## TABLE NO. 5
Theoretical Capacity Model for Standard Freestall Dairies Balanced for Nitrogen and Salt Discounted for Additional Nitrogen Loading Sources

### NITROGEN & SALT GENERATION CALCULATION TABLE (1)

### SECTION A: Calculation of Animal Units (AU)

<table>
<thead>
<tr>
<th>Animals</th>
<th>Milk cows</th>
<th>Support Stock</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Liquid Waste Factor (By age of Animal)</td>
<td>Liquid Waste Factor (By age of Animal)</td>
</tr>
<tr>
<td>(1 A.U./Head)</td>
<td>0.1<em>0.56</em>0.5*365</td>
<td>0.1<em>0.45</em>0.5*365</td>
</tr>
<tr>
<td>Scraped Corrals (4)</td>
<td>0.4<em>0.11</em>0.25*365</td>
<td>0.4<em>0.45</em>0.25*366</td>
</tr>
<tr>
<td>Flushed Corrals (3)</td>
<td>0.2<em>0.11</em>0.25*365</td>
<td>0.2<em>0.45</em>0.25*366</td>
</tr>
<tr>
<td>Freestalls (2)</td>
<td>0.8<em>0.11</em>0.5*365</td>
<td>0.8<em>0.45</em>0.5*365</td>
</tr>
</tbody>
</table>

### SECTION B: Calculation of Nitrogen Loading Capacity

#### Values from Table 1

<table>
<thead>
<tr>
<th>Liquid Manure Factor</th>
<th>Solid Manure Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Nitrogen</td>
</tr>
<tr>
<td></td>
<td>Factor (lb/ac/yr)</td>
</tr>
<tr>
<td>AU's from B.1.</td>
<td>554.772</td>
</tr>
<tr>
<td>AU's from B.2.</td>
<td>554.772</td>
</tr>
<tr>
<td>AU's from D.1.</td>
<td>554.772</td>
</tr>
<tr>
<td>AU's from D.7.</td>
<td>554.772</td>
</tr>
<tr>
<td>AU's from F.1.</td>
<td>554.772</td>
</tr>
<tr>
<td>AU's from F.7.</td>
<td>554.772</td>
</tr>
<tr>
<td>Time Factor (x)</td>
<td>0.50</td>
</tr>
</tbody>
</table>

#### Total N-Acreage Required

<table>
<thead>
<tr>
<th>Crop Acreage Requirement:</th>
<th>Total N in lb./yr. (both from liquid and solid manure): 43,722,936</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double Crop</td>
<td>10,230,082</td>
</tr>
<tr>
<td>Single Crop</td>
<td>10,230,082</td>
</tr>
</tbody>
</table>

### NOTES:

(1) Source: This model for estimating the herd size is based on RWQCB’s Fact Sheet No. 4.
(2) Freestalls: Liquid Waste Factor for Milk Cow = 0.8*0.11*0.5*365, Solid Waste Factor for Milk Cow = 0.4*0.11*0.25*365, Support Stock = 0.4*0.45*0.25*366.
(3) Flushed Corrals: Liquid Waste Factor for Milk Cow = 0.2*0.11*0.25*365, Solid Waste Factor for Milk Cow = 0.2*0.45*0.25*366, Support Stock = 0.2*0.45*0.25*366.
(4) Scraped Corrals: Liquid Waste Factor for Milk Cow = 0.4*0.11*0.25*365, Solid Waste Factor for Milk Cow = 0.4*0.11*0.25*365, Support Stock = 0.4*0.45*0.25*366.
(5) Milk cows and support stock.
(6) Time Factor: The typical N loss from lagoons is time dependent. A loss of 30% of the N for a storage time of less than 30 days, 40% for 30-60 days.

### SECTION E: Estimation of Salt Loading Capacity

#### Values from Table 2

<table>
<thead>
<tr>
<th>Salt (lb/ac/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor</td>
</tr>
</tbody>
</table>

#### Total Salt Generated (both from liquid and solid manure): 411,636,264

<table>
<thead>
<tr>
<th>Salt (lb/ac/yr)</th>
<th>Days per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000</td>
<td>365</td>
</tr>
</tbody>
</table>
NOTES for determining land area needed for the actual dairy facilities (DF):

# of existing Dairy Facilities (DF): 4,756
# of existing Milk Cows: 124,660

Average Acres per existing DF: 32.80 Average Acres per Dairy Facility
Average # of cows per Acres of existing DF: 26.21 Milk Cows/Acres per Dairy Facility

Estimated Dairy Capacity (Milk Cows): 381,980
Estimated Acres required for DFs: 1,4773 Acres in DF
Estimated acreage for other Nitrogen Sources (Table No. 5A): 95,395

SECTION F: Estimate of Available Crop Land for Nitrogen Usage from Dairies:

Estimated Dairy Facility Acreage (from SECTION E above): 264,629
Subtotal: Gross Cropland Acreage available for dairy manure: 70,753,907
Subtotal: Net available cropland (in acres) available for dairy manure: 250,056

Total acres harvested countywide from 1999 Agri. Crop Report: 680,821

Available Acreage: 417,250 90% cropped area

SECTION H: Estimate of Available Crop Land for Nitrogen Usage from Dairies:

Total # of Milk Cows (from Sec. A): 1,4773
Total # of Milk Cows (from Sec. A): 1,4773

Acreage is based on GIS calculation from satellite image of area in existing dairy facilities.

# of existing Dairies: 145
# of milk cows based on the annual report from UC Cooperative Extension.

Acres in existing Dairy Facilities (DF): 4,756
Acreage based on GIS review of the satellite image of Kings Co.

Total estimated Ac. in DF: 1,4773
Total estimated Ac. in DF: 1,4773

Estimated Acres required for DFs: 1,4773 Acres in DF
Estimated Acres required for DFs: 1,4773 Acres in DF

Other Nitrogen sources reduction area from Table No. 5A: 14,573
Other Nitrogen sources reduction area from Table No. 5A: 14,573

Average Nitrogen demand in lbs. per acre (single and double crop) for the project: 267
Average Nitrogen demand in lbs. per acre (single and double crop) for the project: 267

SECTION G: Cropland Nitrogen Requirement:

Crop | Harvested Acres (1,000) | Available in Acreage (a)
-----|------------------------|---------------------
Alfalfa | 50,200 | 42,864
Alfalfa, seed | 20,800 | 17,427
Barley | 9,100 | 7,624
Corn (silage) | 47,700 | 39,965
Corn (lint, all varieties) | 199,000 | 166,732
Corn (seed, all varieties) | 3,300 | 2,765
Pasture, forage | 11,000 | 9,216
Safflower | 16,500 | 13,825
Sugar beets | 5,000 | 4,189
Wheat | 10,000 | 51,947
Wheat, seed | 10,000 | 51,947
Other (double crop acreage) | 68,300 | 57,225
Total: 498,000 | 417,250

95,395 Available acres available loss double cropped acreage. Note that this is nearly 100,000 acres less
than the estimated acreage in the DDOZ and NSOZ due to the actual acreage of the selected crops.