
APPENDIX B

Waste Management Plan

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Waste Management Plan For Godinho Heifer Facility Merced County, CA

Prepared For:
Godinho Dairy LP
13140 Johnson Road
Los Banos, CA 93635



**WASTE MANAGEMENT PLAN
FOR
GODINHO HEIFER FACILITY
MERCED COUNTY, CA**

TABLE OF CONTENTS

1. NARRATIVE

- a. Introduction
- b. Compliance Criteria
- c. Results and Conclusions

2. EXHIBITS

- a. Sheet 1 – Vicinity Map –Production Area
- b. Sheet 2 – Site Map – Production Area
- c. Sheet 3 – Production Area Hydrologic Map
- d. Sheet 4 – FEMA Panel No. 06047C0850G

3. DESIGN, CONSTRUCTION, OPERATION, AND MAINTENANCE DOCUMENTATION

- a. Waste Management Plan Report / Process Wastewater Calculations
- b. Vector Control Plan

1. NARRATIVE

INTRODUCTION

This Waste Management Plan (WMP) has been prepared at the request of the subject dairy's owner and/or operator in conjunction with a Conditional Use Permit (CUP) Application being made to Merced County and a Report of Waste Discharge (ROWD) being made to the California Regional Water Quality Control Board (CRWQCB) Central Valley Region. The criteria used for development of this WMP are those contained in Section K.1.c., *Waste Management Plan*, of Order No. R5-2017-0058, *Waste Discharge Requirements General Order for Confined Bovine Feeding Operations*, (Order) adopted by the (CRWQCB). Per the requirements set forth by the Order it is the intent of this plan to provide an evaluation of the existing and proposed milk cow facility's design, construction, operation, and maintenance for flood protection and waste containment and to determine whether the facility complies with Prohibition A.14, Pond Specifications C.2 through C.7, and Production Area Specifications D.1, D.3, and D.4. Should the evaluation provided by this plan determine that the existing facility and its proposed improvements do not comply with the requirements of the Order, then modifications will be proposed for the facility that will bring it into compliance and those modifications shall be made a part of this plan.

COMPLIANCE CRITERIA

As required by the Order this plan must evaluate the existing facility's compliance with Prohibition A.14 and General Specifications B.1 through B.3 and B.10 through B.16. The criteria set forth by this Prohibition and General Specifications are as follows:

Prohibition A.14: *"The direct discharge of wastewater into groundwater via backflow through water supply or irrigation supply wells is prohibited."*

The water, irrigation, and wastewater systems of this facility have been examined by a Registered Civil Engineer licensed in the State of California. There are no domestic or irrigation wells on the facility that have a connection that would allow for direct discharge of wastewater into groundwater via backflow.

Pond Specification C.2: *"The Confined Bovine Feeding Operation shall have facilities that are designed, constructed, operated, and maintained to retain all wastewater generated during the storage period (maximum period of time anticipated between land applications of wastewater), together with all precipitation on and drainage through manured areas, up to and including during a 25-year, 24-hour storm."*

The attachment in Section 3.a. of this plan demonstrates the facility's ability to retain all process wastewater and precipitation generated during the storage period and by the 25-year, 24-hour storm.

Pond Specification C.3: *"In the Sacramento and San Joaquin River Basins, wastewater retention ponds and manured areas at Confined Bovine Feeding Operations in operation on or before 27 November 1984 shall be protected from inundation or washout by overflow from any stream channel during 20-year peak stream flows. Confined Bovine Feeding Operations that were in operation on or before 27 November 1984 and that are protected against 100-year peak stream flows must continue to provide such protection. Confined Bovine Feeding Operations that were built or expanded after 27 November 1984 shall be protected against 100-year peak stream flows."*

The facility is in the San Joaquin River Basin and was constructed before 27 November 1984; however, it has been expanded since that date and will be expanded further. Thus, the facility must have protection from the 100-year storm event. The relevant Flood Zone Map published by the Federal Emergency Management Agency (FEMA) is Panel No. 06047C0850G. This map indicates that the existing dairy facility is in Zone X and is thus outside of the 1% annual chance, or 100-year, floodplain.

Pond Specification C.4: *"In the Tulare Lake Basin, Confined Bovine Feeding Operations in operation on or before 25 July 1975 shall be protected from inundation or washout from overflow from any stream channel during 20-year peak stream flows and Confined Bovine Feeding Operations constructed after 25 July 1975 shall be protected from 100-year peak stream flows. Confined Bovine Feeding Operations that were expanded after 8 December 1984 shall be protected from 100-year peak stream flows."*

As the facility is in the San Joaquin River Basin this specification is not applicable.

Pond Specification C.5: *"The level of waste in ponds shall be kept a minimum of two (2) feet from the top of each aboveground embankment and a minimum of one (1) foot from the ground surface of each belowground pond. Less freeboard may be approved by the Executive Officer when a Civil Engineer registered in California, or other person as may be permitted under the provisions of the California Business and Professions Code to assume responsible charge of such work, demonstrates that the structural integrity, including potential failure due to wave overtopping, of the pond will be maintained with the proposed freeboard."*

Given that the banks of the facility's ponds are constructed above grade 2' of freeboard has been applied to the relevant capacity calculations.

Pond Specification C.6: *"Ponds shall be managed and maintained to prevent breeding of mosquitoes and other vectors. In particular,*

- a. Small coves and irregularities shall not be allowed around the perimeter of the water surface;*
- b. Weeds shall be minimized through control of water depth, harvesting, or other appropriate method;*
- c. Dead algae, vegetation, and debris shall not accumulate on the water surface; and*
- d. Management shall be in accordance with the requirements of the Mosquito Abatement District, Vector Control District, or other local requirements.*

An Operations and Maintenance Plan addressing these items has been included with the Attachment in Section 3.a. and is hereby made a part of this plan. A Vector Control Plan is included in Section 3.b. which describes additional pond management practices.

Pond Specification C.7: *"Ponds designated to contain the 25-year, 24-hour storm event runoff must have a depth marker that clearly indicates the minimum capacity necessary to contain the runoff and direct precipitation from a 25-year, 24-hour storm event."*

Markers meeting this specification will be installed in all the facility's ponds by the compliance date.

Production Area Specification D.1: *"All corrals, pens, or hutch areas, composting operations, and manure and feed storage areas, shall be graded to promote drainage. All drainage shall be directed to the wastewater management system."*

Corrals, pens, hutch areas, composting areas, and manure and feed storage areas are graded to promote drainage to the wastewater management system.

Production Area Specification D.3: *"All roofs, buildings, and non-manured areas located in the production area of the Confined Bovine Feeding Operation shall be constructed or otherwise designed so that clean rainwater is diverted away from manured areas and waste containment facilities, unless such drainage is fully contained in the wastewater management system."*

Exhibit Sheet 2, "Site Map – Production Area", and Exhibit Sheet 3, "Production Area Hydrologic Map", indicate all areas that contribute runoff to the wastewater retention system. All other areas are diverted away from the wastewater retention system or are self-contained.

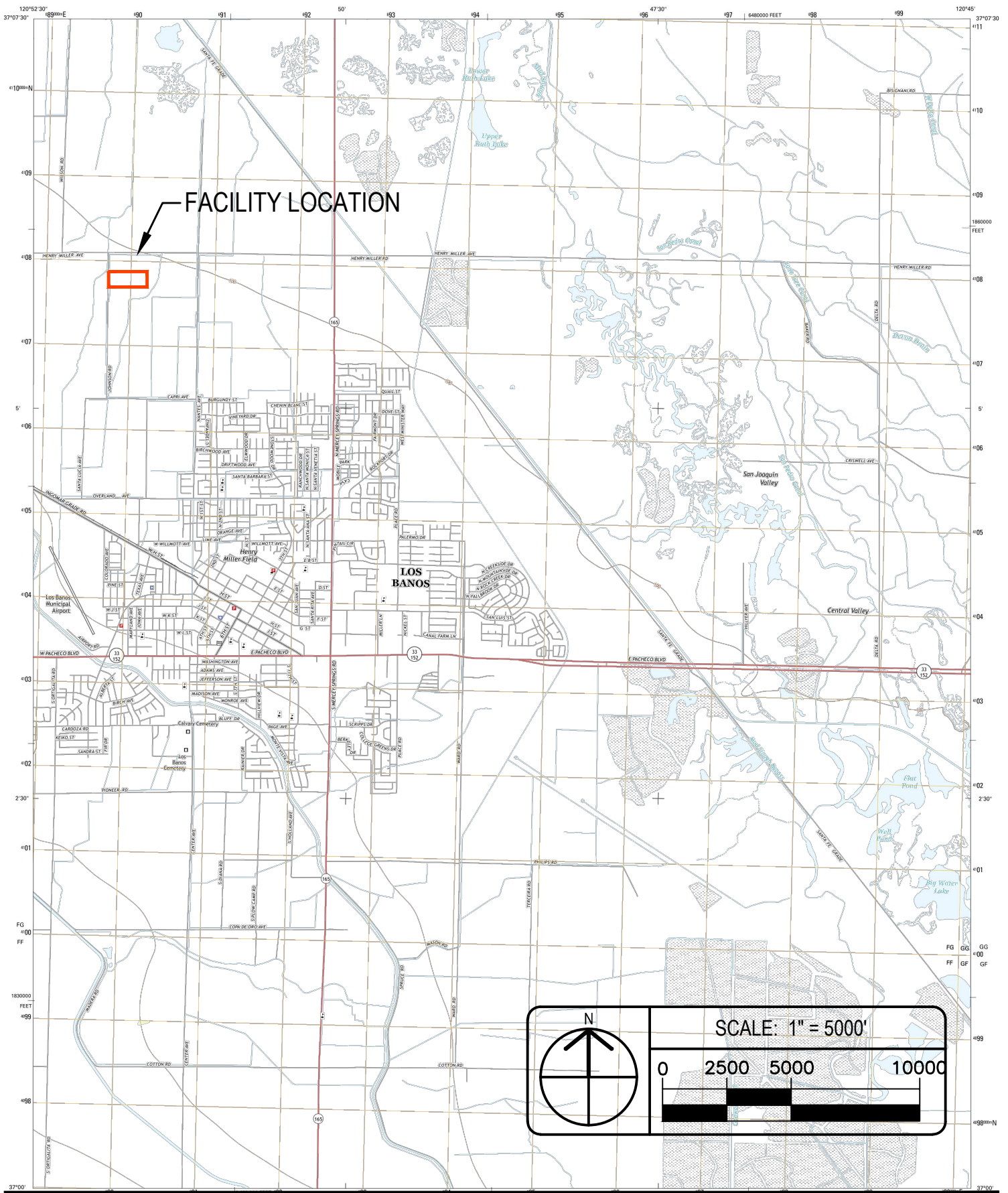
Production Area Specification D.4: *"The animal confinement area (including corrals), and manure and feed storage areas, shall be designed and maintained to convey all water that has contacted animal wastes or feed to the wastewater retention ponds and to minimize standing water as of 72 hours after the last rainfall and the infiltration of water into the underlying soils."*

The animal confinement areas, manure storage areas, and feed storage areas are constructed in such a manner to convey all water that has contacted animal wastes or feed to the wastewater retention system and to minimize standing water. The Operations and Maintenance Plan includes requirements to ensure that these conditions are continually met.

RESULTS AND CONCLUSIONS

After conducting a visual inspection of the site, obtaining herd and facility information from the operator, performing the required measurements of facility improvements, and performing the calculations included in Section 3.a. it has been determined that the design, construction, operation, and waste containment of this facility are in compliance with Prohibition A.14, Pond Specifications C.2 through C.7, and Production Area Specifications D.1, D.3, and D.4 of Order No. R5-2017-0058, *Waste Discharge Requirements General Order for Confined Bovine Feeding Operations*.

2. EXHIBITS



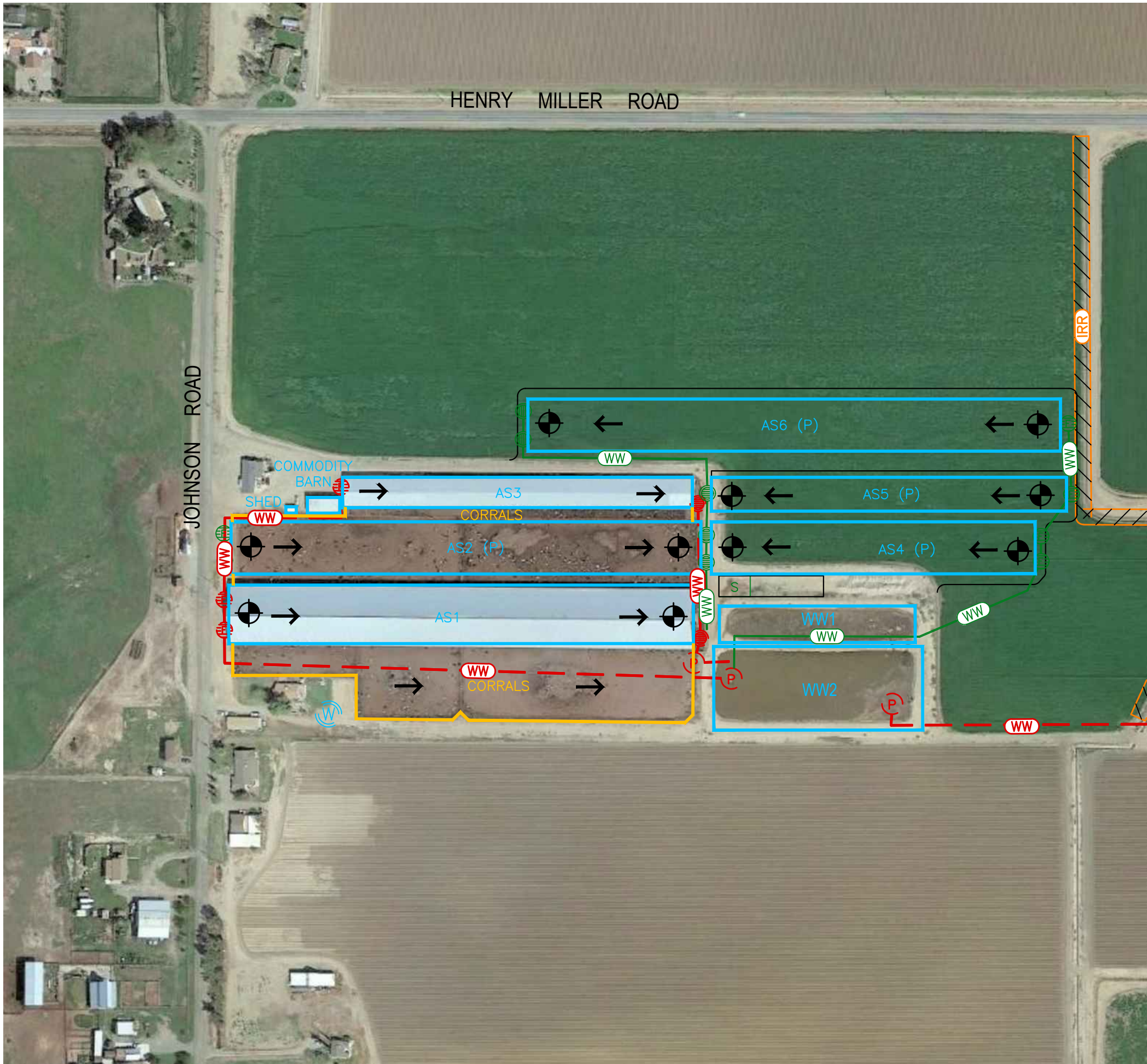
SOUSA
ENGINEERING
INFRASTRUCTURE - DEVELOPMENT -
AGRICULTURE

PO BOX 1613
OAKDALE, CA 95361

PH: (209)238-3151
WWW.SOUSAENG.COM

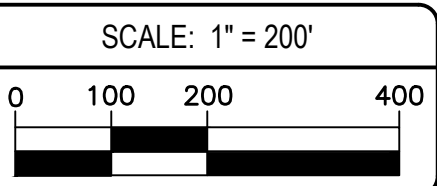
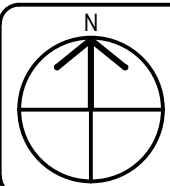
VICINITY MAP
GODINHO HEIFER FACILITY

MERCED COUNTY, CA



LEGEND

- AS1 ROOF AREA
- AS2 (P) ROOF AREA, PROPOSED
- CORRAL AREA
- WW WASTEWATER STORAGE POND
- EXISTING WASTEWATER LINE
- EXISTING WASTEWATER SUMP WITH PUMP
- EXISTING FLUSH SYSTEM DRAIN INLET
- EXISTING FLUSH SYSTEM VALVE
- EXISTING IRRIGATION DITCH
- PROPOSED WASTEWATER LINE
- PROPOSED WASTEWATER SUMP WITH PUMP
- PROPOSED FLUSH SYSTEM DRAIN INLET
- PROPOSED FLUSH SYSTEM VALVE
- PROPOSED MECHANICAL MANURE SEPARATOR
- EXISTING DOMESTIC WELL
- GENERAL SLOPE AND DIRECTION OF FLOW
- INSPECTION POINT FOR MONITORING ANIMAL HOUSING AND FLUSH WATER CONVEYANCE SYSTEM



SHEET 2 OF 4

SOSA
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PO BOX 1613
OAKDALE, CA 95361

SITE MAP - PRODUCTION AREA

GODINHO HEIFER FACILITY

MERCED COUNTY, CA

| | | |
|-------------------|-------------|----------|
| DRAWN BY: MS | REVISIONS | APPROVED |
| DATE: 2/21/2020 | DESCRIPTION | |
| FILE: 02_dpa.dwg | | |
| JOB NO.: 2018-021 | | |

National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

| | | |
|-----------------------------|--|---|
| SPECIAL FLOOD HAZARD AREAS | | Without Base Flood Elevation (BFE) Zone A, V, A99 |
| | | With BFE or Depth Zone AE, AO, AH, VE, AR |
| | | Regulatory Floodway |
| OTHER AREAS OF FLOOD HAZARD | | 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X |
| | | Future Conditions 1% Annual Chance Flood Hazard Zone X |
| | | Area with Reduced Flood Risk due to Levee. See Notes. Zone X |
| | | Area with Flood Risk due to Levee Zone D |
| OTHER AREAS | | NO SCREEN Area of Minimal Flood Hazard Zone X |
| | | Effective LOMRs |
| | | Area of Undetermined Flood Hazard Zone D |
| GENERAL STRUCTURES | | Channel, Culvert, or Storm Sewer |
| | | Levee, Dike, or Floodwall |
| OTHER FEATURES | | 20.2 Cross Sections with 1% Annual Chance Water Surface Elevation |
| | | 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation |
| | | Coastal Transect |
| | | Base Flood Elevation Line (BFE) |
| | | Limit of Study |
| | | Jurisdiction Boundary |
| | | Coastal Transect Baseline |
| | | Profile Baseline |
| MAP PANELS | | Digital Data Available |
| | | No Digital Data Available |
| | | Unmapped |

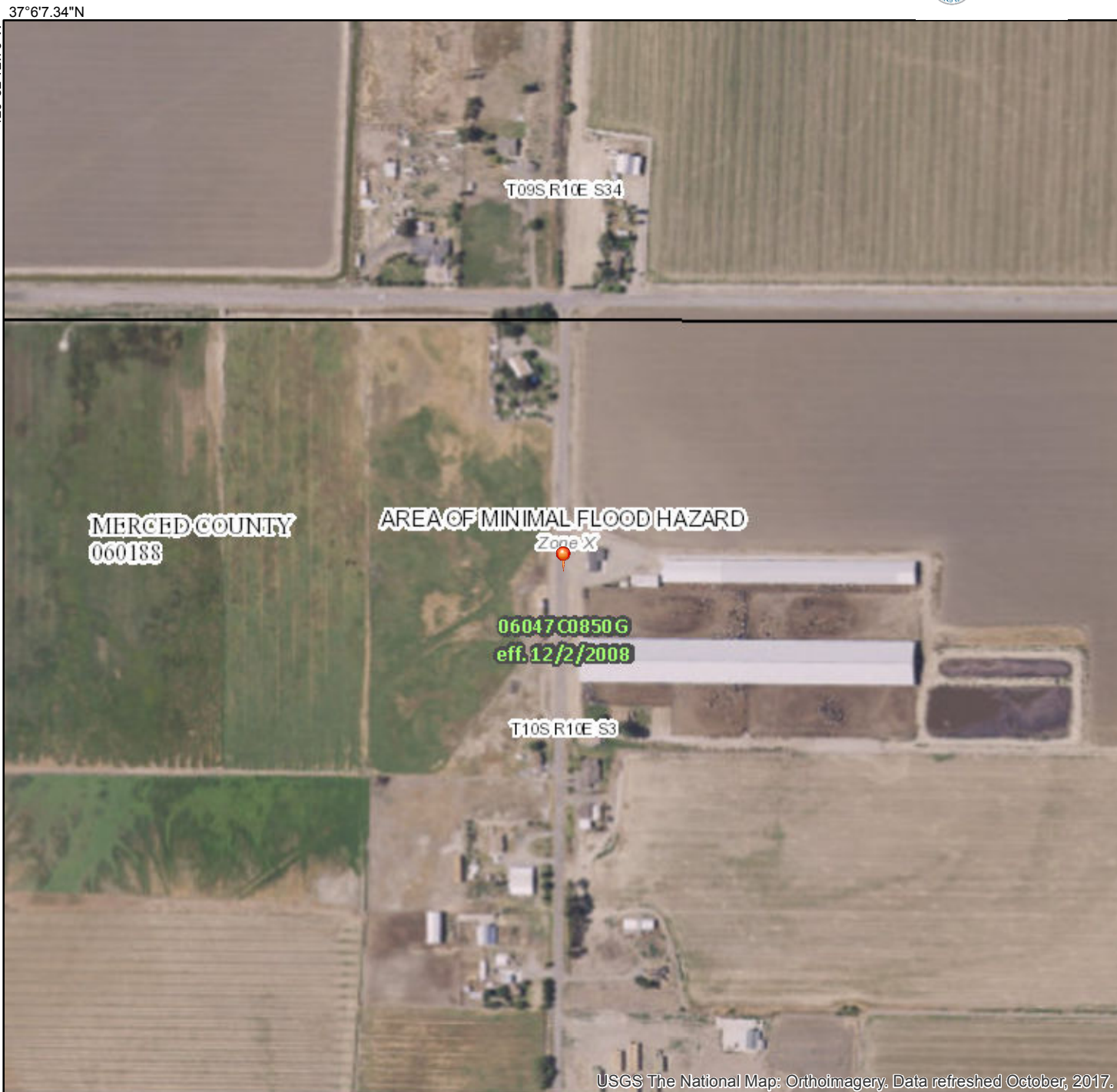


The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **1/29/2019 at 6:49:05 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



37°6'7.34"N

120°52'12.76"W

0 250 500 1,000 1,500 2,000 Feet

1:6,000

37°5'38.64"N

120°51'35.30"W

3. DESIGN, CONSTRUCTION, OPERATION, AND MAINTENANCE DOCUMENTATION

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

DAIRY FACILITY INFORMATION

A. NAME OF DAIRY OR BUSINESS OPERATING THE DAIRY: Godinho Heifer Facility

Physical address of dairy:

| | | | |
|-------------------------|------------------|---------------|--------------|
| <u>13140 Johnson RD</u> | <u>Los Banos</u> | <u>Merced</u> | <u>95365</u> |
| Number and Street | City | County | Zip Code |

Street and nearest cross street (if no address): _____

TRS Data and Coordinates:

| | | | | | |
|---------------|------------|--------------|-------------------|------------------------|--------------------------|
| <u>10S</u> | <u>10E</u> | <u>3</u> | <u>Mt. Diablo</u> | <u>37° 5' 50.21" N</u> | <u>120° 51' 47.71" W</u> |
| Township (T_) | Range (R_) | Section (S_) | Baseline meridian | Latitude (N) | Longitude (W) |

Date facility was originally placed in operation: 08/08/2009

Regional Water Quality Control Board Basin Plan designation: San Joaquin River Basin

County Assessor Parcel Number(s) for dairy facility:

0081-0020-0008-0000 0081-0020-0019-0000

B. OPERATOR NAME: Godinho, David Telephone no.: (209) 826-2517

Landline Cellular

| | | | |
|-----------------------------------|------------------|-----------|--------------|
| <u>12710 Wilson RD</u> | <u>Los Banos</u> | <u>CA</u> | <u>93635</u> |
| Mailing Address Number and Street | City | State | Zip Code |

Operator should receive Regional Board correspondence (check): ☒ Yes ☐ No

C. LEGAL OWNER NAME: 2001 Trust, Manuel Godinho Telephone no.: (209) 826-2517

Landline Cellular

| | | | |
|-----------------------------------|------------------|-----------|--------------|
| <u>12710 Wilson RD</u> | <u>Los Banos</u> | <u>CA</u> | <u>93635</u> |
| Mailing Address Number and Street | City | State | Zip Code |

Owner should receive Regional Board correspondence (check): ☐ Yes ☒ No

D. CONTACT NAME: Sousa, Manny Telephone no.: (209) 238-3151

Landline Cellular

Title: Civil Engineer

| | | | |
|-----------------------------------|----------------|-----------|--------------|
| <u>P.O. Box 1613</u> | <u>Oakdale</u> | <u>CA</u> | <u>95361</u> |
| Mailing Address Number and Street | City | State | Zip Code |

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

HERD AND MILKING EQUIPMENT

A. HERD AND MILKING

The milk cow dairy is currently regulated under individual Waste Discharge Requirements.

Total number of milk and dry cows combined as a baseline value in response to the Report of Waste Discharge (ROWD) request of October, 2005:

471 milk and dry cows combined (regulatory review is required for any expansion)

| Type of Animal | Present Count | Maximum Count | Daily Flush Hours | Avg Live Weight (lbs) |
|--------------------------|---------------|---------------|-------------------|-----------------------|
| Milk Cows | 1 | 1 | 24 | 1,400 |
| Dry Cows | 471 | 471 | 24 | 1,500 |
| Bred Heifers (15-24 mo.) | 1,262 | 1,262 | 24 | 1,100 |
| Heifers (7-14 mo.) | 354 | 354 | 24 | 700 |
| Calves (4-6 mo.) | 882 | 882 | 24 | |
| Calves (0-3 mo.) | 532 | 532 | 24 | |

Predominant milk cow breed:

Holstein

Average milk production:

64 pounds per cow per day

Average number of milk cows per string sent to the milkbarn:

1 milk cows per string

Number of milkings per day:

1.0 milkings per day

Number of times milk tank is emptied/filled each day:

0.0 per day

Number of hours spent milking each day:

1.0 hours per day

B. MILKBARN EQUIPMENT AND FLOOR WASH

Bulk tank wash and sanitizing:

1.0 run cycles/wash

Bulk tank wash vat volume:

0 gallons/cycle

Bulk tank wash wastewater:

0.0 gallons/day

Pipeline wash and sanitizing:

1.0 run cycles/wash

Pipeline wash vat volume:

0 gallons/cycle

Pipeline wash wastewater:

0.0 gallons/day

Reused / recycled water is the source of parlor floor wash water:

[] Yes [X] No

Milkbarn / parlor floor wash volume:

0 gallons/day

Plate coolers type:

None

Plate coolers volume:

0 gallons/day

Vacuum pumps / air compressors / chillers type:

None

Vacuum pumps / air compressors / chillers volume:

0 gallons/day

Milkbarn and equipment wastewater volume generated daily:

0 gallons/day

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

C. OTHER WATER USES

Reused/recycled water is the source of herd drinking water: ☐ Yes ☒ No

| | Milk Cows | Dry Cows | Bred Heifers (15-24 mo.) | Bred Heifers (7-14 mo.) | Calves (4-6 mo.) | Calves (0-3 mo.) |
|--|-----------|----------|-----------------------------|----------------------------|---------------------|---------------------|
| Number of cows drinking from reusable water: | 0 | 0 | 0 | 0 | 0 | 0 |
| | of 1 | of 471 | of 1,262 | of 354 | of 882 | of 532 |
| Gallons per head per day: | 0 | 0 | 0 | 0 | 0 | 0 |

Total reusable water consumed by herd: _____ 0 gallons/day

Reused/recycled water is the source of sprinkler pen water: ☐ Yes ☒ No

Number of sprinklers in the holding pen: _____ 0 sprinklers

Duration of each sprinkler cycle: _____ 0.1 minutes

Number of sprinkler pen runs/milking: _____ 0 cycles/milking

Flow rate for each sprinkler head: _____ 0.1 gallons/minute

Total sprinkler pen wastewater volume: _____ 0 gallons/day

Total fresh water used in manure flush lane system(s): _____ 0 gallons/day

D. MISCELLANEOUS EQUIPMENT

No miscellaneous equipment entered.

E. MILKBARN AND EQUIPMENT SUMMARY

Number of days in storage period: _____ 120 days

Water available for reuse/recycle: _____ 0 gallons/day

Recycled water reused: _____ 0 gallons/day

Recycled water leaving system: _____ 0 gallons/day

Reusable water balance: _____ 0 gallons/day

Volume of milkbarn and equipment wastewater generated for storage period: _____ 0 gallons/storage period

MANURE AND BEDDING SOLIDS

A. IMPORTED AND FACILITY GENERATED BEDDING

| Bedding Type | Imported or Generated (tons) | Density (lbs/cu. ft.) | Applied Separation Efficiency (default) | Solids to Pond (cu. ft./period) |
|----------------------------|---------------------------------|--------------------------|--|------------------------------------|
| Facility generated bedding | 425 | 40.0 | 50% | 10,625 |
| | | | Total: | 10,625 |

B. SOLIDS SEPARATION PROCESS

Combined manure solids separation efficiency (weight basis): _____ 35 %

Description of all solids separation equipment used in flushed lane manure management systems:

Mechanical solids separator (proposed).

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

C. MANURE AND BEDDING SOLIDS SUMMARY

| | cubic feet | | gallons | |
|--|---------------------|----------------|------------------|----------------|
| | day | storage period | day | storage period |
| Manure generated by the herd (pre-separation): | 2,536.71 | 304,406 | 18,975.94 | 2,277,113 |
| Manure generated by the herd sent to pond(s): | 2,210.59 | 265,270 | 16,536.34 | 1,984,361 |
| Manure generated by the herd sent to dry lot(s): | 0.00 | 0 | 0.00 | 0 |
| Manure solids (herd) removed by separation: | 157.88 | 18,945 | 1,181.00 | 141,720 |
| Liquid component in separated solids not sent to pond(s): | 168.25 | 20,190 | 1,258.60 | 151,032 |
| Imported and facility generated bedding sent to pond(s): | 88.54 | 10,625 | 662.34 | 79,481 |
| Total manure and bedding sent to pond(s): | 2,299.13 | 275,895 | 17,198.68 | 2,063,841 |
| Residual manure solids and bedding sent to pond(s) w/factor: | 190.87 | 22,904 | 1,427.81 | 171,337 |
| | cubic feet per year | | gallons per year | |
| Residual manure solids and bedding sent to pond(s) w/factor: | 69,668 | | 521,151 | |

RAINFALL AND RUNOFF

A. RAINFALL ESTIMATES

Rainfall station nearest the facility: Los Banos

25 year/24 hour storm event (default NOAA Atlas 2, 1973): 2.30 inches/storage period

25 year/24 hour storm event (user-override): inches/storage period

Storage period rainfall (default DWR climate data): 6.03 inches/storage period

Storage period rainfall (user-override): inches/storage period

Flood zone: Zone X

B. IMPERVIOUS AREAS

| Name | Surface Area (sq. ft.) | Quantity | 25yr/24hr Storm Runoff Coefficient | Storage Period Runoff Coefficient | Runoff Destination |
|--------------------------|------------------------|----------|------------------------------------|-----------------------------------|----------------------|
| Impervious Area - IA1 | 215 | 1 | 0.95 | 0.50 | Drains into pond(s). |
| Impervious Area - IA2 | 125 | 1 | 0.95 | 0.50 | Drains into pond(s). |
| Impervious Area - IA3 | 11,060 | 1 | 0.95 | 0.50 | Drains into pond(s). |
| Impervious Area - IA4 | 8,160 | 1 | 0.95 | 0.50 | Drains into pond(s). |
| Mechanical Separator Pad | 8,000 | 1 | 0.95 | 0.50 | Drains into pond(s). |

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

Surface area that does not run off into pond(s): 0 sq. ft.

Surface area that runs off into pond(s): 27,560 sq. ft.

Total surface area: 27,560 sq. ft.

Runoff from normal storage period rainfall: 51,798 gallons/storage period

Runoff from normal storage period rainfall with 1.5 factor: 77,698 gallons/storage period

25 year/24 hour storm event runoff: 37,539 gallons/storage period

Total surface area runoff: 89,337 gallons/storage period

Total surface area runoff with 1.5 factor: 115,237 gallons/storage period

C. ROOF AREAS

| Name | Surface Area (sq. ft.) | Quantity | Runoff Destination |
|----------------------|------------------------|----------|--------------------|
| Animal Shelter - AS1 | 99,680 | 1 | Field |
| Animal Shelter - AS2 | 90,000 | 1 | Field |
| Animal Shelter - AS3 | 38,860 | 1 | Field |
| Animal Shelter - AS4 | 62,000 | 1 | Field |
| Animal Shelter - AS5 | 44,200 | 1 | Field |
| Animal Shelter - AS6 | 102,000 | 1 | Field |
| Commodity Barn | 1,860 | 1 | Field |
| Shed | 240 | 1 | Field |

Surface area that does not run off into pond(s): 438,840 sq. ft.

Surface area that runs off into pond(s): 0 sq. ft.

Total surface area: 438,840 sq. ft.

Runoff from normal storage period rainfall: 0 gallons/storage period

Runoff from normal storage period rainfall with 1.5 factor: 0 gallons/storage period

25 year/24 hour storm event runoff: 0 gallons/storage period

Total surface area runoff: 0 gallons/storage period

Total surface area runoff with 1.5 factor: 0 gallons/storage period

D. EARTHEN AREAS

| Name | Surface Area (sq. ft.) | Quantity | 25yr/24 Storm Coefficient | Storage Period Coefficient | Runoff Destination |
|--------------------|------------------------|----------|---------------------------|----------------------------|----------------------|
| Earthen Area - EA1 | 298,000 | 1 | 0.35 | 0.20 | Drains into pond(s). |
| Earthen Area - EA2 | 21,550 | 1 | 0.35 | 0.20 | Drains into pond(s). |
| Earthen Area - EA3 | 18,625 | 1 | 0.35 | 0.20 | Drains into pond(s). |

| |
|---|
| <p style="text-align: center;">Waste Management Plan Report General Order No. R5-2007-0035, Attachment B July 1, 2010 deadline</p> |
|---|

| | |
|---|---------------------------------------|
| Surface area that does not run off into pond(s): | <u>0</u> sq. ft. |
| Surface area that runs off into pond(s): | <u>338,175</u> sq. ft. |
| Total surface area: | <u>338,175</u> sq. ft. |
| Runoff from normal storage period rainfall: | <u>254,237</u> gallons/storage period |
| Runoff from normal storage period rainfall with 1.5 factor: | <u>381,356</u> gallons/storage period |
| 25 year/24 hour storm event runoff: | <u>169,702</u> gallons/storage period |
| Total surface area runoff: | <u>423,940</u> gallons/storage period |
| Total surface area runoff with 1.5 factor: | <u>551,058</u> gallons/storage period |

E. TAILWATER MANAGEMENT

No fields with tailwater entered.

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

LIQUID STORAGE

A. POND OR BASIN DESCRIPTION: WW1

Pond is rectangular in shape: ☒ Yes ☐ No

| Dimensions | | | |
|----------------------|-----------------------|--|----------------------------|
| Earthen Length (EL): | <u>365</u> ft. | Earthen Depth (ED): | <u>11</u> ft. |
| Earthen Width (EW): | <u>58</u> ft. | Side Slope (S): | <u>2.0</u> ft. (h:1v) |
| Free Board (FB): | <u>2</u> ft. | Dead Storage Loss (DS): | <u>0.0</u> ft. |
| Calculations | | | |
| Liquid Length (LL): | <u>357</u> ft. | Storage Volume Adjusted for Dead Storage Loss: | <u>98,604</u> cu. ft. |
| Liquid Width (LW): | <u>50</u> ft. | | |
| Pond Surface Area: | <u>21,170</u> sq. ft. | Pond Marker Elevation: | <u>8.3</u> ft. |
| Storage Volume: | <u>98,604</u> cu. ft. | Evaporation Volume: | <u>108,751</u> gals/period |
| | | Adjusted Surface Area: | <u>17,333</u> sq. ft. |

POND OR BASIN DESCRIPTION: WW2

Pond is rectangular in shape: ☒ Yes ☐ No

| Dimensions | | | |
|----------------------|------------------------|--|----------------------------|
| Earthen Length (EL): | <u>393</u> ft. | Earthen Depth (ED): | <u>11</u> ft. |
| Earthen Width (EW): | <u>150</u> ft. | Side Slope (S): | <u>2.0</u> ft. (h:1v) |
| Free Board (FB): | <u>2</u> ft. | Dead Storage Loss (DS): | <u>2.0</u> ft. |
| Calculations | | | |
| Liquid Length (LL): | <u>385</u> ft. | Storage Volume Adjusted for Dead Storage Loss: | <u>332,873</u> cu. ft. |
| Liquid Width (LW): | <u>142</u> ft. | | |
| Pond Surface Area: | <u>58,950</u> sq. ft. | Pond Marker Elevation: | <u>8.4</u> ft. |
| Storage Volume: | <u>410,544</u> cu. ft. | Evaporation Volume: | <u>339,191</u> gals/period |
| | | Adjusted Surface Area: | <u>54,061</u> sq. ft. |

Potential storage losses (due to dead storage): 77,671.0 cubic feet - or - 581,019.4 gallons

Liquid storage surface area: 72,520 sq. ft.

Rainfall onto retention pond(s): 301,168 gallons/storage period

Rainfall runoff into retention pond(s): 306,036 gallons/storage period

Normal rainfall onto retention pond(s) with 1.5 factor: 451,752 gallons/storage period

Normal rainfall runoff into retention pond(s) with 1.5 factor: 459,054 gallons/storage period

Storage period evaporation (default): 13.42 inches/storage period

Storage period evaporation (user-override): _____ inches/storage period

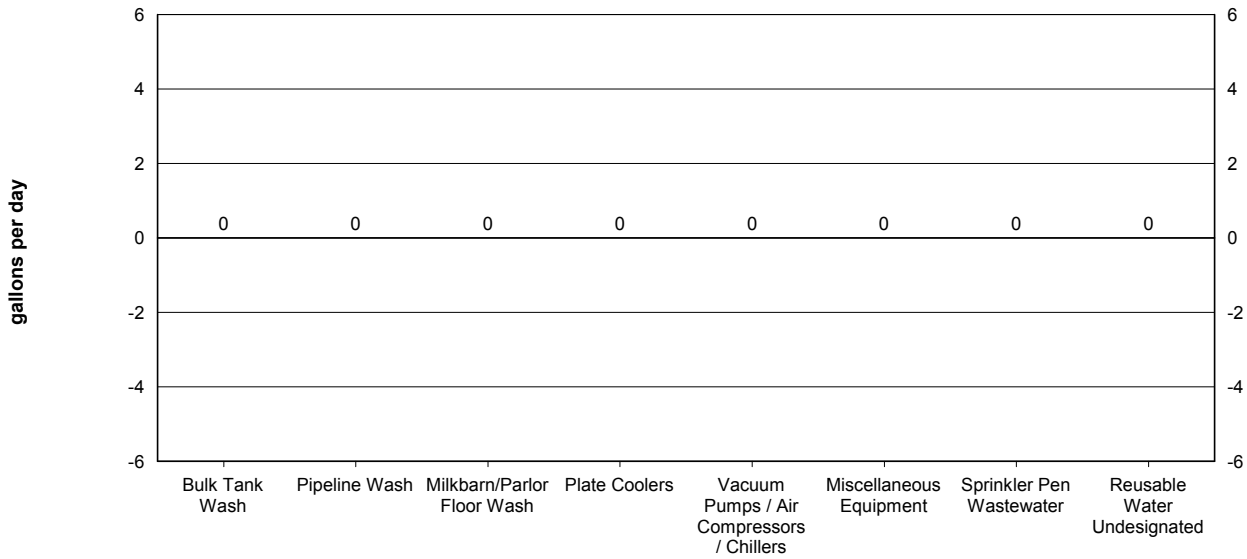
Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

| | |
|---------------------------------------|---|
| Storage period evaporation volume: | <u>447,942</u> gallons/storage period |
| Manure and bedding sent to pond(s): | <u>2,063,841</u> gallons/storage period |
| Milkbarn water sent to pond(s): | <u>0</u> gallons/storage period |
| Fresh flush water for storage period: | <u>0</u> gallons/storage period |

Waste Management Plan Report
 General Order No. R5-2007-0035, Attachment B
 July 1, 2010 deadline

CHARTS

A. MILKBARN WASTEWATER SENT TO POND(S)



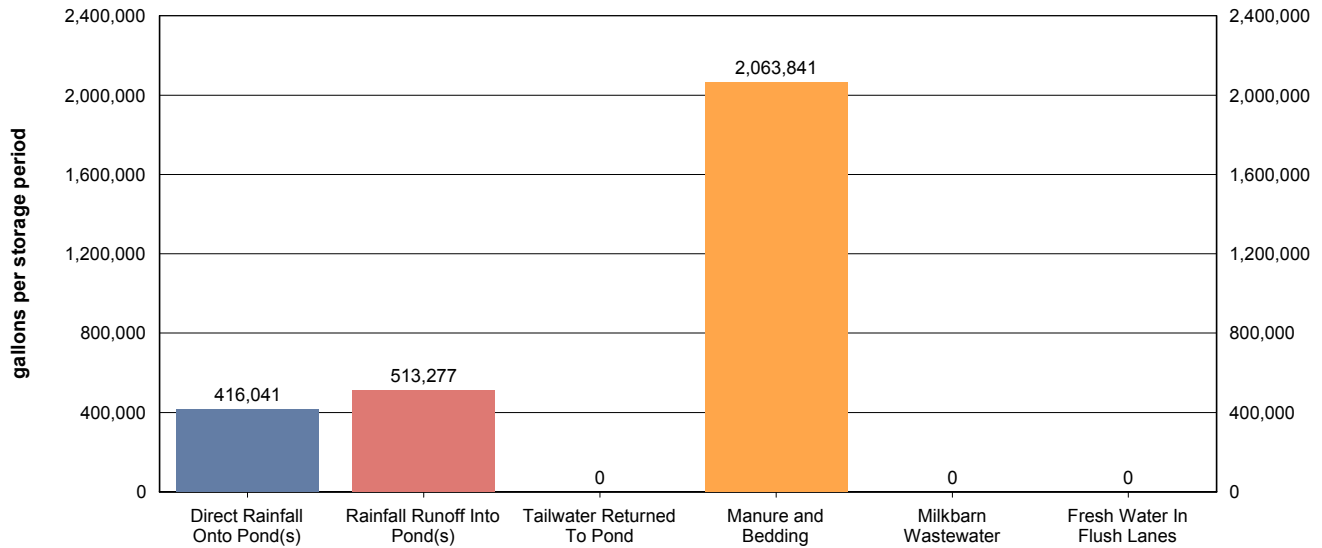
Values shown in chart are approximate values per day.

Total milkbarn wastewater generated daily: _____ 0 gallons/day

Total milkbarn wastewater generated per period: _____ 0 gallons/storage period

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

B. PROCESS WASTEWATER (NORMAL PRECIPITATION)



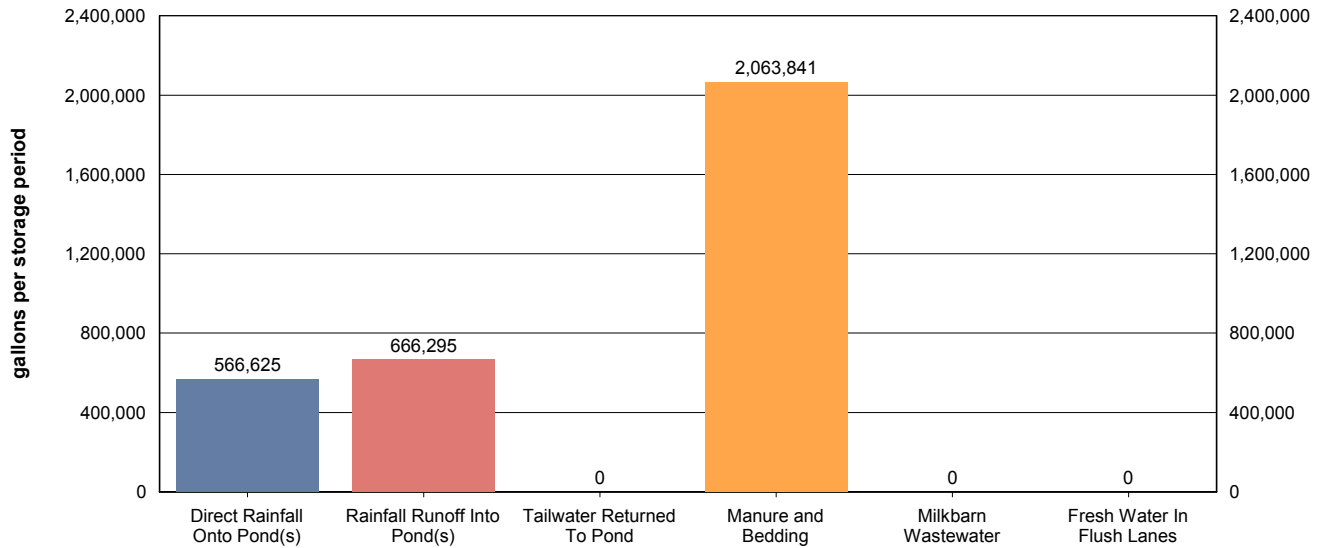
Values shown in chart are approximate values for storage period.

| | |
|---|---|
| Storage period: | <u>120 days</u> |
| Total process wastewater generated daily: | <u>24,943 gallons/day</u> |
| Total process wastewater generated per period: | <u>2,993,160 gallons/storage period</u> |
| Total process wastewater removed due to evaporation: | <u>447,942 gallons/storage period</u> |
| Total storage capacity required: | <u>2,545,218 gallons</u> |
| | <u>340,246 cu. ft.</u> |
| Existing storage capacity (adjusted for dead storage loss): | <u>3,227,672 gallons</u> |
| | <u>431,477 cu. ft.</u> |

Considering normal precipitation, existing capacity meets estimated storage needs: ☒ Yes ☐ No

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

C. PROCESS WASTEWATER (NORMAL PRECIPITATION WITH 1.5 FACTOR)



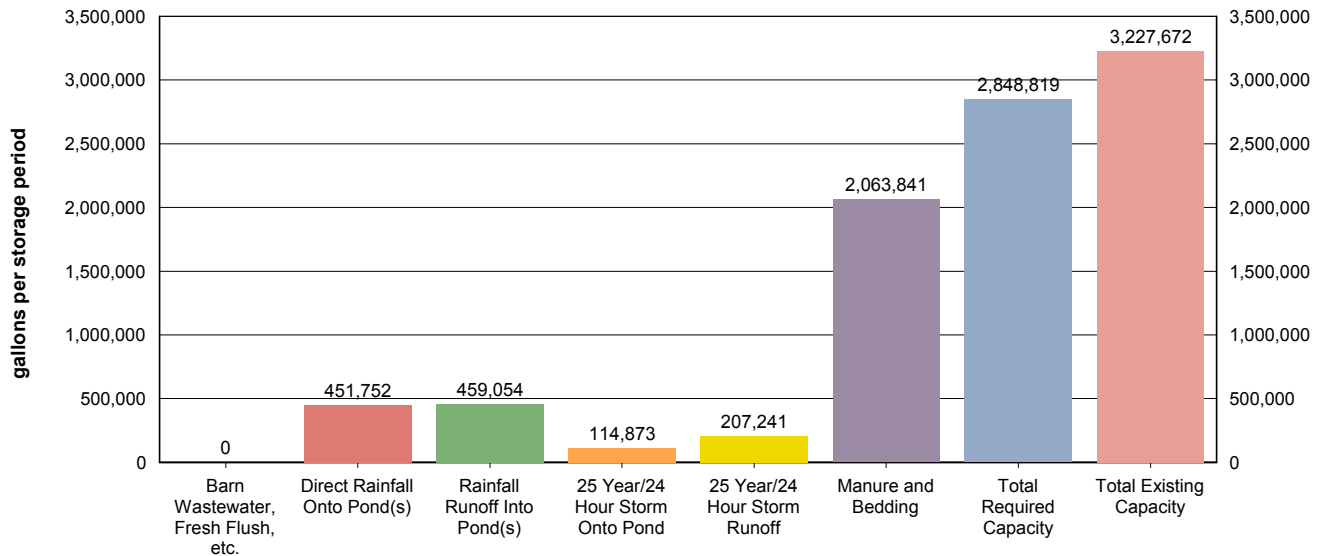
Values shown in chart are approximate values for storage period.

| | |
|---|---|
| Storage period: | <u>120 days</u> |
| Total process wastewater generated daily: | <u>27,473 gallons/day</u> |
| Total process wastewater generated per period: | <u>3,296,761 gallons/storage period</u> |
| Total process wastewater removed due to evaporation: | <u>447,942 gallons/storage period</u> |
| Total storage capacity required: | <u>2,848,819 gallons</u> |
| | <u>380,832 cu. ft.</u> |
| Existing storage capacity (adjusted for dead storage loss): | <u>3,227,672 gallons</u> |
| | <u>431,477 cu. ft.</u> |

Considering factored precipitation, existing capacity meets estimated storage needs: ☒ Yes ☐ No

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

D. STORAGE VOLUME ASSESSMENT (NORMAL PRECIPITATION WITH 1.5 FACTOR)



Values shown in chart are approximate values for storage period.

| | |
|--|---|
| Storage period: | 120 days |
| Barn wastewater, fresh flush water, and tailwater: | 0 gallons/storage period |
| Manure and bedding sent to pond: | 2,063,841 gallons/storage period |
| Precipitation onto pond: | 451,752 gallons/storage period |
| Precipitation runoff: | 459,054 gallons/storage period |
| 25 year/24 hour storm onto pond: | 114,873 gallons/storage period |
| 25 year/24 hour storm runoff: | 207,241 gallons/storage period |
| Residual solids after liquids have been removed (liquid equivalent): | 171,337 gallons/storage period |
| Total process wastewater removed due to evaporation: | 447,942 gallons/storage period |
| Total required capacity: | 2,848,819 gallons/storage period |
| Total existing capacity: | 3,227,672 gallons/storage period |
| Existing capacity meets estimated storage needs: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

OPERATION AND MAINTENANCE PLAN

The goal of the Operation and Maintenance Plan is to eliminate discharges of waste or storm water to surface waters from the production area and the protection of underlying soils and ground water.

A. POND MAINTENANCE

i. FREEBOARD MONITORING

1. Freeboard will be monitored monthly from June 1 through September 1 (dry season) and weekly from October 1 through May 31 (wet season). The results will be recorded on a Dairy Production Area Visual Inspection Form.
2. Freeboard will be monitored during and after each significant storm event and the results recorded on a Production Area Significant Storm Event Inspection Form.
3. Ponds will be photographed on the first day of each month. Pond photos will be labeled and maintained with the dairy's monitoring records.

ii. PREPARATION FOR MAINTAINING WINTER STORAGE CAPACITY

1. The retention pond(s) will begin to be lowered to the minimum operating level on or before a designated date each year.
2. The minimum operating level will include the necessary storage volume as identified in Section II.A in Attachment B of the General Order.

iii. OTHER POND MONITORING

1. At the time of each monitoring for freeboard, the pond(s) will be inspected for evidence of excessive odors, mosquito breeding, algae, or equipment damage; and issues with berm integrity, including cracking, slumping, erosion, excess vegetation, animal burrows, and seepage. Any issues identified and corrective actions performed will be recorded on a Dairy Production Area Visual Inspection Form - Other Pond Monitoring.
2. At the time of each monitoring during and after each significant storm event, the ponds will be inspected for evidence of any discharge and issues with berm integrity, including cracking, slumping, erosion, excess vegetation, animal burrows, and seepage. Any issues identified and corrective actions performed will be recorded on a Production Area Significant Storm Event Inspection Form.

iv. SOLIDS REMOVAL PROCEDURES

1. The average thickness of the solids accumulated on the bottom of the pond(s) will be measured on the designated interval using the owner, operator, and/or designer specified procedure.
2. Once solids/sludge on the bottom of the pond(s) reach the owner, operator, and/or designer specified critical thickness, solids/sludge will be removed so that adequate capacity is maintained.
3. When necessary, solids/sludge will be removed using the owner, operator, and/or designer specified methods for protecting any pond liner.

OPERATIONS AND MAINTENANCE PLAN FOR POND: WW1

Dry season freeboard monitoring will occur on the 1st of each month.

Wet season freeboard monitoring will occur every Monday of each week.

Process wastewater pond contents will be lowered to the minimum operating level (elevation) of 0.0 feet above the pond invert beginning in May of each year.

Sludge accumulation will be measured annually.

The following method will be used to measure solids/sludge accumulation:

Sludge thickness will be measured with a probe after lowering of process wastewater.

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

When solids/sludge accumulate to a thickness of 4.0 feet, the following method will be used to maintain adequate storage capacity while protecting any pond liner:

Solids are typically removed with a backhoe or excavator.

OPERATIONS AND MAINTENANCE PLAN FOR POND: WW2

Dry season freeboard monitoring will occur on the 1st of each month.

Wet season freeboard monitoring will occur every Monday of each week.

Process wastewater pond contents will be lowered to the minimum operating level (elevation) of 2.0 feet above the pond invert beginning in May of each year.

Sludge accumulation will be measured annually.

The following method will be used to measure solids/sludge accumulation:

Sludge thickness will be measured with a probe after lowering of process wastewater.

When solids/sludge accumulate to a thickness of 2.0 feet, the following method will be used to maintain adequate storage capacity while protecting any pond liner:

Solids are typically removed with a backhoe or excavator.

B. RAINFALL COLLECTION SYSTEM MAINTENANCE

i. Annually, rainfall collection systems will be assessed to ensure:

1. Conveyances are free of debris and operating within designer/manufacturer specifications.
2. Components are properly fastened according to designer/manufacturer specifications.
3. All downspouts and related infrastructure are connected to conveyances that divert water away from manured areas.
4. Water from the rainfall collection system(s) is diverted to an appropriate destination.

| <i>Buildings with rooftop rainfall collection systems</i> | Quantity | Surface Area (sq. ft.) |
|--|-----------------|-------------------------------|
| Animal Shelter - AS1 | 1 | 99,680 |
| Animal Shelter - AS2 | 1 | 90,000 |
| Animal Shelter - AS3 | 1 | 38,860 |
| Animal Shelter - AS4 | 1 | 62,000 |
| Animal Shelter - AS5 | 1 | 44,200 |
| Animal Shelter - AS6 | 1 | 102,000 |
| Commodity Barn | 1 | 1,860 |
| Shed | 1 | 240 |

Assessment for buildings with rooftop rainfall collection systems will occur on or before: 1st of October

Assessment for other rainfall collections systems will occur on or before: 1st of October

Description of how rainfall collection systems will be assessed:

Gutters, downspouts, and all other collection and conveyance systems are to be inspected, cleaned, and/or repaired as required.

C. CORRAL MAINTENANCE

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

- i. Monthly from June 1st through September 30th (dry season) and weekly from October 1st through May 31st (wet season), the perimeter of the corrals and pens will be assessed to ensure that runoff controls such as berms are functioning correctly, and that all water that contacts waste is collected and diverted into the wastewater retention pond(s). Any issues identified and corrective actions performed will be recorded on a Dairy Production Area Visual Inspection Form - Corrals.
- ii. The corrals will be assessed by the designated date to determine:
 1. Whether manure needs to be removed from the corrals based on the owner, operator, and/or designer specified conditions.
 2. Whether there are depressions within the corrals that should be filled/groomed to prevent ponding.
- iii. Removal of manure and/or regrading, when necessary, will be completed on or before the designated month/day of each year.

Day of the month dry season assessment will occur: 1st of each month

Day of the week wet season assessment will occur: Monday

Solid manure removal and regrading assessment will occur on or before: 1st of October

Conditions requiring manure removal and/or regrading:

Corrals will be scraped twice annually to remove solids and maintain proper gradient for drainage.

Solid manure removal and/or regrading will occur on or before: 1st of November

D. FEED STORAGE AREA MAINTENANCE

- i. During the dry season and prior to the wet season, the perimeter of storage areas will be assessed to ensure all runoff controls such as berms are functioning correctly and runoff and leachate from the areas are collected and diverted into the wastewater pond(s). Any issues identified and corrective actions performed will be recorded on a Dairy Production Area Visual Inspection Form - Manure and Feed Storage Areas.
- ii. During the wet season, feed storage area(s) will be assessed to determine if there are depressions within any feed storage area that should be filled or repaired to prevent ponding.
- iii. Any necessary regrading/resurfacing and berm/conveyance maintenance will be completed on an annual basis.

Day of the month dry season assessment will occur: 1st of each month

Day of the week wet season assessment will occur: Monday

Regrading/resurfacing and berm maintenance assessment will occur on or before: 1st of October

Regrading/resurfacing and berm maintenance completion will occur on or before: 1st of November

E. SOLID MANURE STORAGE AREA MAINTENANCE

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

- i. During the dry season and prior to the wet season, the perimeter of manure storage areas will be assessed to ensure all runoff and runoff controls such as berms are functioning correctly and runoff and leachate from the areas are collected and diverted into the wastewater pond(s). Any issues identified and corrective actions performed will be recorded on a Dairy Production Area Visual Inspection Form - Manure and Feed Storage Areas.
- ii. During the wet season, manure storage area(s) will be assessed to determine if there are depressions within any manure storage area that should be filled to prevent ponding.
- iii. Any necessary regrading/resurfacing and berm/conveyance maintenance will be completed on an annual basis.

Day of the month dry season assessment will occur: 1st of each month

Day of the month wet season assessment will occur: Monday

Regrading/resurfacing and berm maintenance assessment will occur on or before: 1st of October

Regrading/resurfacing and berm maintenance completion will occur on or before: 1st of November

F. ANIMAL HOUSING AND FLUSH WATER CONVEYANCE SYSTEM MAINTENANCE

- i. A map will be attached that identifies critical points for monitoring the animal housing and flush water conveyance system to verify that water is being managed as identified in this Waste Management Plan. These points will be maintained at owner, operator, and/or designer specified intervals.

Animal housing area assessment will occur on or before: 1st of October

Animal housing drainage system maintenance will occur on or before: 1st of October

Animal housing area drainage system assessment and maintenance methods:

Flush and/or wastewater conveyance lanes are to be inspected and cleared of debris and/or other obstructions as required. Defects in said conveyance systems, such as failed concrete and/or pipes, shall be repaired as needed.

G. MORTALITY MANAGEMENT

- i. Dead animals will be stored, removed, and disposed of properly.

Rendering company or landfill name: Sisk Tallow

Rendering company or landfill telephone number: (209) 667-1451

H. ANIMALS AND SURFACE WATER MANAGEMENT

- i. A system will be in place, monitored, and maintained to prevent animals from entering any surface waters when a stream or other surface water crosses or adjoins the corral(s).

Does a stream or any other surface water cross or adjoin the corrals? ☐ Yes ☒ No

I. MONITORING SALT IN ANIMAL RATIONS

- i. The combined quantity of minerals as salt in animal drinking water and feed rations will be reviewed by a qualified nutritionist on a routine basis to verify that minerals are limited to the amount required to maintain animal health and optimum production. As feed rations change, mineral content may change.

Assessment interval: Semiannually

J. CHEMICAL MANAGEMENT

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

- i. Chemicals and other contaminants handled at the facility will not be disposed of in any manure or process wastewater, storm water storage or treatment system unless specifically designed to treat such chemicals and other contaminants.

No chemicals entered.

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

REQUIRED ATTACHMENTS

The following list, based upon user selections and data entries, describes the minimum required attachments that must be submitted with the Waste Management Plan for the reporting schedule of 'July 1, 2010'.

A. SITE MAP(S)

Provide a site map (or maps) of appropriate scale to show property boundaries and the location of the features of the production area including the following in sufficient detail: structures used for animal housing, milk parlor, and other buildings; corrals and ponds; solids separation facilities (settling basins or mechanical separators); other areas where animal wastes are deposited or stored; feed storage areas; drainage flow directions and nearby surface waters; all water supply wells (domestic, irrigation, and barn wells) and groundwater monitoring wells.

Production area map reference number: Exhibit Sheet 2

Provide a site map (or maps) of appropriate scale to show property boundaries and the location of the features of all land application areas (land under the Discharger's control, whether it is owned, rented, or leased, to which manure or process wastewater from the production area is or may be applied for nutrient recycling) including the following in sufficient detail: a field identification system (Assessor's Parcel Number; field by name or number; total acreage of each field; crops grown; indication if each field is owned, leased, or used pursuant to a formal agreement); indication of what type of waste is applied (solid manure only, wastewater only, or both solid manure and wastewater); drainage flow direction in each field, nearby surface waters, and storm water discharge points; tailwater and storm water drainage controls; subsurface (tile) drainage systems (including discharge points and lateral extent); irrigation supply wells and groundwater monitoring wells; sampling locations for discharges of storm water and tailwater to surface water from the field.

Application area map reference number: N/A

Provide a site map (or maps) of appropriate scale to show property boundaries and the location of all cropland (land that is part of the dairy but not used for dairy waste application) including the following in sufficient detail: Assessor's Parcel Number, total acreage, crops grown, and information on who owns or leases the field. The Waste Management Plan shall indicate if such cropland is covered under the Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Order No. R5-2006-0053 for Coalition Group or Order No. R5-2006-0054 for Individual Discharger, or updates thereto).

Non-application area map reference number: N/A

Provide a site map (or maps) of appropriate scale to show property boundaries and the location of all off-property domestic wells within 600 feet of the production area or land application area(s) associated with the dairy and the location of all municipal supply wells within 1,500 feet of the production area or land application area(s) associated with the dairy.

Well area map reference number: Exhibit Sheet 2

Provide a site map (or maps) of appropriate scale to show property boundaries and a vicinity map, north arrow and the date the map was prepared. The map shall be drawn on a published base map (e.g., a topographic map or aerial photo) using an appropriate scale that shows sufficient details of all facilities.

Vicinity map reference number: Exhibit Sheet 1

B. PROCESS WASTEWATER MAP(S)

Provide a site map (or maps) of appropriate scale to show property boundaries and the location of the features of the production area including the following in sufficient detail: process wastewater conveyance structures, discharge points, and discharge /mixing points with irrigation water supplies; pumping facilities and flow meter locations; upstream diversion structures, drainage ditches and canals, culverts, drainage controls (berms/levees, etc.), and drainage easements; and any additional components of the waste handling and storage system.

Production infrastructure system area map reference number: Exhibit Sheets 2

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

Provide a site map (or maps) of appropriate scale to show property boundaries and the location of the features of all land application areas (land under the Discharger's control, whether it is owned, rented, or leased, to which manure or process wastewater from the production area is or may be applied for nutrient recycling) including the following in sufficient detail: process wastewater conveyance structures, discharge points and discharge mixing points with irrigation water supplies; pumping facilities; flow meter locations; drainage ditches and canals, culverts, drainage controls (berms, levees, etc.), and drainage easements.

Land application infrastructure system area map reference number: N/A

C. EXCESS PRECIPITATION CONTINGENCY REPORT

There were no attachment references entered or required for this attachment section.

D. OPERATION AND MAINTENANCE PLAN

Attach a map that identifies critical points for monitoring the system to verify that water is being managed as identified in this Waste Management Plan (see Attachment B, Pg B-7 V.F, V.G, and V.H for additional requirements).

Animal housing assessment map reference number: Exhibit Sheet 2

E. FLOOD PROTECTION / INUNDATION REPORT

Provide an engineering report showing that the facility has adequate flood protection.

Flood zone map and/or document reference number: Exhibit Sheet 4

F. BACKFLOW PROTECTION

Attach documentation from a trained professional (i.e. a person certified by the American Backflow Prevention Association, an inspector from a state or local governmental agency who has experience and/or training in backflow prevention, or a consultant with such experience and/or training), as specified in Required Reports and Notices H.1 of Waste Discharge Requirements General Order No. R5-2007-0035, that there are no cross-connections that would allow the backflow of wastewater into a water supply well, irrigation well, or surface water as identified on the Site Map.

Backflow documentation reference number: WMP Section 1.b.

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

CERTIFICATION

A. DAIRY FACILITY INFORMATION

Name of dairy or business operating the dairy: Godinho Heifer Facility

Physical address of dairy:

13140 Johnson RD

Los Banos

Merced

95365

Number and Street

City

County

Zip Code

Street and nearest cross street (if no address): _____

B. DOCUMENTATION OF QUALIFICATIONS AND PLAN DEVELOPMENT

I have reviewed the portion of the waste management plan that is related to storage capacity facility and design specifications in accordance with Item II, Attachment B of the Waste Discharge Requirements General Order for Existing Milk Cow Dairies - Order No. R5-2007-0035 and certify that this plan was prepared by, or under the responsible charge of, and certified by a civil engineer who is registered pursuant to California law or other person as may be permitted under the provisions of the California Business and Professions Code to assume responsible charge of such work.

Storage capacity is:

Insufficient

- ☐ Retrofitting Plan/Schedule/Design Criteria attached in accordance with Attachment B, II.B. 1-5 and Attachment B, II. C.

Sufficient

- ☒ Certification 1 - Certified in accordance with Attachment B, II. A. 1-8. (no contingency plan)
- ☐ Certification 2 - Certified in accordance with Attachment B, II. A. 1-8, II. C. (with contingency plan attached)



CIVIL ENGINEER'S WET STAMP

2/21/2020

SIGNATURE OF CIVIL ENGINEER

DATE

Manny Sousa

PRINT OR TYPE NAME

P.O. Box 1613; Oakdale, CA 95361

MAILING ADDRESS

(209) 238-3151

PHONE NUMBER

Waste Management Plan Report
General Order No. R5-2007-0035, Attachment B
July 1, 2010 deadline

C. OWNER AND/OR OPERATOR CERTIFICATION

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.

SIGNATURE OF OWNER

SIGNATURE OF OPERATOR

Manuel Godinho 2001 Trust

David Godinho

PRINT OR TYPE NAME

PRINT OR TYPE NAME

DATE

DATE



Sousa
ENGINEERING
INFRASTRUCTURE-DEVELOPMENT-
AGRICULTURE

PO BOX 1613
OAKDALE, CA 95361
PHONE: (209)238-3151
www.sousaeng.com

VECTOR CONTROL PLAN
FOR
GODINHO HEIFER FACILITY
MERCED COUNTY, CA

TABLE OF CONTENTS

1. INTRODUCTION
2. BEST MANAGEMENT PRACTICES
 - a. Land Application Areas
 - b. Dairy Production Area (DPA)
3. CONTACT INFORMATION

1. INTRODUCTION

Vector control is an important aspect of disease prevention and public health. Without proper management, agricultural production facilities can create or enhance opportunities for vectors to develop and proliferate. Certain land management practices can reduce vector populations thereby reducing long-term vector treatment costs, reducing the amount of pesticides used in vector control operations, helping to protect public health, and contributing to an integrated pest management (IPM) approach to vector control.

Integrated Pest Management is an approach that focuses on site-specific, scientifically sound decisions to manage pest populations by matching a wide variety of techniques with the conditions found on site. These techniques are commonly grouped into four categories:

1. Source reduction or physical control—environmental manipulation that results in a reduction of vector development sites.
2. Biological Control—use of biological agents to limit vector populations
3. Chemical Control—larvicides (materials that kill immature larval vectors and mosquitoes) and adulticides (materials that kill adult vectors and mosquitoes)
4. Cultural Control—change the behavior of people so that their actions prevent the development of vectors or the transmission of vector-borne disease.

Through the adoption of these policies and procedures, this Plan will provide an outline to effectively control vectors by physical, cultural, and biological means.

The Vector Reduction Best Management Practices (BMPs) referred to in this document are the recommended land management practices that can provide a reduction in vector populations by various means including: reducing or eliminating breeding areas, increasing the efficacy of biological controls, increasing the efficacy of chemical controls, and improving access for control operations.

While it is generally accepted that vector production from all sources may be reduced through the widespread implementation of vector Reduction BMPs, these policies specifically target the most severe vector problems with the greatest likelihood of responding through the use of BMPs.

2. BEST MANAGEMENT PRACTICES (BMPs)

- a. **Land Application Areas:** there are no Land Application Areas associated with this heifer facility. Adjacent Land Application Areas are associated with a separate dairy facility that has a separate Waste Management Plan and Vector Control Plan.
- b. **Production Area:** for the Production Area, the following are areas of concern and recommended BMPs for vector control:

Common Vector Development Areas

- Wastewater lagoons
- Animal washing areas
- Drain ditches
- Sumps/ponds
- Watering troughs
- Corrals
- Milk barn
- Calf areas
- Free stalls and flush lanes
- Shades
- Feed storage and feeding areas

Special Concerns

Dairy and associated agricultural practices vary; however, these practices need to consider mosquito and vector control issues. The Best Management Practices for Vector Reduction below offer options to balance the requirements of the dairy operators with the need for effective vector control.

General Vector Control Principles

1. Prevent or eliminate unnecessary standing water that remains for more than 72 –96 hours during mosquito season which can start as early as March and extend through October depending on weather.
2. Maintain access for Abatement District staff to monitor and treat mosquito breeding sources.
3. Minimize emergent vegetation and surface debris on the water.
4. Inspect Common Vector Development Areas monthly for evidence of presence of vectors.
5. Contact the County Department of Environmental Health or Mosquito Abatement District for technical guidance or assistance in implementing vector reduction BMPs.

Vector Reduction BMPs for Production Area

- DA-1 All holding ponds should be surrounded by lanes of adequate width to allow safe passage of vector control equipment. This includes keeping the lanes clear of any materials or equipment (e.g. trees, calf pens, hay stacks, silage, tires, equipment, etc.).

- DA-2 If fencing is used around the holding ponds, it should be placed on the outside of the lanes with gates provided for vehicle access.
- DA-3 It is recommended that all interior banks of the holding ponds should have a grade of at least 2:1.
- DA-4 An effective solids separation system should be utilized such as a mechanical separator or two or more solids separator ponds. If ponds are used, they should not exceed sixty feet in surface width.
- DA-5 Drainage lines should not by-pass the separator ponds whenever possible, except those that provide for normal corral run-off and do not contain solids. All drain inlets must be sufficiently graded to prevent solids accumulation.
- DA-6 Floating debris should be minimized in all ponds; mechanical agitators may be used to break up crusts.
- DA-7 Vegetation should be controlled regularly to prevent emergent vegetation and barriers to access. This includes access lanes, interior pond embankments and any weed growth that might become established within the pond surface.
- DA-8 Dairy wastewater discharged for irrigation purposes should be managed so that it does not stand for more than three days.
- DA-9 All structures and water management practices should meet current California Regional Water Quality Control Board requirements.
- DA-10 Tire sidewalls or other objects that will not hold water should be used to hold down tarps (e.g. on silage piles). Whole tires or other water-holding objects should be replaced.

3. CONTACT INFORMATION

- a. Merced County Department of Environmental Health
260 E. 15th St.
Merced, CA 95341
Toll Free: 800-734-7391
Phone: (209)381-1100
Fax: (209) 384-1593

- b. Merced County Mosquito Abatement District
3478 Beachwood Drive
P.O. Box 909
Merced, CA 95341
Toll Free: 800-622-3242
Phone: (209) 722-1527
Fax: (209) 722-3051