



### Estimating annual runoff

This worksheet and its lookup charts are provided for those producers estimating annual volume of process wastewater collected from the Production Area to complete Question 14 of the North Coast Regional Water Quality Control Board's Water Quality Plan associated with the Conditional Waiver of Waste Discharge Requirements for Existing Cow Dairies.

[http://www.waterboards.ca.gov/northcoast/water\\_issues/programs/dairies/#permit](http://www.waterboards.ca.gov/northcoast/water_issues/programs/dairies/#permit)

If you have farm specific data, use them. Otherwise, complete the following worksheet to estimate annual volume of material collected.

Coefficients for runoff are from NRCS annual contour maps CN 90 and CN 97.

Line

**1 Annual milk parlor water generated from previous page (acre-inches)**

Divide gallons by 27,154 to calculate acre-inches (daily x 365)

### RUNOFF VOLUME (estimated by subtracting roof diversion from production area surface)

**2 Annual rainfall [inches]**

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**3 Total production area from Table 3 [acres] OR**

3a Concrete area and non-diverted roofs (JAVA Step 10)

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3b Non-concrete area (JAVA Step 10)

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**4 Total roofed area diverted from storage from Table 4 [acres]**

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**5 Total production area draining to storage (line 3 - Line 4) [acres]**

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**6 Total drainage into storage (Line 2 x Line 5 x .45) [acre-inches] OR**

6a Concrete area draining into storage  
(Line 2 x Line 3a x 0.5), PLUS

6b Non-concrete area  
(Line 2 x Line 3b x 0.3)

**7 Total manure storage surface area from Table 5 [acres]**

(from WQP page 4, item B)

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**8 Direct rainfall into manure storage structures  
(Line 2 x Line 7) [acre-inches]**

**Total volume of process water, drainage, and rainfall [acre-inches]**

Annual wastewater collected Line 1 + Line 6 + Line 8 OR

Annual wastewater collected Line 1 + Line 6a + Line 6b + Line 8

Surface area calculations

Table 3

Production area surface area

Description	Length	Width	Area (ft <sup>2</sup> ) concrete & non- diverted roof	Area (ft <sup>2</sup> ) other surfaces
Total (ft <sup>2</sup> )				
Total (acres) - transfer to 3a and 3b				

Divide ft<sup>2</sup> by 43,560 to calculate acres

Table 4

Roofed areas in the production area with gutters diverting rainfall away from the storage structure.

Description	Length	Width	Area (ft <sup>2</sup> )
Total (ft <sup>2</sup> )			
Total (acres) - transfer to 4			

Divide ft<sup>2</sup> by 43560 to calculate acres

Table 5

Manure storage structure surface area

Description	Length	Width	Area (ft <sup>2</sup> )
Total (ft <sup>2</sup> )			
Total (acres) - transfer to 7			

Divide ft<sup>2</sup> by 43560 to calculate acres



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### RUNOFF VOLUME (estimated by estimating total concrete and non-diverted roof surfaces plus earthen surfaces)

**2 Annual rainfall [inches]**

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**3 Total production area from Table 3 [acres] OR**

3a Concrete area and non-diverted roofs (JAVA Step 10)

---

3b Non-concrete area (JAVA Step 10)

---

**4 Total roofed area diverted from storage from Table 4 [acres]**

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**5 Total production area draining to storage (line 3 - Line 4) [acres]**

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**6 Total drainage into storage (Line 2 x Line 5 x .45) [acre-inches] OR**

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**7 Total manure storage surface area from Table 5 [acres]**

(from WQP page 4, item B)

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**8 Direct rainfall into manure storage structures  
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**Total volume of process water, drainage, and rainfall [acre-inches]**

Annual wastewater collected Line 1 + Line 6 + Line 8 OR

Annual wastewater collected Line 1 + Line 6a + Line 6b + Line 8