy per the Gold Ridge Resource Conservation District (GRRCD) contract with the City of Santa Rosa (City) SRNO Task 6. Crediting options and associated credits for the Nunes-Ocean View Dairy Project were approved as part of the City of Santa Rosa’s Nutrient Offset Program by the Regional Water Quality Control Board (RWQCB), North Coast Region. The methodology for calculating nutrient reductions and offset credits was developed by the City's consultant, Keiser and Associates, using a nutrient offset tool known as the Pennsylvania Credit Calculator<sup>1</sup>. This offset calculating tool is well established in the Midwest and accepted there by the pertinent regulatory agencies<sup>1</sup>. RWQCB staff concluded that the assumptions used in the model were conservative and reasonable, and that the final credit proposals are acceptable<sup>1</sup>. The amount of credit earned is based on the amount of manure managed according to RWQCB approved project description and the values are listed in Table 1 below:

**Table 1: Disposition of Nutrients<sup>1</sup>**

	<b>Basis</b>	<b>P (lbs)</b>	<b>N (lbs)</b>
1. Land applied Fall 2014	From Table 5, based on acreage and application rate reported by Krasilisa, and manure quality data collected by the City (Table 3)	85,680	197,816
2. Stockpiled on-site awaiting application	Joint estimate of 625 cy by Krasilisa and City	3,750	8,707
3. Total potential manure for credit calculation	Sum of values in row 1 and 2	89,430	206,523
4. Removed from Ponds but not in Project	Land applied method inconsistent with project BMPs	241	557
5. Total removed from Ponds	Sum of values rows 3 plus 4.	89,672	207,080
6. Estimated nutrients in ponds	Based on pool volume estimate and manure quality data <sup>2</sup> .	89,761	207,237

1. Information taken from Table 7, Page 9 in the *Second Amendment: City of Santa Rosa Approved Offset Credit Proposal for Nunes-Ocean View Dairy BMP*, January 28, 2015

2. Pond Volume estimate (Pond 1 = 14.71 AF, Pond 2 = 14.77 AF); Manure volume (Pond 1 = 5.27 AF, Pond 2 = 7.84 AF)



As directed by the City, GRRCD provided project monitoring during the implementation phase of on-site remediation efforts and verification that the project was completed in accordance to the City's requirements. GRRCD was present for the removal of liquid, slurry and solid manure resources in the manure ponds on site at the property. The following **Beneficial Management Practices** were implemented for the project:

- BMP #1: Empty manure lagoons and appropriately manage for future stormwater collection;
- BMP #2: Implement BMPs in heavy use areas to address accumulated manure;
- BMP #3: Distribute 12,700 tons of manure solids for on-site land application.

GRRCD oversaw BMP #1 and BMP #2. GRRCD was not present for BMP #3.

### **BMP Inspection**

On 04 September 2014, RCD staff inspected all installed Beneficial Management Practices (BMPs) at Nunes – Ocean View Dairy and made the following observations:

- BMPs #1 and #2 were found to be functional and properly maintained.

On 02 October 2014, RCD staff inspected all installed BMPs at Nunes – Ocean View Dairy and made the following observations:

- BMPs #1 and #2 were found to be functional and properly maintained.

On 10 November 2014, RCD staff inspected all installed BMPs at Nunes – Ocean View Dairy and made the following observations:

- BMPs #1 and #2 were found to be functional and properly maintained.

On 08 May 2015, RCD staff visited Nunes – Ocean View Dairy to meet with the Landowner. The project had been implemented by this point in time.

*Please see field sheets included in Appendix A and associated Photo Plates included in Appendix B.*

### **Credit Verification**

The following information was provided to GRRCD by Erickson Engineering and it is based upon a survey in December 2014 of Pond 1 and a survey in February 2015 of Pond 2. It should be noted that the engineer's revised calibration of the manure volume reduces the number of credits generated when compared to the RWQCB approved credits from Table 1. GRRCD verifies the following:

- Manure Volume estimate:
  - Pond 1 = 5.27 acre-feet (AF), Pond 2 = 7.84 AF
- Manure Volume revised calibration:
  - Pond 1 = 4.64 AF, Pond 2 = 7.84 AF
- Difference in Manure Volume:
  - Pond 1 = -0.63 AF, Pond 2 = 0 AF

Therefore, Phosphorus credits from Pond 1 have been reduced from 25,634 lbs to 22,570 lbs.



- Additionally, the City has provided GRRCD with the following information regarding the land application of the manure:
  - Nutrients/credits associated with 625 cubic yards (cy) of manure that were not spread need to be deducted in order to determine the actual earned credit. The 625 cy represents 3.1 percent of the total manure amount.
  - Therefore, the credit earned is  $22,632 \times (1-0.031) = 21,930$  lbs of Phosphorus.

Please refer to Table 2 below for the volume of manure and nutrients based on the February 2015 survey of Ponds are as follows:

**Table 2:**

Pond	Manure Volume Based on Final Pond Survey		Phosphorus			Nitrogen		
	Acre-foot	Gallons	PPM wet	Lbs/1000 gallons	Lbs	PPM wet	Lbs/1000 gallons	Lbs
1	4.64	1,511,846	1,790	15	22,570	4,950	41	62,414
2	7.84	2,554,498	3,010	25	64,127	6,400	53	136,349
SUM	12,48	4,066,344			86,697			198,763
Max Potential Credit					22,632			47,187
Credit earned <sup>1</sup>					21,930			45,724

1. To determine the actual earned credit, the nutrients/credits associated with the 625 cy that were not spread need to be deducted. The 625 cy represents 3.1 percent of the total manure amount, so Phosphorus credit earned is  $22,632 \times (1-0.031) = 21,930$  and Nitrogen credit earned is  $47,187 \times (1-0.031) = 45,724$ .

**Conclusions**

The Nunes – Ocean View Dairy BMP #1 and #2 monitoring were found to be functioning and properly maintained. Gold Ridge RCD was not present to oversee BMP #3. Differences between the proposed work and the work implemented were based upon 1) Erickson Engineering survey calibration of the pond volume which resulted in a reduction in the volume of manure as compared to the original estimate; and 2) Reduction of Max Credit Potential due to the 626 cubic yards of manure that were not applied to the land.

If you have any questions, please contact me at 707-823-5244 or [William@goldridgercd.org](mailto:William@goldridgercd.org)

Thank you,

William J. Hart  
 Project Manager  
 Gold Ridge Resource Conservation District